10. **ARTICLE 3:** INTERNET COMMUNICATION: DOES IT STRENGTHEN LOCAL VOLUNTARY ORGANIZATIONS?

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ABSTRACT

Does communication through the Internet strengthen local voluntary organizations? This question is investigated by analyzing sustainability, vitality, and the use of the Internet by Norwegian local voluntary organizations. Using quantitative data, analyses show that the use of the Internet by Norwegian voluntary organizations is widespread. Primarily, organizations appreciate the technology for its one-way aspect of communication and information distribution, rather than for aspects of many-to-many communication between organizations, members, and volunteers. Using data from two points in time, analyses show that organizations using the Internet have had a higher probability of achieving organizational growth than those who do not. Furthermore, these organizations are also more likely to hold internal meetings and to arrange other face-to-face activities. This article therefore concludes that rather than replacing traditional organizations and face-to-face activities, the Internet may strengthen their sustainability and vitality.

INTRODUCTION

In times of a more challenging and competitive environment for voluntary organizations, with heightened scrutiny, greater demands, fewer resources, and increased competition—information and communication technology has been held up as one way to address these challenges (Burt & Taylor, 2000, 2003; Hackler & Saxton, 2007). With 97% of the population having Internet access, Norway leads per capita Internet access relative to the rest of Europe (61%) and North America (79%; Internet-World-Stats, 2012). Eighty percent of the Norwegian population between 9

and 79 years of age are daily Internet users (Vaage, 2012) and over half are registered members on the social network site Facebook (Internet-World-Stats, 2012; Social Bakers, 2012). One could therefore claim that Norway is a highly connected and well-networked society, but how connected and networked are Norway's voluntary organizations and what effect, if any, does the technology have on them?

In this article the focus is on voluntary organizations' use of the Internet, including email and different types of websites such as homepages, blogs, and social network sites, henceforth collectively referred to as network technology. While studies of network technology in voluntary organizations have shown a rapid growth of basic technology use in terms of computers, Internet access, email and websites (Hackler & Saxton, 2007; Saxton & Guo, 2011), the technology's possibilities for interactivity are underutilized, there are poor levels of information disclosure (Gandia, 2011), and the voluntary sector lacks a wider Internet strategy (Hackler & Saxton, 2007). Nevertheless, due to the Internet, new forms of volunteering and new possibilities for voluntary efforts have developed. A case in point is the formation of network organizations that exist primarily in cyberspace (Brainard & Brinkerhoff, 2004; Brainard & Siplon, 2002). Other studies have suggested that the implementation of network technology offers support to traditional organizations by increasing their level of internal integration (Burt & Taylor, 2000) and by reducing the costs of voluntary participation (Leizerov, 2000; Ward, Gibson, & Lusoli, 2003). Thus far, the empirical knowledge of how the use of such technology affects social and civic structures has been somewhat inconsistent and incomplete, especially in the context of local voluntary organizations. Given that this field of research has matured and triggered a great many case studies exploring new adaptations of network technology by different types of organizations, there is now a need for research that yields more generalizable results (Garret, 2006; Quan-Haase & Wellman, 2006).

This article explores whether communication through the Internet strengthens local voluntary organizations. The main research question is how the structure of communication through the Internet is related to organizational change, face-to-face

activities and the sustainability and vitality of organizations? Using survey data from organizations, we first investigate the factors that increase likelihood of network technology implementation. Next, using longitudinal data measured in 1998 and 2009, we analyze the effects of network technology implementation on these organizations.

A REVITALIZING TECHNOLOGY?

Challenges for and pressures on voluntary organizations have been observed in many countries, especially in cases where individualization processes and fiscal distress have affected organizations' relationships with their active members and their internal economy. As Denison (2004) points out, the failure to make effective use of the Internet in response to such pressures can only weaken an organization's position. In Norway, the structure and scope of the organized civil society has changed over time. Voluntary organizations have met the demands of professionalization and have become more centralized and bureaucratized (Tranvik & Selle, 2008). There has been a general decline in membership meetings, while other organizational and social activities have slightly increased – executive committee meetings in particular (Christensen, Strømsnes, & Wollebæk, 2011). Membership figures and the number of local organizations have stagnated or declined since the 1990s, and loyalty to organizations and ties between individuals and organizations have also become weaker (Wollebæk, Selle, & Strømsnes, 2008; Wollebæk & Sivesind, 2010). In the face of such change, the implementation and use of network technology in Norway's voluntary organizations may be a means for counteracting some of these negative developments.

