UC Berkeley

Title

Exploring the opportunities of mobile technology use in nonprofit organizations

Authors

Kim, Sunyoung
Mankoff, Jennifer
Paulos, Eric

Peer reviewed

Exploring the Opportunities of Mobile Technology Use in Nonprofit Organizations

Sunyoung Kim

Human-Computer Interaction Institute

Carnegie Mellon University

5000 Forbes Avenue, Pittsburgh PA 15213 USA

sunyoung.kim@cs.cmu.edu

Jennifer Mankoff

Human-Computer Interaction Institute

Carnegie Mellon University

5000 Forbes Avenue, Pittsburgh PA 15213 USA

jmankoff@cs.cmu.edu

Eric Paulos

Electrical Engineering and Computer Sciences

University of California, Berkeley

Berkeley, CA 97420-1776

paulos@berkeley.edu

Abstract

The proliferation of mobile technology has opened up opportunities for more effective services through improved work processes in nonprofit organizations. Contrary to the potential of mobile technology, few nonprofits fully exploit the capabilities of mobile technology. We present results of a qualitative study of current usage of information technology in nonprofit organizations, and explore the reasons for the underutilization and potential opportunities of mobile technology. We categorize the type of nonprofits with regard to the types of public engagement and identify the challenges of adopting mobile technology to bridge the gap between the current and potential use of mobile technology. Finally, we provide implications that reflect common needs and unique characteristics that nonprofits share with regard to mobile technology for data collection.

Author Keywords

Nonprofit organization, mobile technology, data collection

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Nonprofit organizations are an important part of civil society, contributing to social wellness through support for diverse interests related to societal services. According to the National Center for Charitable Statistics (NCCS), more than 1.5 million nonprofit organizations have been registered in the U.S by 2012 [7]. As the adoption of mobile technology spurs, a variety of application areas in nonprofits are trying to adopt it to enhance their organizational capacity and sustain their mission. Mobile technology can empower nonprofits to provide better services to clients, fundraise, and raise awareness and conduct outreach.

Despite these potential gains, nonprofits have been slow in adopting emerging technologies [2]. At the center of this underutilization often lies the fact that nonprofits are resource constrained. We planned to study the current practices of mobile technology use in nonprofits, but did not find any organization that was using mobile technology. Such underutilization is particularly striking given that the dependence on volunteers is a key aspect in nonprofits [10].

This work aims to examine the challenges that nonprofits are facing in the adoption and use of mobile technology and its opportunities. To explore it, we undertook a qualitative investigation of eleven local nonprofits that were seeking democratic participation for projects. Because we could not find any nonprofits that were using mobile technology, we investigated the practices of information technology use, seeking the reasons for the underutilization and the opportunities for mobile technology.

Related works

Information Technology in Nonprofit Organizations
Information technology (IT) has proved to be a helpful asset in increasing work efficiency. Studies of IT use in nonprofits have sought to improve organizational efforts in various applications, including recruiting volunteers [3], inter-organizational coordination [9] to general volunteering support [8]. As such there remains a vast amount of effort necessary to understand the adoption and use of information technology to empower nonprofits; to our knowledge there has been little exploration about the use of mobile technology. A couple of exceptions include a study of mobile technology use in the public sector for the urban homeless [6], and a report that examined what larger organizations were doing successfully with mobile technology [4]. We extend this prior work by exploring the use of mobile technology to promote public participation and empower nonprofits.

Public Participation through Mobile Technology Use
Whereas mobile technology is relatively underutilized by nonprofits, there exist specific domains that are relatively good at leveraging mobile technology to facilitate public engagement for social services, including participatory sensing and citizen science.

1. Participatory sensing: The core idea of participatory sensing is to utilize embedded sensors and other hardware features of smartphones in collecting in-situ contextual information automatically [1]. An aggregation of such information is crucial to assess certain conditions or to collect data without the deployment of large-scale systems.

Type	Area of interest	ID
Environmental activism	Bird counting	EA1
	Bird counting	EA2
	Cleaning up illegal dumping	EA3
	Water quality monitoring	EA4
	Water quality monitoring	EA5
Community Mobilization	Waste reclaiming	CM1
	Local community development	CM2
	Bike-safe community building	CM3
	City development planning	CM4
	Protesting against Fracking	CM5
	Eliminating hunger in a community	CM6

Table 1. Organizations that participated in the study

2. Citizen science: Citizen science harnesses the power of everyday people to solve real-world problems. Because citizen science relies on non-experts for systematic data collection and analysis, a handy tool for participation often determines its success. There are several ongoing citizen science projects that adopt mobile applications to facilitate data collection efforts, such as Creek Watch. [5]. While smartphones can be a promising tool for citizen science, it should also be acknowledged that there are limitations and hidden costs in dealing with issues such as poor usability or lack of appropriate functionality [4].

