

A Preliminary Study of Information Technologies Usage in Nonprofit Organizations

Full Paper

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Abstract

In this paper, we present the results of a preliminary survey study to examine the ways in which regional nonprofit organizations (NPOs) in the U.S. adopted and utilized information technologies. The majority of the survey respondents (72.5%) consists of small to medium sized NPOs. The survey findings reveal that most responding organizations don't have a technology plan even though they consider information technology as an important driving force to achieve organizational missions. A pragmatic approach that adopts mature, proven technologies is the most common approach followed by the respondents. Our findings also provide some empirical insights on how NPOs perform different technological tasks, manage data, and exploit web capabilities.

Keywords

Nonprofit, non-profit organizations, information technology, adoption, budget, technology tasks.

Introduction

The nonprofit organizations (NPOs) are key public service providers in the U.S. and an important constituent of the economic, social, and political entity in the society (Drucker 2006). NPOs are a critical resource as they provide services to important areas such as healthcare, shelter, education and environments, which would not be sufficiently addressed by other entities including for-profit organizations and governmental agencies (Richardson et al. 2011). NPOs are distinguished from for-profit businesses because NPOs align their activities with a mission to create social values as opposed to engaging in activities in order to maximize profits and increase personal and stakeholder wealth (Richardson et al. 2011). NPOs are also different from the public sector and governmental agencies in that those organizations are funded and controlled by local, state, or federal governments (Gutierrez and Zhang 2007). NPOs, on the other hand, primarily rely on external funding sources (i.e., donations, grants, and government aids) and voluntary workforce.

Similar to for-profit private and public sectors, nonprofits can benefit significantly from applying emerging information technologies (IT) in both internal and external operations. For example, NPOs can leverage IT to increase the efficiency and effectiveness of service delivery and fundraising, sharing best practices with other organizations, providing access to information to their staff, creating awareness of issues in the community, and sharing information about their operations to establish legitimacy (Richardson et al. 2011). To facilitate fundraising from general public, NPOs need to take advantage of IT in particular Web and social networking technologies for building and sustaining their customer and donor base (West and Green 2008). Furthermore, NPOs are increasingly facing pressure from funding agencies to adopt IT so that data for program performance evaluation can be collected and reported (Zhang and Gutierrez 2005). For example, U.S Department of Housing and Urban Development (HUD) mandates homeless service organizations to implement Homeless Management Information Systems to track status of homelessness accurately and objectively (Zhang et al. 2010). However, in reality, NPOs often operate on outdated infrastructures and information technologies (Zorn et al. 2011). Studies have shown that IT adoption and

usage in NPOs are usually constrained by resource shortages, a lack of IT expertise, and decision makers' IT knowledge (Boles 2013; Zhang and Gutierrez 2005).

Given that the operating contexts of for-profit businesses and NPOs are quite different, both theoretical and empirical information systems (IS) research on nonprofit sectors will be very important to advance our knowledge of IT strategies and usages in NPOs. A better understanding of the unique contexts of NPOs is necessary to gain knowledge on IT needs, technology tasks performed, and technology related decision making process followed by nonprofits. Deeper knowledge of NPOs context can lead to development of effective approaches and design of applicable information systems to address challenges faced by NPOs. Subsequently, such contributions can have positive impacts on social conditions and improve the quality of life for a great many people. However, information systems research focusing on studying NPOs is scarce. This paper draws on the preliminary findings from a survey study to explore how some regional NPOs in the U.S. develop their IT strategies and deploy IT solutions.

Literature Review

The number of IS research that specifically focuses on nonprofit organizations is very limited. Gutierrez and Zhang (2007) argued that the lack of interest in studying NPOs among IS researchers can be attributed to the slow adoption of emerging information technologies by the NPOs in general and a lack of understanding of the NPO contexts in specific. They also pointed out that the availability of commercial and open source software built to cater the needs of nonprofit organizations could present new opportunities for NPOs with regard to IT adoption. Below, we provide a review of some published IS studies targeted at NPOs.

Zhang, Gutierrez, and Mathieson (2010) proposed a conceptual framework to identify challenges and opportunities for conducting IS research in the nonprofit sector. The framework encompasses three tiers: the first and outermost tier represents the *social environment* on which the organization relies upon to function; the second tier represents the *organizational environment* within which the organization operates; and the third and inner tier represents the *effectiveness of IT/IS usage* based on the interplays of three factors – workers, tasks, and technologies.

Within the social environment, one of the major challenges faced by NPOs is concerned with social accountability, that is, NPOs need to be transparent and accountable on their finance and service performance to their varied stakeholders (Dumont 2013b). Stakeholders of NPOs expect financial and service performance information to be disclosed on NPOs public websites (Dumont 2013a). Lee and Blouin (2014) investigated factors that influence NPOs to disclose information on their websites. They surveyed 176 NPOs and revealed that attitude toward disclosure, compatibility of disclosure with current practices, and financial readiness were all positively related to web disclosure adoption (Lee and Blouin 2014).