In response to the aforementioned societal and organizational changes, much of the voluntary sector in Norway has been through a process of modernization over the last 20 years. Tranvik and Selle (2008) conducted a case study of the implementation of network technology in four national-level voluntary organizations. They found that a central focus of modernization processes has been the implementation of network technology and how it can improve cooperation and communication between mem-

bers and volunteers on the local level, and between different levels in organizations. The reforms have entailed vertical and horizontal integration: local levels are supposed to gain more access to an organization's central level so as to increase their influence and coordinate efforts toward mutual ends. As Tranvik and Selle (2008) point out, an intention has been to strengthen the volunteer culture locally through an increase in service from the central level. The implementation of network technology is supposed to revitalize local organizations by helping them increase their activities and staunch declining membership figures. The use of homepages, email lists, and web forums, the argument goes, should strengthen commitment and participation and reinforce the collective identity of an organization's members (Tranvik & Selle, 2008). Despite these intentions, the researchers found that the efforts to facilitate online participation had little effect on the recruitment of volunteers and members. Furthermore, these efforts made little impact on active participation and discussion online (Tranvik & Selle, 2008).

NETWORK TECHNOLOGY AND ORGANIZATIONAL CHANGE

Previous studies have shown that the Internet supplements more traditional forms of mobilization, protest, and collective action, and that it supports traditionally structured organizations (Costanza-Chock, 2003; Downing, 2001, 2003; Kahn & Kellner, 2004; Rogers & Marres, 2000; Van Aeist & Walgrave, 2002). Information about activities and meetings, distributed by email or published on websites, may spur active participation in organizations since information can be channeled directly to members, volunteers (Costanza-Chock, 2003; Downing, 2001; Smith, 2000), or the general public. Online information can also be used indirectly for creating consensus of opinion that may reinforce participation in organizations (Tarrow, 2005).The distribution of information through the Internet can also be of value for an organization's internal governance. Pure one-way communication from the leadership and outward may strengthen an organization's central level, and focus less attention on the members' opinions and feedback. The use of the Internet by organizations has also been

shown to lack interactivity and dialogue (Gandia, 2011). Thus, a first hypothesis is formulated:

Hypothesis 1 (H1): Voluntary organizations appreciate network technology for the aspect of oneway information provision that support a traditional, centralized organization.

However, since communication through network technology can be synchronous, asynchronous, and mobile, it may have the potential to transform governance structures (Burt & Taylor, 2000). Two-way web communication, which could involve the participation of affiliates from all organizational levels, may lead to network organizing and a decentralization of leadership. Examples of such communication modes are websites that allow internal dialogue, construction of meaning, and discursive networks inside an organization (Downing, 2001, 2003; Kahn & Kellner, 2004). The term "Web 2.0" describes this type of two-way communication, which has recently become a notable feature of the Internet, in contrast to the preceding "Web 1.0" with its characteristic one-way communication (Allen, 2012; Madden & Fox, 2006). Web services are now more concerned with social networks—that is, with capabilities for linking people within networks – and alongside the linking of information, with user-generated content, online commenting, and discussion forums. The user interface of these web services (also called social network sites or social media) is often predefined and easy-to-use, consisting of profiles, friends lists, and designated tools for communication (boyd, 2011). Web 2.0 supports an ideal of participation where users themselves are both the content creators and consumers (Beer & Burrows, 2007). Along with linking people, the underlying structure of these web services makes them potentially very efficient in information dissemination and mobilization. For established organizations, this may challenge the very logic of organizing and centralizing information, knowledge, interests, and internal relations of decision-making power. It has also been argued that network technology has reduced the cost of organizing collective action, thereby making organizations less important (Shirky, 2008). With two-way communication – both one-to-one and one-

to-many – organizations can still maintain control over information, yet many-to-many forms of communication in decentralized networks may challenge the structure of organizations and render them more open and decentralized. We hypothesize:

Hypothesis 2 (H2): Voluntary organizations appreciate network technology for its Web 2.0 aspects of two-way and many-to-many communication, indicating a move toward more network-based organizations.

NETWORK TECHNOLOGY AND ORGANIZATIONAL ACTIVITIES

A frequent question that arises in conjunction with the implementation of network technology in society is whether the technology will cause people to interact less face-to-face, cooperate less, and participate less in civic affairs. Some studies have indicated these outcomes by finding links between Internet usage, decreased offline contact, and increased depression and loneliness (Kraut et al., 1998; LaRose, Eastin, & Gregg, 2001). However, in a 3-year follow-up of one such study, many of the negative effects initially indicated were no longer present (Kraut, Kiesler, Bonka, & Cummings, 2002). Some studies also indicate a "novelty effect" of new technology on individuals that eventually wears off (Henke & Donohue, 1986; Henke & Fontenot, 2007). In the initial stage of adopting new technology, these studies suggest, there is a reduction of time spent on other activities. But this effect eventually wears off and conditions return to the baseline state. A study by Wellman, Quan-Haase, Witte and Hampton (2001) showed that online interaction has a supplemental rather than replacing function, neither increasing nor decreasing offline interaction. The Internet may be incorporated into the routine practices of everyday life by supplementing other forms of contact (Wellman et al., 2001). However, the study by Wellman et al. (2001) also indicates that the more people use the Internet and are involved in online organizational and political activity, the more they are also involved in offline organizational and political activity. Taken together, the results of this study suggest that the Internet increases interpersonal connectivity and organizational involvement (Wellman et al., 2001). A metastudy of research on Internet use and civic and political engagement also suggests that the effect of Internet use on civic and political