Method
We conducted a semi-structured interview of local nonprofit organizations with diverse sizes and areas of interest. To start recruiting, we first relied on organizations from our local resources and previous experiences. Then, we asked them to introduce other organizations that might be relevant to the study, following the snowball method of recruitment. We also looked up on/offline resources where organizations post their activities and advertise volunteer recruitment, such as local newspapers, bulletin boards, meetup.com, and mailing lists. As a result, we recruited eleven active nonprofit organizations (See table 1). To protect anonymity, we refer to each organization with the composition of the type acronym and a randomized number instead of their actual names (e.g., EA1 for environmental activism group 1).

The current practices of technology use
Not surprisingly, all organizations were using IT and social media, such as websites, email, Facebook and Twitter, to operate the organization and coordinate their activities. Websites enabled them to affordably convey information to a wide audience; e-mail was a cost-effective method to communicate with other organizations and individuals; and social media allowed transmitting and sharing information in real-time.

In addition, we found that non-IT tools such as landline phones, fax, and pen-and-paper were still widely used. Even though those are easy to use at hand, however, they were in fact struggling with additional efforts when making use of those tools. For example, a pen-and-paper was widely used due to its ease and simplicity, but it was time consuming and prone to human error.

"Because it uses staff time [to type hand-written data into a database], sometimes the orders are wrong, sometimes they (staff) don't get the date they want quickly [from paper]. So we want to move... drive it to be online. Everything online." (CM6)

Contrary to a fairly wide adoption of IT and social media, none of the organizations appropriated mobile technology of any sort. All organizations mentioned that they were seeking more public engagement, and that mobile technology, and smartphones in particular, might be an additional yet effective channel through which the public could easily engage in their activities. However, most of them merely used built-in features such as text messaging, and off-the-shelf social media apps for Twitter or Facebook at best.

The opportunities for mobile technology
We found three areas related to public participation in which mobile technology would enhance: enhancing data collection process, fostering communication, and promoting deeper engagement.

Enhancing Data Collection Process
Most environmental activism organizations were looking for objective, factual, standardized, and sometimes, numeric data about the condition of community environments. This type of data is gathered through monitoring or observing the current state of the circumstance. The prevalent current practice of collecting environmental observation data involves the combination of pen-and-paper and information technology: people note their observations in the field, and send an email of a report afterwards at home. Many mentioned that mobile devices would enhance this work process, enabling capturing the scene with a camera, taking notes digitally, and transmitting it to the central server on site with a few clicks.

> *"We are looking for more specific data about who the hungry people are (demographics), and what legislative districts they are in (location)." (CM5)*

Meanwhile, community movement organizations were collecting subjective information from their community members, such as public opinion, feedback, thoughts, reports, and suggestions about community conditions and civic issues. To reduce the participation cost and workload, many organizations were using free-form communication technologies like online bulletin board services and email. The complicating matter is that subjective information is legitimized when it is accompanied with descriptive data about the information, such as demographics or the locality of respondents. However, it is hard to constrain including descriptive data when using free-form communication tools as is. Thus, the organizations have sought ways to effectively constrain data submission to include descriptive data.

Whereas a single entry and its contents are still valuable, data becomes much more meaningful and representative when the quantity submitted is large enough to tell a story. Therefore, the frequency or volume of data is crucial, considered a barometer of quality, and most community movement organizations forage for mobile solutions to increase public engagement in the issues of their concern. When data is associated with locality information, it can be rendered on a map to reveal a pattern or trend (e.g., reporting neighborhood living conditions).

Fostering Communication and Building Community
Communication can help groups be better aware of similar struggles across the region, and support people to deal with issues collaboratively. Hence, most nonprofit organizations look for technical solutions to foster communication and forge a sense of community. Social media provides communication tools and a virtual space through which people can prompt conversation, maintain communication, and exchange information. These purposes were central to the current use of social media, like Facebook Page, among nonprofit organizations. Social media (e.g., Facebook Mobile) can help overcome temporal and spatial gaps in communication [11]. In the meantime, a major shortfall of existing social media lies in a divide between communication dialog content on social media and the internal database of an organization.

> *"We want to increase the sense of belonging to our organization, being part of the communities of people who are interested in doing similar things." (CM1)*

Promoting Deeper Engagement with Current Volunteers
Communicative engagement provides a positive influence on offline participation, promoting more active contributions and fostering a better sense of membership. Most nonprofits were looking for ways for their members to interact with each other in order to build a stronger community and make people feel closer to each other. In addition, several nonprofits wanted to make it easier for volunteers to record and upload observation data in the field, which could help them earn a sense of achievement.