With respect to the organizational environment, Richardson, Parrish, and Rosenthal (2011) developed a conceptual framework to depict how leadership can emerge from the collaborative process of information systems development among nonprofit organizations. They applied neohumanist philosophy, in particular Habermas' Theory of Communication Action, to develop their framework. Their conceptual framework identifies the following leadership activities: embracing new members, empowering all members by creating infrastructure for communication and collaboration, involving each member in the collaborative process, and mobilizing everyone's effort for common good and resolving conflicts using rational discourse.

Regarding the effectiveness of IT usage, West and Green (2008) presented a case study of two small-sized NPOs on how they managed their constituent data. Their findings reveal that data management tasks of NPOs typically involved managing client, volunteer, and donor related information as well as managing data on program outcome assessments, volunteer activities, and donor related communications. Their case study also shows that these two NPOs primarily relied on external support such as volunteers to handle data management related tasks. West and Green (2008) recommended that NPOs can partner with educational institutions to obtain the needed external support to accomplish data management tasks.

Several studies examine the influential factors of IT adoption and usage in NPOs from multiple perspectives. Burt and Taylor (2000) conducted a survey of NPOs in the UK to examine levels of uptake and applications of IT. Their survey results reveal that NPOs are slow and cautious to handle technology adoption decisions. According to their study, disparity existed among NPOs with respect to which IT applications were critical to their missions. Survey results also indicate that when NPOs employed IT staff

as opposed to relying on volunteers, there was a higher level of IT uptake. They did not find any significant relationships between applications of IT and organization's budget, services provided, and type of activities engaged (Burt and Taylor 2000).

O'Hanlon and Chang (2007) investigated the adoption and use of Internet technologies by community-based NPOs in the Western Australia state of Australia. They developed a research model consisting of four main constructs: perceived external pressure, organizational readiness, compatibility, and internal support. Drawing upon a survey of 119 NPOs in the Western Australian state, they found out that IT adoption decisions were influenced by pressure from donors, the organization's budget and technical capacity, ratio of paid employees to volunteers, organizational practices, and the level of internal support (O'Hanlon and Chang 2007).

Another study was conducted by Zorn, Flanagin, and Shoham (2011) to investigate whether environmental factors, organizational characteristics, and institutional isomorphic pressures are important influential factors on NPOs' technology adoption decisions and usage behaviors, and what the effects of those factors might be. They surveyed 2,543 NPOs in New Zealand. The survey findings suggest that both institutional isomorphic pressures and organizational characteristics played important roles in determining NPOs' adoption and use of IT to support communication and information flow, stakeholder engagement, and resource acquisition. Environmental factors (indicated by competition intensity), on the other hand, were found to be statistically unrelated to the adoption and use of IT in the above areas (Zorn et al. 2011).

Ward and Never (2012) examined the differences between the adoption of geographic information systems (GIS) and of websites among NPOs. Based on a survey of 72 NPO managers, they found that environment, organization and system characteristics surrounding GIS adoption significantly differed from those surrounding website adoption, which might result in lower adoption of GIS. Their findings suggest that though some NPOs believed GIS could improve their performances, they were still less likely to adopt GIS because of high risk and maintenance associated with GIS, a lack of technical expertise to successfully manage GIS, and fewer managerial support and peer pressure to adopt GIS.

The above literature showcases the importance of studying NPOs and insights into concepts that make NPOs context different from for-profit context. However, review of literature indicates that there are theoretical and empirical gaps in the existing limited number of IS studies about IT adoption and usage in NPOs. From the theoretical perspective, there lacks a systematic and cumulative effort towards building theories that are applicable to studying the IT strategy, adoption, and usage in NPOs. From the empirical perspective, the research efforts are quite dispersed. In terms of adoption, the majority of empirical research examined the relationships between the influential factors (such as environment factors and organizational characteristics) and the perceived utilities of a technology (such as website). Our review of literature did not provide any concrete information about how information technology strategies are formed and how information technologies are used and managed in the NPO contexts.

Authors of this paper have working relationship with several NPOs in the region and have aided in their efforts to develop and apply information systems. Our experience with NPOs revealed that the operating contexts of NPOs are drastically different from those of for-profit businesses, which in turn affect the dynamics of system development and project management processes involving NPOs. Therefore, the objective of our current research is to survey the landscape and current status of IT usage in nonprofit organizations located in a specific U.S. region.

Survey Development and Administration

The survey instrument was developed based on a series of surveys conducted by Nonprofit Technology Network (NTEN) on IT staffing and spending (NTEN 2014). NTEN conducts IT staffing and spending survey on an annual basis to help NPOs in the U.S. to benchmark their efforts with other NPOs at the national level. The objective of our survey is to gain a preliminary understanding of technology efforts by NPOs in a particular U.S. region (county/district). Drawing on our experience of working with several NPOs in the region, we modified the survey instrument used by NTEN to reflect the local NPO contexts. The survey instrument went through multiple rounds of critical review by three experts in the nonprofit sector. After each round of review, the survey instrument was modified to reflect those suggestions provided by the experts. The review process was continued until none of the experts had any further suggestions.