engagement is positive (Boulianne, 2009). Although much research is based on individual-level data, it indicates a positive effect of network technology on participation in organizations. It can be assumed that this effect may also be demonstrated by organizational data on types of activities and membership. In addition, if network technology indeed has the ability to increase individual involvement in voluntary organizations, this may stimulate the vitality and sustainability of voluntary organizations. Thus, we formulate a third hypothesis:

Hypothesis 3 (H3): The use of network technology strengthens face-to-face meetings and activities as well as the vitality and sustainability of local voluntary organizations.

An important theoretical question is whether the technology is a cause or an effect, a dependent or an independent variable. It is reasonable to expect a relationship between changes in organizational traits and the use of network technology, but is it possible to trace the causal direction and exact effects of these changes? Will the use of network technology lead to certain organizational changes, or is that use shaped by organizational types and traits? In this article, it is assumed that organizational traits – age, geographic area, size of membership, and so forth – will affect how an organization develops over time, and that these traits will also affect an organization's use of the Internet and its perceived benefits of that use. Different organizations will of course implement technology to different degrees. Our primary focus, then, is on the possible organizational changes stemming from the technology, and the use of the Internet is our main explanatory variable. This variable is assumed to have an independent effect on organizational change. We first analyze what types of organizations actually implement the technology and how they benefit from it, then we analyze the potential effects on organizational change.

DATA AND METHOD

The data stem from survey questionnaires that were mailed to local chapters of voluntary organizations in 17 of 33 municipalities in Hordaland County, Norway, in 1998 and 2009 (the survey was also made available online in 2009). Comprehensive cen-

suses of all organizations in the area, which were based on different types of registries for existing organizations (public registries, registries from municipal governments, umbrella and national organizations, etc.), were used as a starting point for the surveys. The census and surveys were undertaken by researchers and research assistants at the Stein Rokkan Centre for Social Studies. For the 2009 survey, the response rate for 16 out of 17 municipalities was 52%. The response rate for the biggest city and municipality, Bergen, was somewhat lower – 39%. This was a drop from the response rate in 1998 of 60% in the rural municipalities, and 45% in Bergen. Approximately 2,500 associations responded to the survey at both times. The organizations represent a wide range of fields, including sports, politics, language, missionary activities, alcohol abstention, music and the arts, children's organizations, social and humanitarian work, neighborhood activities, and culture and leisure. The two surveys give a longitudinal structure of data on organizations that responded to both surveys, enabling the exploration of technology as a cause, since the data indicates which organizations used personal computers (PC) and the Internet in 1998. The results are primarily reflective of the local organizations in Hordaland. Nonetheless, it can be assumed that traits of Hordaland's organizations and the functions of network technology can be extrapolated to all local voluntary organizations throughout Norway. In fact, the analyses may also indicate the functions of network technology in voluntary organizations internationally.

The first model of analysis uses data solely from the 2009 survey (see Table 1). The organizations were asked if the Internet was used (email or web) in the running of their activities, and what benefits they perceived from using the technology (further detail on measurement and coding of variables is included in the appendix). A Heckman two-step regression is used to control for the selection of types of organizations that used the Internet in 2009 (Heckman, 1976). The regression first considers what factors influenced whether organizations were online or not. Controlling for the selection of online organizations, the regression then considers what factors influenced the organizations' sense of having perceived benefits from the Internet. We are here investigating the nonrandom subgroup of organizations that

used the Internet and therefore need to control for the selection using a Heckman two-step regression. The dependent variable in Step 1 of the regression is whether the organizations used the Internet or not. In the second step, a variable for general benefits from the Internet is included. Also included are three variables for measuring specific benefits from the Internet: (a) increased outward contact, (b) the Internet as a source for feedback and discussion between members and volunteers, and (c) the Internet as a means for expediently sharing information with members and volunteers. The main focus in this first model of analysis is the different ways voluntary organizations use the Internet and how each way can affect their perception of its benefits. Three types of Internet use are examined: having a homepage, having a profile on a social network site like Facebook, and having a blog. A reasonable expectation is that the use of social network sites and blogs, which are indicators of Web 2.0, will increase the likelihood of perceived benefits, specifically in relation to outward contact, feedback, and discussion. Homepages, which indicate Web 1.0 and one-way communication, are expected to increase the likelihood of perceived improvement in online information distribution.