> *"It would be nice to show the volunteers that 'look we are putting your data to international database. Your data don't go to a pile of paper on my desk but goes here.'" (EA5)*

Disseminating Information to the Wider Population
Websites are commonly used as an online repository to post retrievable data and update information, and most nonprofits maintain their own websites. However, a website is a passive information distribution platform, because people must be prompted somehow to access the website. Sometimes, volunteering activities happen immediately with little time to recruit participants. Therefore, mailing lists and social media like Twitter are often incorporated with web content as a prompt for distributing information to target populations.

> *"…, putting information out there (homepage) coupled with our social media which are primarily through Facebook and Twitter where we were sending updates and letting people what's going on through that." (CM2)*

Challenges in the use of mobile technology
Lack of technical expertise and resources
Resource shortages emerged as a core reason for an inability to integrate mobile technology in their operations. We found that most organizations were concerned about lack of technical expertise, even before exploring the feasibility, possibilities, and benefits of using mobile technology. The organizations felt that the technical threshold was too high, and was a barrier to considering its adoption. In the beginning of the brainstorming session, when participants freely discussed ideas of using mobile technology, discussion was rather limited, as they did not have ideas of how and where to use smartphones. Most of them said that they had barely thought about the idea.

> *"We really don't have the expertise to build that app and to test that app and to make sure that it feeds into our existing system. I would say probably that's the biggest reason." (CM2)*

Mobile interaction Interfering with Field Experience

We found that an additional step in dealing with mobile devices may cause harm as well as good. Especially, people participating in environmental conservation projects engage in the activities not only to contribute to the social improvement, but also to learn about nature for their pleasure. Because people want to enjoy the moment, they sometimes feel dealing with technology out in the woods distracts or interferes with their experience.

> *"I find it distracting to use my cellphone in the field because then I read emails, I send text messages. So, I prefer not to actually do any logging in the field on my phone." (EA1)*

Questioning the credibility of public participation
For environmental movement organizations, the data is meaningful only when it is accurate. Therefore, accuracy was regarded as a barometer of quality. A number of empirical works have shown that the quality of novice-collected data is as valid as data collected by professionals. However, strong distrust about the accuracy of novice-collected measurement data still exists in some organizations.

> *"I wouldn't even bother looking at that data if I know that's volunteers collected information." (EA5)*

Conclusion

We identified and discussed the opportunities and challenges of mobile technology use in nonprofit organizations. These organizations desire to harness the potential of mobile technology in order to improve the work process more effectively, however several challenges prevent them from doing so. As a next step, we plan to apply our findings to designing a framework that supports facilitation of mobile platform openness by grassroots organizations. We are also interested in conducting a longitudinal study to further investigate the relationship between the characteristics of grassroots activism and their use of mobile technology. We are hopeful that our work can be useful towards empowering grassroots organizations to achieve shared goals through the effective use of mobile technology.

References

[1] Cuff, D., Hansen, M., Kang, J.: Urban Sensing: Out of the Woods. Comm. ACM 51(3), 24–33 (2008)

[2] Hackler, D., & Saxton, G. D. (2007). The strategic use of information technology by nonprofit organizations: Increasing capacity and untapped potential. Public Administration Review, 474-487.

[3] Herranz, S., Díaz, P., Díez, D., & Aedo, I. (2013). Studying social technologies and communities of volunteers in emergency management. In Proceedings of the 6th International Conference on Communities and Technologies (pp. 140-148). ACM.

[4] Idealware. (2012). What every nonprofit should know about mobile report. Retrieved from http://idealware.org/reports/mobile-globaldevelopment

[5] Kim, S., Robson, C., Zimmerman, T., Pierce, J., & Haber, E. M. (2011). Creek watch: pairing usefulness and usability for successful citizen science. Proc. of CHI (pp. 2125-2134). ACM.

[6] Le Dantec, C. A. (2010). Exploring mobile technologies for the urban homeless. In CHI'10 Extended Abstracts (pp. 2883-2886). ACM.

[7] National taxonomy of exempt entities. http://nccs.urban.org/ classification/NTEE.cfm

[8] Pereira, N., & Cullen, R. (2009). Exploring ICT Use in Voluntary Sector Organizations: A Framework Based on the Social Actor Model.

[9] Stoll, J., Edwards, W.K. and Mynatt, E.D. Interorganizational coordination and awareness in a nonprofit ecosystem. Proc. CSCW 2010, ACM Press (2010), 51–60.

[10] Voida, A., Harmon, E., & Al-Ani, B. (2012). Bridging between organizations and the public: volunteer coordinators' uneasy relationship with social computing. Proc. 2012 ACM CHI (pp. 1967-1976). ACM.

[11] Lovejoy, K., & Saxton, G. D. (2012). Information, Community, and Action: How Nonprofit Organizations Use Social Media. Journal of Computer Mediated Communication, 17(3), 337-353.