The survey instrument was implemented using Qualtrics, an online survey management system. The survey was open for responses for a period of three months. The survey invitation was sent via email to members of a regional nonprofit consortium. The consortium encouraged members to participate in the survey in their monthly newsletter as well. This nonprofit consortium has about 240 members. The survey participation was voluntary and no incentives was offered. At the end, we received 74 responses, but only 53 responses were valid. The response rate is around 22%. In the survey, all respondents were required to enter the name of their organization. This information was used to eliminate redundant responses. In case of redundant responses from same organization, the most recent and completed response was used for data analysis.

The survey invitation was addressed to the executive directors of the participating NPOs. However, it is possible that some directors have requested other personnel to complete the survey. Thus, survey participants were asked to rate their knowledge on technology usages, planning, and infrastructure within their organization. Out of 53 responses received, 23 respondents rated themselves as highly knowledgeable, 18 as sufficiently knowledgeable, 6 as moderately knowledgeable, 5 as limited knowledge, and 1 provided no response to the question. It can be noted that majority of the respondents were knowledgeable in regards to technology usage and strategies employed within their organization.

Survey Results

In this section, we present some descriptive statistics based on data analysis to address the research question: what is the current status of information technology usages in NPOs of the local region.

Budget

We asked respondents about their overall operating budget for the most recent fiscal year. In nonprofit sector, size of the organization is one of the most important determinant factors in regards to access to resources such as volunteers and technology (Ward and Never 2012). Large and established organizations tend to have better access to resources than smaller organizations. NPOs with operating budget of less than one million dollars can be classified as small organizations, those in the range of 1 to 5 million dollars can be classified as medium, those in the range of 5 to 10 million dollars are large, and anything above 10 million dollars are very large organizations (NTEN 2014). Based on this criterion, we received responses from 22 small, 16 medium, 4 large, and 7 very large NPOs. Four NPOs did not respond to the overall organizations operating budget question. Thus, the majority of participating NPOs were either small (41.5%) or medium (30.2%) sized organizations. Figure 1 provides a histogram view of the responses received.

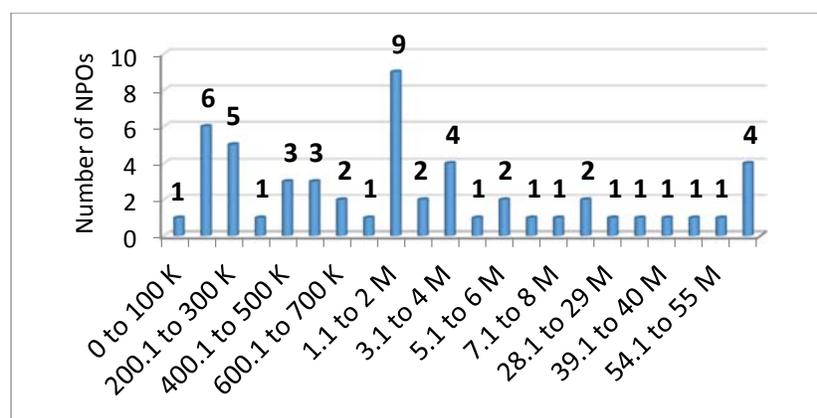


Figure 1. Overall budget

Technology spending

We asked respondents what percentage of their overall operating budget was allocated for technology expenses such as computer hardware/accessories, software purchases, consulting, networking, training,

staffing, and online/cloud services. From Figure 2, it can be noted that a large portion (62%, 33 out of 53 respondents) of NPOs allocated between 1% and 5% of their operating budget for technology related expenses. Few NPOs did not allocate any funds, not aware of any separate budget allocation for technology, or didn't track technology related expenses. Most NPOs viewed expenditure on IT as taking resource away from the services that are core to their mission (Zhang and Gutierrez 2005). This finding supports prior literature that NPOs do not favor large-scale IT investments.