Several control variables are included in the first model of analysis in order to analyze the selection of online organizations and to control for the influence of differences in Internet usage and how these uses affect the perceived benefits of network technology. Stinchcombe (1965) claims that in the process of being institutionalized, an organization develops its own traditions and values and will, over time, become less adaptive to its surroundings. An assumption here is that older organizations are less adaptive to new technology than younger organizations by being less likely to implement and appreciate it. Based on empirical findings that younger people are more likely to adopt new communication technologies, another plausible assumption is that in organizations where the majority of members are young, the probability of being online is high (Lenhart, Purcell, Smith, & Zickuhr, 2010).

With network technology, the number of receivers of information will have little or no impact on the cost to an organization to use the technology. Incentives to utilize it

may therefore be stronger for larger organizations, who likely have more resources for implementing network technology than smaller organizations. Denison (2004), in Australia, found that large organizations (based on annual budget), in contrast to smaller organizations, are more prone to publish their own websites and be satisfied with their website's performance. Having a hierarchical organizational structure with local, regional, and national levels could also affect the implementation and appreciation of network technology. Network technology can potentially ease the flow of information and communication between different organizational levels and integrate them internally (Burt & Taylor, 2000). Because of the potential administrative tools implicit in network technology, it is also reasonable to assume that formal organizations – that is, organizations with bylaws, balance sheets, membership lists, and so forth – are more likely to use the Internet than are less formal organizations. The lesser importance of physical distance, with respect to effectiveness and range of network technology, could also make organizations with larger geographical scopes more likely to use and benefit from the technology. A final control in the first model of analysis concerns the urban-rural dichotomy. In Australia, city-based organizations are significantly more likely to have websites and be satisfied with them than are small, regionally based organizations (Denison, 2004). This leads to the assumption that urban organizations use and benefit from the Internet more than do rural organizations.

In the second model of analysis (see Table 2), our attention shifts to the effects of using the Internet in the running of voluntary organizations, including long-term effects, using data from 1998. This analysis is also a Heckman two-step regression, and controls for the nonrandom selection of surviving organizations, followed by an examination of the factors influencing changes in the dependent variables that indicate organizational vitality, centralization, and face-to-face activities. The first step in the regression considers the effects of Internet usage and selected control variables on the survival of an organization (a primary indicator of organizational vitality). The second step examines the likelihood of membership growth, increases in executive committee meetings and membership meetings, and increase in other

organizational activities involving face-to-face interaction, such as athletic practices and competitions, social events, cultural activities, courses, and so forth.

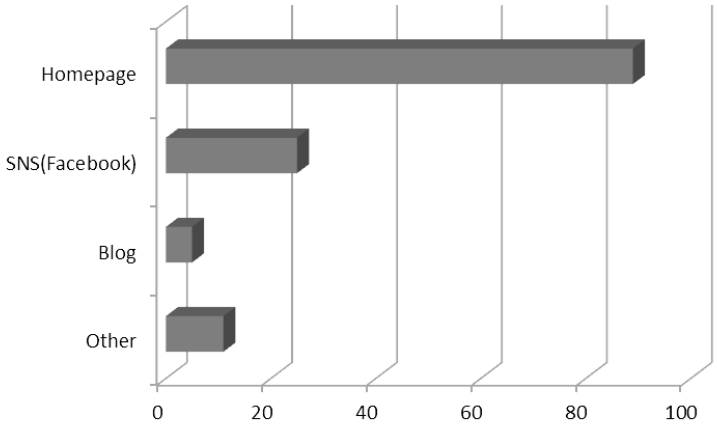
The second model first examines the early use of the Internet and PC with the variable: PC and Internet (1998). Will the early adoption of PC and the Internet have any effect on face-to-face activities, organizational vitality, and centrality? In line with studies indicating a "novelty effect" of new technology (Henke & Donohue, 1986; Henke & Fontenot, 2007), it can be expected that early adoption of network technology will not have a significant effect on face-to-face activities, organizational vitality, or centrality. This does not necessarily mean that the use of technology has no effect, but that it becomes integrated into routine daily practice and is normalized. A second variable: PC, no Internet (1998), is included to control for the effect of early use of PC without being online. Although the exact time of implementation may not be important, the eventual implementation and use of the technology may be important. For this reason, the main explanatory variable is added: Started using Internet after 1998. To control for the variables measuring implementation of PC and the Internet, we include the aforementioned control variables in the first model: organizational age, membership figure, formalization, connection to a national level, size of geographic area, residing in a city or rural area, and a variable measuring the age of members. We also include four additional control variables that were measured in 1998: the number of executive committee meetings, the number of membership meetings, the number of other activities, and the membership figure.

DESCRIPTIVE STATISTICS

The data from 2009 on local voluntary organizations in Hordaland show that 79% of the organizations are online, using email or the World Wide Web in the running of their operations. This is a 63% increase from 1998 (Wollebæk, 2000). By comparison, the proportion of organizations in Australia with access to the Internet – including local, regional, and national organizations of all sizes and types – increased from 40% in 1997 to 90% in 2003 (Denison, 2004). The fact that most organizations in the data set are local or regional level in nature may explain this difference in adoption rates.

Of the organizations in Hordaland who had used the web or email the previous year, 89% had their own homepage, 25% had a profile on a social network site such as Facebook (referred to as SNS in Figure 1), 5% had their own blog and 11% had another kind of web presence.

Figure 1: Percentage of organizations using various web media.



With respect to Web 1.0 and Web 2.0, the majority of the organizations value the one-way dissemination of information aspect as the most useful (see Figure 2). This implies the organizations consider the Internet useful for disseminating information about activities and meetings to members and volunteers. This same implication arose in the 2003 Australian survey results (Denison, 2004). Further, the Internet plays an important role as a mode of contact with an organization's central level. It also facilitates feedback from organizational members and volunteers and contact with other organizations. Finally, the organizations deem the Internet less useful as an arena for advocacy, dialogue, and discussion between members and volunteers.

Figure 2 indicates that Internet usage in voluntary organizations generally does not facilitate cooperation, activity, and discussion between members and volunteers. It also indicates the Internet can ease the administrative and logistical burden between local and central levels and ease the dissemination of information from an organization to its members and volunteers, thereby integrating an organization internally

(Burt & Taylor, 2000). In support of Hypothesis 1, as opposed to Hypothesis 2, the one-way communication aspect combined with more centralized communication, demonstrate local organizations' benefit from using the Internet. These first descriptions imply the traits of Web 2.0, with more user-generated content and many-to-many communication in networks, are less visible in local voluntary organizations' Internet use.

Figure 2: Percentage of perceived benefit from e-mail and the Internet

MAIN ANALYSES AND RESULTS

Table 1 displays the two-step regression model of Internet use and its perceived benefits. To an extent, the results support the expectation of a positive correlation between using the Internet in different ways and the level of perceived benefit from that use. Organizations with a profile on a social network site are more likely to perceive social network sites as beneficial in general and specifically as a means for feedback, debate, and outward contact, than those who do not have a profile. Having a blog, however, does not significantly affect the perceived benefit. Organizations with a homepage are also more likely to perceive general and specific benefits from the Internet, compared to organizations without homepages. The effect of having a

homepage appears to be stronger than the effect of having a profile on a social network site, and in fact, a homepage offers the greatest perceived benefits in terms of outward contact.

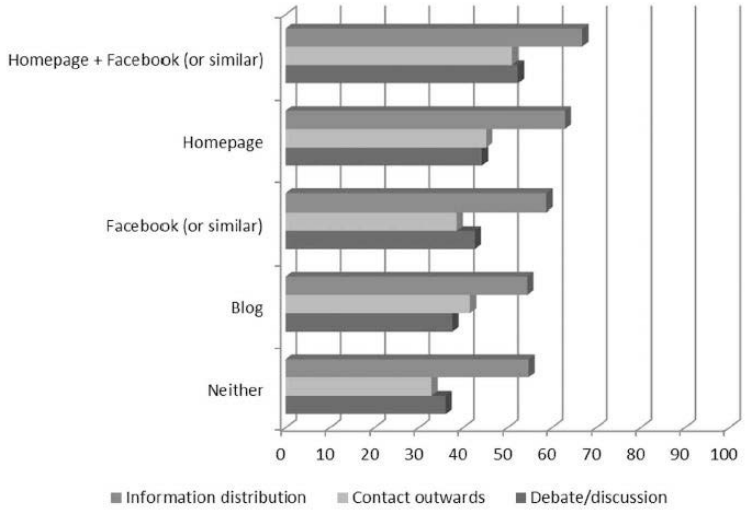
Table 1: Likelihood of Internet Use and Perceived Benefits in 2009. Two-step Heckman Regression.

	STEP 1	STEP 2			
	Using the Internet	Benefits from the Internet (variable from factor analysis, all benefit variables)	Debate/ discussion (1-8)	Contact outward (1-8)	Information distribution (1-4)
Facebook or similar		.319***	.541**	.445**	.155*
Blog		.288†	.292	.753*	.070
Homepage		.517***	.599***	.981***	.305***
Organizational age (log)	−.037***	−.121***	−.295***	−.153**	−.088***
Membership figure	.033***	.024	.009	.068	−.012
Formalization	.075***	.097**	.144*	.179**	.083**
Connected to national level	.092***	.208**	.043	.448**	.012
Bergen (= 1)	.068***	.194***	.522***	.120	.294***
Geographic area	.025***	.060***	.092**	.114***	.044***
Members' age composition					
Members below 15 years	.106***	.179	.177	.381**	.142*
Members 16 to 30 years	.090***	.059	.178	.118	.084
Members 31 to 50 years	.077***	.218***	.419***	.302**	.171**
Members 51 to 66 years	.032†	.074	.219†	.007	.102†
Members 67 years and over	−.215***	−.305***	−.566**	−.251	−.359***
Democracy vs. effectiveness (0-10, instrument variable)	−.007				
Constant	.260***	−1.241***	2.165***	.870†	1.689***
Rho		−.008	.085	.124	−.076
N =	1,597	1,479	1,419	1,356	1,524