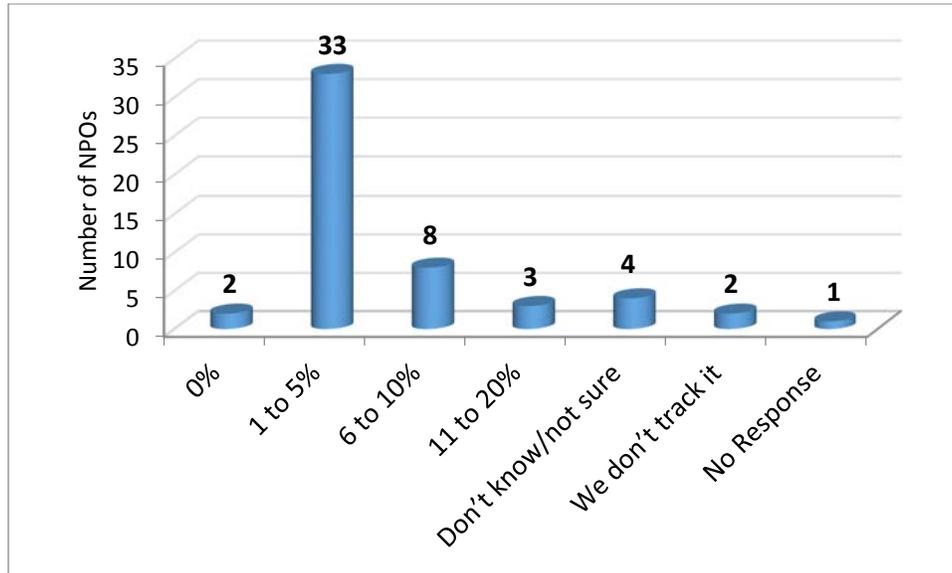


Figure 2. Technology spending as a percentage of the overall budget

Technology staffing

Respondents were asked to enter number of full-time/part-time employees working for their organizations and how many of those employees are responsible for supporting, maintaining, and managing technology-related tasks. From figure 3, it can be noted that a large portion NPOs had only 2 to 10 staff members regardless of whether they were full-time or part-time. From figure 4, it can be noted that most NPOs did not have any staff member responsible for technology related tasks. Those NPOs with employed staff for technology tasks had either 1 or between 2 and 10 staff members. We also asked respondents to provide the number of volunteers and/or private consultants used for technology related tasks. 32 NPOs had 1 private consultant and 21 NPOs had 1 volunteer helping them with technology related tasks, while other NPOs did not use private consultant or volunteers for technology related tasks. This finding corroborates the view that NPOs do not have sufficient resources and funding to hire staff members dedicated for technology related tasks (Gregory and Howard 2009).