Note: †$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$

Figure 3 illustrates the estimated perceived benefits of a homepage, a Facebook profile, and a blog. Since the majority of organizations with a Facebook profile also have a homepage, a combined estimation is made for the value of having both a homepage and a profile on a social network site. This additive effect gives the highest perceived benefit from the Internet for all three specific benefit variables. The most valued benefit was the use of the Internet for information dissemination, and this is true for all types of websites. This implies that the most important benefit of having an online presence is ease of the dissemination of information, regardless of the type of website an organization uses. The organizations showed less appreciation for how the Internet could be used for internal dialogue and contact with the outside world. One may have expected those organizations actually using social network sites, in addition to having a homepage, to have a greater sense of appreciation for interactivity and dialogue. However, satisfaction with the Internet seems to be more contingent upon Web 1.0 technology than Web 2.0 technology. This analysis lends support to Hypothesis 1, that one-way communication through network technology, from an organization to its members and volunteers, is more important for an organization than two-way communication between volunteers and members.

Figure 3: Estimated values for benefits of various web media. Scaled 0 to 100. 2009.



As shown in Table 1, other variables were also controlled for, and in accordance with the expected effects, older organizations were less likely to use the Internet and less likely to report general and specific benefits from using it. Larger organizations, however, were more likely to report using the Internet. More formal and urban organizations, those covering a larger geographical area and those connected to a national level were more likely to report Internet usage and general benefits from its use. Furthermore, organizations with many young members were more likely to report Internet use, while organizations with the oldest members were less likely to report Internet usage or any benefits from such use.

Thus far the analysis has focused on different ways organizations may use the Internet and the benefits from that usage, measured at one point in time. To further explore the main research question concerning organizational change, vitality, and face-to-face activities, we now turn to the more long-term effects of Internet use. When comparing early adoption, late adoption, or no adoption of network technology, can it be discerned whether early adoption of network technology affect current levels of face-to-face activity, membership figures, and the concentration of power at the executive level in organizations?

Table 2: Percentage of organizations with varying online status in 1998. Seen in relation to organizational survival and membership growth in 2009.

	Status 2009				Survival/Membership development 1998-2009			
	Non existing	Exists	Unknown destiny	Total	Recess < 10%	Stable +/– 10%	Growth > 10%	Total
Internet 98	15	76	9	100	46	14	40	100
Only PC 98	18	73	9	100	46	19	35	100
No Internet or PC 98	27	63	10	100	53	18	29	100
Total	21	70	9	100	49	17	34	100
N				2,494				671
P-value				.000				.079

Table 2 indicates that early adopters indeed have an advantage with respect to organizational survival and growth. Organizations using the Internet in 1998 have a higher

survival rate than those that did not use the Internet. But what exactly affects organizational vitality and activities?

Table 3: Likelihood of organizational survival, increased membership figures, executive commitee meetings, membership meetings and other organizational activities in 2009. Data from 1998 included. Two-step Heckman regression.

	STEP 1	STEP 2									
		Member figure 2009		Exec. committee meeting 2009		Membership meeting 2009		Other activities 2009			
Variables 1998	Survival	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2		
PC and Internet (1998)	−.009	−.466*	−.362†	−.079	.183†	−.093	.032	−.177	.178		
PC, no Internet (1998)	−.104	.153*	.125†	.062	.016	−.137	−.159	−.050	−.114		
Started using Internet after 1998			.214**		.329***		.157		.445***		
Exec. Committee meeting 1998 (log+1)	.038	−.012	−.025	.451***	.429***	.026	.016	.154*	.126*		
Membership meeting 1998 (log+1)	.039	−.080***	−.079***	−.009	−.006	.345***	.346***	.030	.034		
Other activities 1998 (log+1)	.157***	−.023	−.025	.067*	.062*	.035	.033	.511***	.508***		
Organizational age (log)	.092*	−.058*	−.055*	−.026	−.022	.013	.016	−.006	.002		
Members 1998 (log)	.257***	.827***	.818***	.109***	.103**	.013	.012	.067	.064		
Formalization	.099**	.004	.002	.103***	.097**	−.004	−.007	.018	.011		
Connected to national level.	−.033	−.004	−.011	−.042	−.056	.123	.116	−.190†	−.210*		
Bergen (= 1)	−.533***	.150*	.136†	.107	−.090	.137	.127	.172	.139		
Geographic area	.026	.010	.002	.003	−.011	−.045	−.052	−.029	−.048		
Members age composition											
Members below 15 years	−.229*	.115	.098	−.092	−.124	−.263*	−.279*	.065	.019		
Members 16 to 30 years	−.128	.008	.007	.064	.091	−.071	−.073	.027	.021		
Members 31 to 50 years	.097	−.016	−.035	−.063	−.094	−.237**	−.252**	−.116	−.156†		
Members 51 to 66 years	.003	.035	.034	.010	−.004	.098	.095	−.063	−.072		
Members above 67 years	−.016	−.134*	−.078	−.109	.030	.069	.106	−.246*	−.140		
Used the Internet* members	.006	.138**	.154**								
Democracy vs. effectiveness (instrument variable)	−.008										
Constant	−1.589***	1.115***	1.049***	.117	.029	.794†	.737†	.776	.595		
Rho		−.486	−.477	−.205	−.223	−.059	−.056	.131	.151		
N	1,192	1,192	1,192	1,329	1,329	1,329	1,329	1,329	1,329		

Note: †p ≤ .10, *p ≤ .05, **p ≤ .01, ***p ≤ .001

Table 3 displays the results from the Heckman regression of the effect of implementing network technology. With respect to the main research question – how the structure of communication through the Internet is related to organizational change, face-to-face activities, and the sustainability and vitality of organizations – we find no significant effect of having adopted the Internet in 1998, other than a significant negative influence on membership figures at the 10% level. However, compared with non-adopters of the Internet, there is a significant positive effect of having adopted the Internet sometime after 1998, and this applies to membership figures, to the number of executive committee meetings, and to the number of face-to-face activities in 2009. To this end, in this model there is no significant effect of Internet usage on organizational survival. It can be concluded, then, that early Internet adoption does not appear to have an effect on face-to-face activities or organizational vitality and centrality. Being an Internet "pioneer" is therefore not important here. Still, the model does point to a significant positive effect of the eventual implementation of the technology on face-to-face activities, and organizational vitality, and centrality. This finding supports Hypothesis 3, namely, that the usage of network technology strengthens face-to-face interaction and activities in local voluntary organizations.

Another important finding is that Internet usage seems to have no significant effect on the number of membership meetings, but it does increase the number of executive committee meetings. This implies a centralization of organizational power through using the Internet, where the power to make decisions is moved from mere organizational members to an executive committee. This corroborates Hypothesis 1 – that the use of network technology supports traditional organizational structures by facilitating the centralization of decisive power. Examining the control variables, it is clear that a high number of members and activities in the organizations in 1998 would increase the likelihood of organizational survival up to 2009. Being an urban organization, meanwhile, seems to have a negative effect on organizational survival. In Step 2, one can note the positive effect that a high degree of formalization in 1998 has on the number of executive committee meetings in 2009. Interestingly, the number of membership meetings in 1998 has a negative effect on the membership

figure for 2009. Furthermore, having members below 15 years of age and between 31 and 50 years of age negatively affects the number of membership meetings and the number of activities in the organizations.

SUMMARY AND DISCUSSION

Results of the analyses lend support to Hypothesis 3, which postulates that network technology strengthens the sustainability and vitality of voluntary organizations and the number of face-to-face activities. This study demonstrates the use of the Internet in local voluntary organizations as extensive, particularly in larger and younger organizations, in urban organizations, and in organizations with a higher proportion of younger members. It shows that Internet usage can positively affect face-to-face interaction through social activities in local voluntary organizations, thereby strengthening their function as social arenas. The analyses also show organizations using the Internet experience increased growth in membership. This implies a remedial effect of the technology on declining membership figures in voluntary organizations. These findings suggest communication through the Internet and face-to-face communication is not an either-or phenomenon, where communication either takes place via the Internet or face-to-face. On the contrary, Internet usage may support increased face-to-face interaction in local voluntary organizations through a range of social, cultural, and organizational activities.

Being online is also related to the centralization of decisive power in organizations, and organizations appreciate the Internet mostly for one-way communication. The running of voluntary organizations and their decision-making processes appear to have been moved from local members and to executive committees. This finding challenges the ideal of a participatory democracy and the local members' influence within voluntary organizations' central administration. This finding also rejects the concept of network technology as a transformative force in organizations, and as favoring the network-based organization of collective action. In established organizations, the Internet works largely administratively and as a one-way channel of information from an organization to its volunteers, members, and other organizations.

It is less appreciated as an arena for dialogue and discussion between active members. This confirms earlier studies indicating a lack of discussion and members' dialogue on the organizations' websites. This lack of dialogue may represent an increase in power and influence on behalf of the organizational leadership and the sender-side, or those who control homepages, email accounts, or profiles on social network sites. This also supports the notion that when it comes to today's local voluntary organizations and their members, the Internet's potential for deliberative, two-way communication is unfulfilled. It seems rather that the largest advantages are perceived by an organizations' central level, and concern the function of information dissemination.