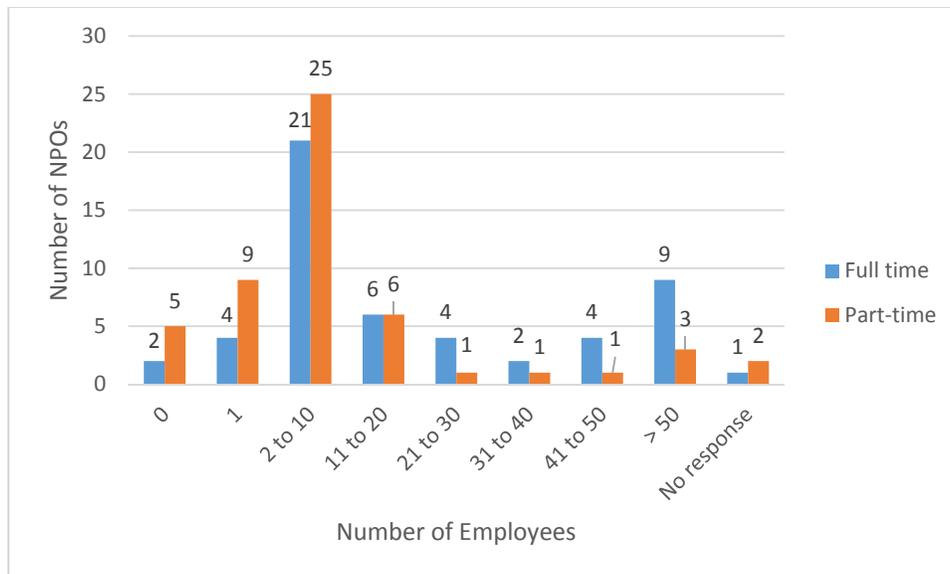


Figure 3. Organization wide number of employees

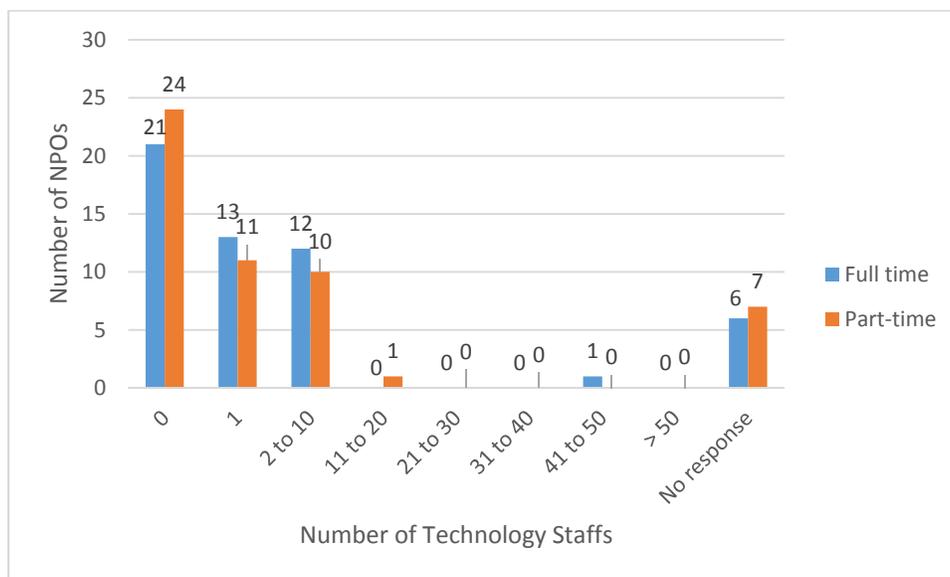


Figure 4. Number of technology staffs

Technology adoption

Respondents were asked to select a statement that best describes their organization’s approach to adopting technology. Table 1 shows the list of descriptions provided in the survey along with response counts and percentage. A large number of NPOs considered themselves to take a pragmatic approach towards technology adoption, that is, to adopt matured and proven technologies that support their mission.

When asked to select a description that closely resembles their approach to making decisions on technology (see Table 2 for the list of descriptions), many NPOs indicated that they used pragmatic and thoughtful approach, that is, decision makers consult with the staff members who have knowledge on the technology. At the same time, a considerable number (45%) of NPOs indicated that they viewed technology as an integral part of their mission and involved technology staff members as part of their organizational planning

process. This finding is promising as it suggests that most NPOs were not averse of using technology but rather needed help in developing right technology for the price they could afford.

When asked whether their organization had a technology plan, about 38% (20 out of 53) of NPOs responded that they had only a strategic plan but no technology plan. About 40% (21 out of 53) NPOs indicated they either had a technology plan separately or as a part of the strategic plan (as shown in Figure 5). The mixed result indicates that a considerable portion of NPOs were not proactively seeking to improve their technology capabilities.

Respondents were further asked to select the primary person responsible for making technology-related decisions which include planning, technology acquisitions, staffing and training. Figure 6 shows that in many NPOs (32.1%), CEO or the executive director was the decision maker. The second highest category of decision makers was those personnel in charge of general operations or administration department (18.9%). Given the NPOs context, it is not surprising to find that some NPOs relied on part-time staff (13.2%) or outsourced their technology decisions to private consultants (11.3%).

Adoption approach descriptors	Response Count	Response Percentage
We are innovators – We tend to take risks, experiment with, and adopt new technology	1	0.02%
We are early adopters – We are technologically sophisticated and seek to adopt new technologies that have higher chances of supporting organizational strategies and/or solving organizational problems	11	20.76%
We are pragmatic – We have stable technology infrastructure, policies and practices that support our mission. We adopt technologies that are matured and proven within our industry/sector	22	41.51%
We are conservative – We have basic technology infrastructure that meets our immediate needs. We continue to use our existing technologies as long as they work, and replace them only when broken	13	24.53%
We are falling behind – We only have limited budget for technology. Our technology infrastructure cannot meet our needs	5	9.43%
Don't know/ not sure	1	1.89%

Table 1. Organization approach to technology adoption

Descriptors for making decisions on technology	Response Count	Response Percentage
We recognize that investment in technology is critical for achieving our mission. We consider technology decisions as an integral part of organizational strategies. Technology decisions are made by technology staff members. We have plans for using current and new technologies to improve our services, fundraising, and/or publicity.	7	13.21%
We recognize that technology investments aides our mission. Technology staff members take part in organization's strategic planning and provide insights on how technology can be used for achieving our goals.	17	32.08%
We take a pragmatic and thoughtful approach in making decisions on technology. Organization leadership consults with technology staff members when making decisions and developing future technology plans.	20	37.74%
We take a conservative approach in investing and using technologies. We consider technology as an added operational cost rather than strategic advantage. Organization leadership makes technology	5	9.43%

Descriptors for making decisions on technology	Response Count	Response Percentage
decisions based on efficiencies and with minimal input from technology staff/consultant.		
Technology decisions and planning are made by external consultants hired by our organization.	0	0.00%
Don't know/ not sure	4	7.55%