This study brings forth new knowledge in three important areas. First, a focus on the organizational level of society adds important knowledge to what we know about individual behavior, with respect to Internet usage. The main conclusion supports a growing number of studies that reject the idea of the Internet as replacing social connectivity and face-to-face interaction. Regardless, there appears to be different patterns in the way organizations and individuals use the Internet. While Web 2.0 and social network sites proliferate on the individual level, Web 1.0 is the preferred mode of network technology on the organizational level. Further research is needed on how organizations respond to the proliferation of Web 2.0 and social network sites, and on the potential implications for organizations. Second, this study provides useful information about the extent of the use of network technology at the local level of voluntary organizations and what these uses imply. Organizations surveyed are not big national-level organizations often subject to inquiry, but rather grass-roots organizations whose activities are restricted to local neighborhoods. It is through these organizations most members and volunteers interact with other active members, and are connected to the organized civil society on a larger scale. Investigating such organizations gives us important information about the sociological implications of technology at the interface between the individual level and the organizational level of society. Third, through the use of quantitative data, this study contributes to more general knowledge about the use of the Internet in voluntary organizations. This is

important insofar as most research in the field has focused on qualitative aspects and case studies of network technology use in selected organizations.

Looking at the use of new forms of network technology is much like aiming at a moving target; the technology's development and usage change at an ever-increasing pace, and empirical results quickly become outdated. Still, keeping track of its development over time is important. The survey data used in this study were gathered both before the proliferation of the Internet and in a relatively early period of the expansion of Web 2.0 and social network sites in Norway. It is important to continue keeping track of these and similar developments within network technology, as well as their social implications.

This study also provides relevant knowledge for practitioners in the field, both for voluntary organizations and managers of organizations. The analyses indicate that the use of regular homepages, and social network sites like Facebook, seem to provide benefits for an organization in terms of information distribution, outward contact, and debate and discussion. The use of regular homepages is, however, more common, while the adoption of social network sites is less common. By favoring homepages, administration, and one-way communication, organizations may miss out on the potential for dialogue, outward contact, visibility, mobilization, and information dissemination that may be gained from tapping into individuals' networks through social network sites. Even so, these potentialities need to be considered in relation to the possible weakening of organizational structures, centralization, boundaries, and power that may result from the implementation of new network technologies.

APPENDIX

Appendix 1: List of variables and coding

Variables 2009	
Using the Internet	Is the organization using the Internet/email. 1 = *yes*, 0 = *no*.
Benefits from the Internet	Constructed by factor analysis of seven indicators of use value.
Debate/discussion	The Internet as a source for feedback and dialogue with members and volunteers. 1 = *little use value*, 8 = *much use value*.
Contact outward	Constructed by combining two questions on the use of the Internet in relation to contact with other organizations and for influencing others. 1 = *little use value*, 8 = *much use value*.
Information distribution	Internet as a tool for information distribution to members/ volunteers. 1 = *little use value*, 4 = *much use value*.
Facebook or similar	Use of website type. 1 = *yes*, 0 = *no*.
Blog	
Homepage	
Organizational age	Logarithm of year of establishment subtracted from 2009. (Method is used in order to measure the relative effect of an independent variable, where the assumed effect could be of a curvilinear form. A curvilinear effect is reshaped into a linear effect in order to measure the relative effect.)
Membership figure	Logarithm of membership figure 2009 registered by the organization.
Formalization	Index made from the summary of five characteristics: Organizational bylaws, balance sheets, membership lists, written minutes from meetings, and yearly reports.
Connected to national level	1 = *yes*, 0 = *no*.
Bergen	Municipality of Bergen. 1 = *yes*, 0 = *no*.
Geographic area	Measures geographical scope from 1 = *village* to 8 = *county* or *larger area*.
Members below 15 years	Age category of most members. 1 = *yes*, 0 = *no*.
Members 16 to 30 years	
Members 31 to 50 years	
Members 51 to 66 years	
Members 67 years and above	
Democracy vs. effectiveness (0-10, instrument variable)	Instrument for the regressor (Internet use). It is uncorrelated with the error term in the equation and is correlated with the regressor. Used to estimate causal relationships when controlled experiments are not feasible.
Survival	Organization exists 2009. 1 = *yes*, 0 = *no*.
Used the Internet* members	Representing the interaction between the two variables.
Variables 1998	
PC and Internet (1998)	Used PC and the Internet. 1 = *yes*, 0 = *no*.
PC, no Internet (1998)	Used PC, but no Internet connection. 1 = *yes*, 0 = *no*.
Started using Internet after 1998	Started using the Internet after 1998. 1 = *yes*, 0 = *no*.
Executive committee meeting (1998)	Logarithm of frequency of meetings/activities. From 1 = *every week* to 7 = *once a year*.
Membership meeting (1998)	
Other activities (1998)	

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