Table 2. Organization approach for making decisions on technology

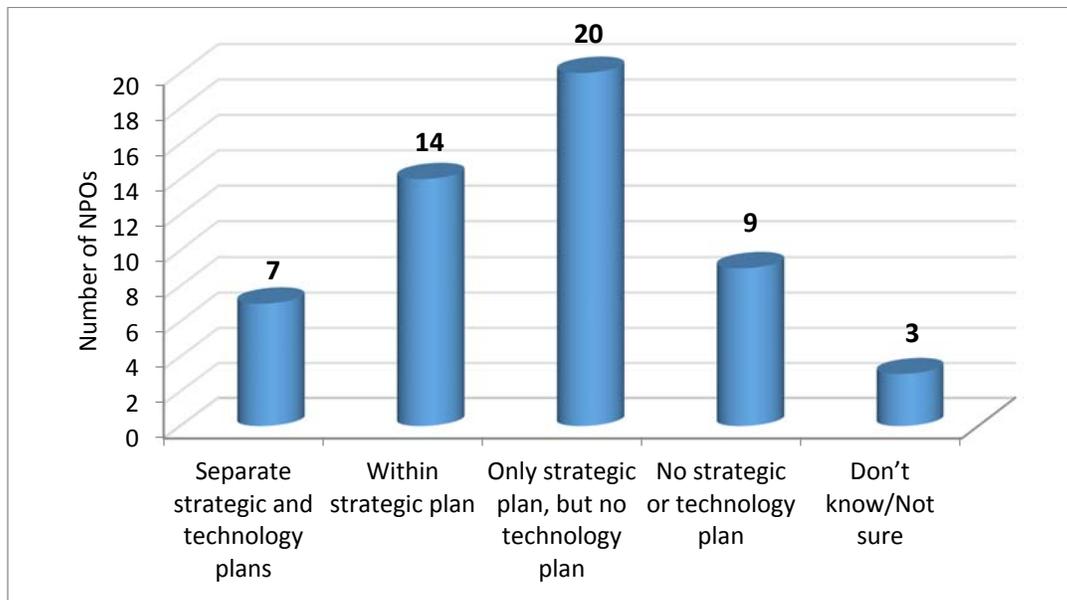


Figure 5. NPO Technology Plan

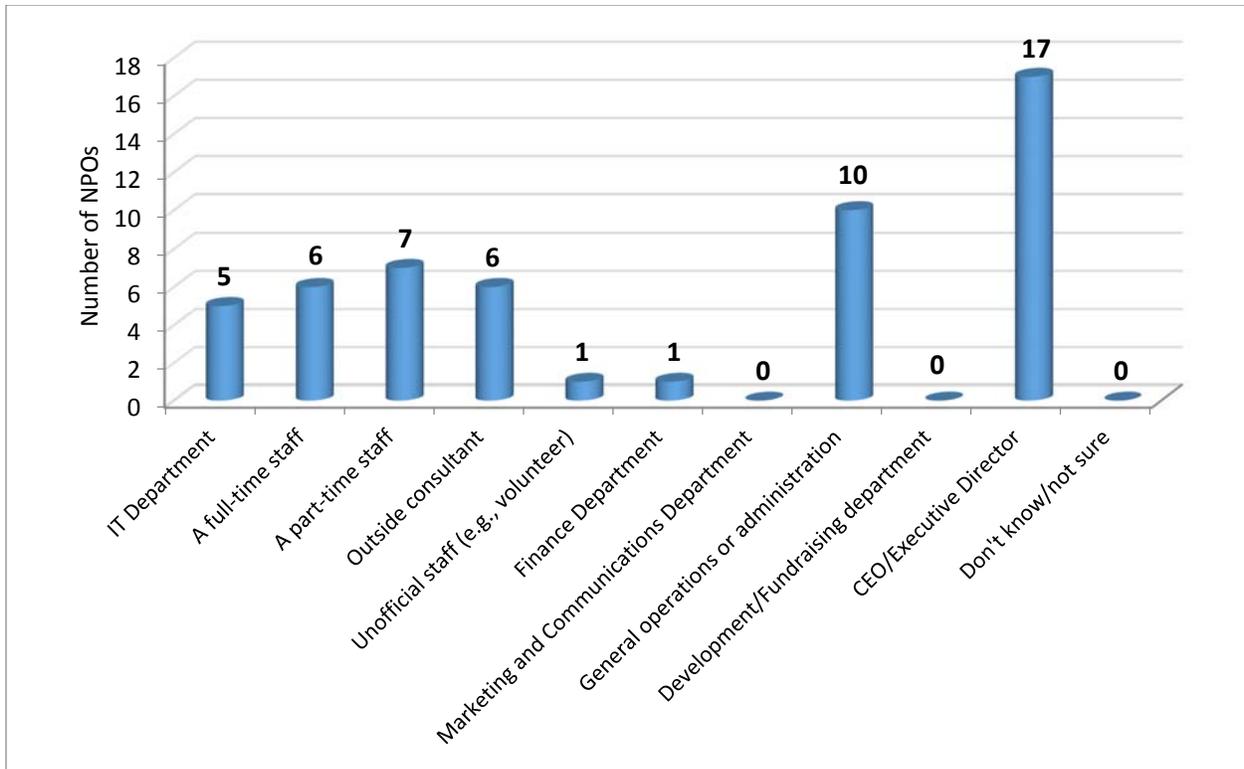


Figure 6. Technology Related Decision Maker

Technology Tasks

Respondents were provided a list of technology tasks and were asked to indicate whether they were performed in-house, outsourced, or by volunteers. Table 3 provides the list of technology tasks and response counts. Most commonly performed in-house tasks were managing social media accounts, updating website content, and data entry & analysis. Most commonly outsourced tasks were website hosting, website design and development, and database hosting. Only few NPOs indicated to have volunteers perform some of those tasks. This is surprising given that 21 NPOs had at least one volunteer helping out with technology tasks. One of the noteworthy findings is that most NPOs did not provide training for their IT or non-IT staff and did not use online community tools (indicated by Not Applicable). This finding suggests that IS community can play a significant role in the nonprofit sector by helping NPOs train their staff members with technology related tasks and thereby helping them use technology effectively and efficiently to achieve their missions.

	In-house	Outsourced	Volunteer	Have this service or capability, but don't know how	Not Applicable	No Response
Professional Development						
Training for IT staff	13	13	2	2	22	1
Training for non-IT staff	26	9	4	2	11	1
General IT						
Telecommunication and Network administration and support	16	26	6	0	3	1

	In-house	Outsourced	Volunteer	Have this service or capability, but don't know how	Not Applicable	No Response
Hardware & Software installation, and upgrades	21	25	3	0	3	1
IT support/help desk	15	23	5	0	9	1
Data Management						
Data security and backup	15	29	3	2	3	1
Database hosting/maintenance	10	35	3	1	3	1
Data entry and analysis	31	11	4	2	2	1
Website						
Website design and development	11	32	5	2	1	1
Managing and updating website contents	32	12	5	2	1	1
Website hosting and maintenance	8	40	2	2	0	1
Communications and Social Media						
Online communication like newsletters and mass emailing	36	9	4	1	2	1
Online community management like discussion forums and blogs	24	5	3	1	19	1
Managing social media accounts (e.g.: Facebook, Twitter, and LinkedIn)	41	2	5	2	1	1
Other Tasks						
IT Staff Recruiting	16	5	1	3	27	1
Recruiting volunteers via online avenues (like VolunteerSpot, Meetup, and VolunteerMatch)	25	4	2	2	19	1
Fundraising via online avenues (like Kickstarter and causes)	19	4	2	2	25	1

Table 3. NPOs Technology Tasks**Website and Data Management**

Respondents were asked to select features currently available in their organization's website (shown in Figure 7). The results show that most NPOs' websites provided information about their organization's mission and included donation features to raise funds. Other most commonly available features were staff directory, forthcoming events, and resources for finding help for their constituents. While some NPOs utilized their websites for volunteer registration, events signup, and social media communication, a larger portion NPOs didn't use their websites for these critical features that could help them recruit and manage volunteers. Respondents were asked to select data management applications used for managing donor and volunteer information. Figure 8 provides listing of data management application included in the survey and

response counts received. Interestingly most NPOs did not use commercially available database such as Oracle, DB2, and MS SQL (which are extensively used by for-profit businesses). Instead, a large portion of NPOs (64.2%) used specialized databases such as Raiser’s Edge, Donor Perfect, and Constant Contact.

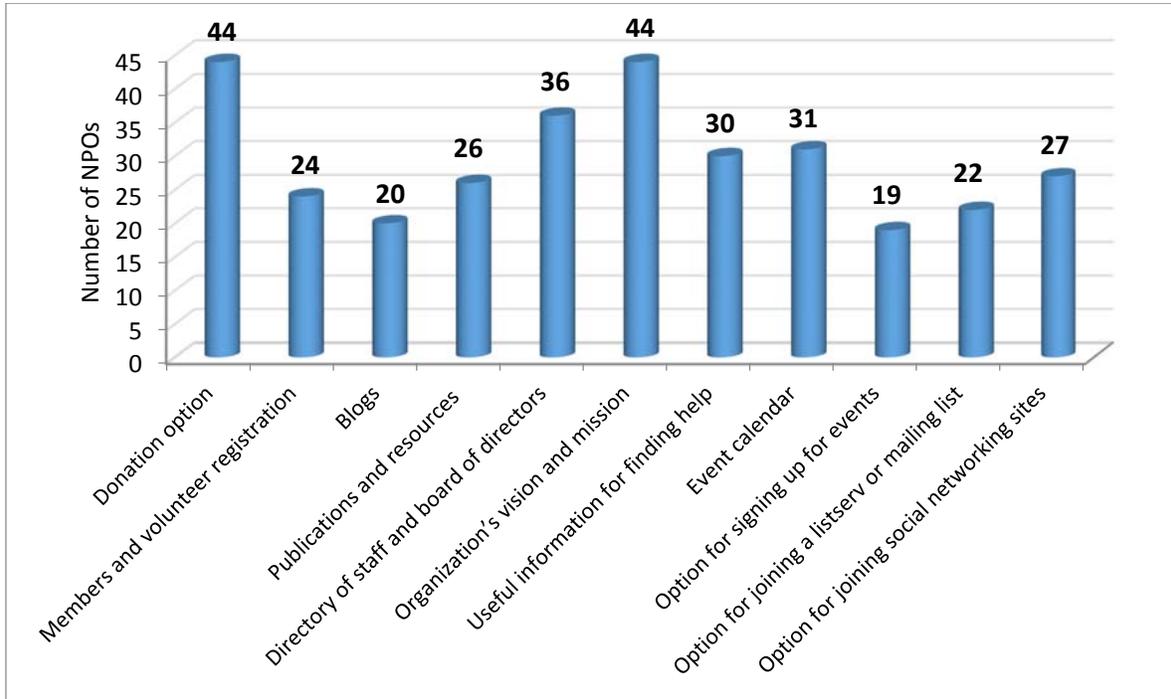


Figure 7. Website Features

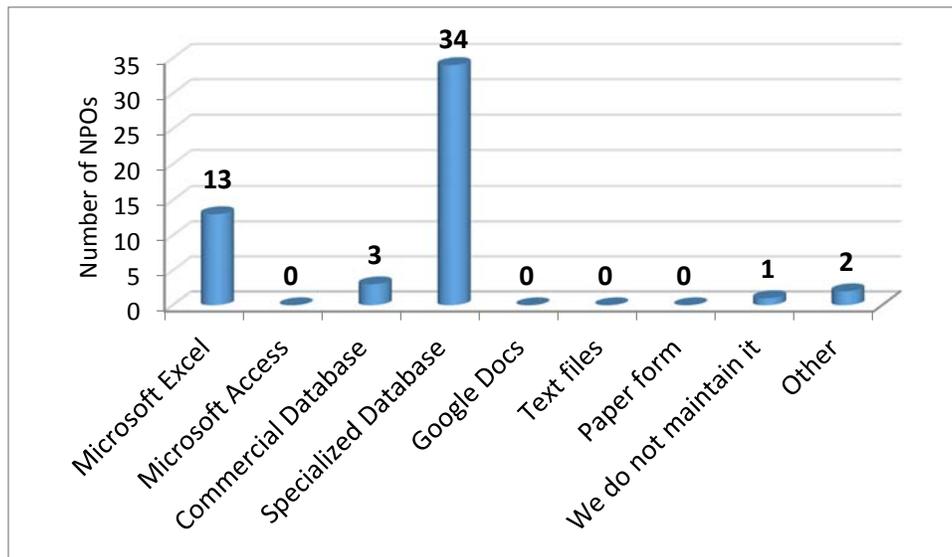


Figure 8. Data Management Software

Discussion

In order to achieve their missions, NPOs need to use technology strategically. Our survey results reveal that majority of the NPOs had an overall budget of less than 5 million dollars and allocated less than 5% of the

budget for technology expenses. In regards to staffing, few NPOs had one or two technology staffs. Majority of the NPOs did not have any technology staff not even part-time staff. Thus, a large number of NPOs were not making sufficient investments on technology expenses and not hiring staffs specifically for technology oriented tasks.

In regards to adoption, most NPOs were willing to use stable and proven technologies as opposed to emerging and unproven technologies. Technology decisions were mostly made by CEO/executive directors. Decisions makers in NPOs most often consulted with their technology staff or consultant for making technology related decisions. Very few organizations had a separate technology plan or included it as a part of strategic planning. Thus, majority of the NPOs were not strategically planning for technology adoption which might be a consequence of insufficient funds and lack of trained staffs.

Regards to technology tasks, database hosting and website design and hosting were outsourced by most NPOs, whereas social media posts, website updates, and data analysis were primarily performed in-house. Majority of the NPOs used their website for raising funds, listing their mission, staff directory, forthcoming events, and resources for finding help. Only less than 50% of NPOs used their website for members and volunteer registration. About 65% of NPOs used specialized database applications for maintaining their donor and volunteer information. Our survey results show that not all organizations utilized functionalities like volunteer recruitment, event registration, and donor management which are critical functions of NPOs. This presents an opportunity for IS researchers to study factors that can help improve technology adoption, and also an opportunity for IS practitioners to develop low cost but effective applications for NPOs to use.

This study has several limitations. First, survey respondents were from one county region in U.S, thus, findings cannot be generalized. In this paper, we present only descriptive data. As a part of future work, we plan to perform correlation analysis and exploratory factor analysis. We also intend to conduct qualitative study to gain better understanding on contextual differences between for-profit and nonprofit organizations.

Lack of interest to study NPOs among IS researchers creates a disconnect on both ends of the spectrum – a lack of awareness by NPOs of available technologies that can help achieve their missions on the one hand, and a lack of understanding by IS professionals and researchers of NPO's technology needs and environmental constraints on the other hand (West and Green 2008). Our long term research objective is to address this disconnection. In this paper, we present our initial attempt on gaining an understanding of NPO's technology needs and environmental constraints. We intend to conduct a longitudinal study by administrating this survey periodically and help NPOs to benchmark their technology efforts in comparison to other NPOs in the region. We also plan to select several representative NPOs among the respondents to conduct in-depth case studies.

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