

Using Information Technology (IT) Volunteers: A Conceptual Framework

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Abstract

Volunteer organizations (VOs) offer important services the private and public sectors cannot or will not provide. VOs tend not to use information technology (IT) to the extent they could, and so don't receive the benefits it offers. This paper examines the challenges using IT volunteers creates, including limits in availability, expertise, commitment, organizational knowledge, and equipment ownership. A framework for thinking about the effectiveness of IT volunteers is presented.

Keywords:

volunteers, information technology, effectiveness, challenges

Volunteer organizations (VOs) are central to social and cultural life, offering services the private and public sectors cannot or will not provide. They define their missions not in economic terms, but by values, be they social (e. g., a hospice), cultural (e. g., a choir), educational (e. g., a literacy program), spiritual (e. g., a church), or political (e. g., a group opposing an ordinance).

Some volunteers do IT work. This can be risky for VOs (Ticher, Maison, & Jones, 2002), since IT volunteers may, for example, lack expertise, not be available when needed, and ignore important tasks like data backup. Many VOs do not have a choice, however. They use IT volunteers, or do not use IT. Many VOs do not integrate IT with their core business activities (Burt & Taylor, 1999). Further, while IT management is difficult enough for larger VOs (Peizer, 2001), smaller organizations are even less likely to use IT (Princeton Survey Research Associates, 2001). Some

struggle with even basic hardware and software needs (Forster, 2003).

Little is known about IT volunteers. CompuMentor (2001) offers VO leaders guidelines for managing IT volunteers, but there is more to learn. In fact, there is almost no empirical work on IT volunteers: who they are, why they volunteer, what problems they face, what their relationship with VO leadership is like, and so on. This lack of information prevents VOs from maximizing the value of IT volunteers' time. Further, if VO leaders do not offer IT volunteers opportunities to meet their personal goals, the volunteers may leave in frustration.

Resources exist to fill this knowledge void. Management information systems (MIS) researchers study how companies use IT to achieve their goals. Topics include the use of IT to support strategic positions (Chung, Byrd, Lewis, & Ford, 2005), how business needs are translated into accurate system requirements (Teng & Sethi, 1990), and how decision support systems can help

people become more disciplined ethical decision makers (Mathieson, in press). Unfortunately, few MIS researchers, even those in public universities, have considered questions outside the private sector. Work on IT in volunteer organizations could help both VOs and MIS researchers. Empirical research on, for example, why IT personnel volunteer, could be of great value to volunteers, leaders, consultants, and others. VOs could help MIS researchers test and refine their ideas about the role of IT in organizations.

This paper offers a conceptual framework for understanding the relationships between VOs, IT volunteers, and their environments. The framework serves two purposes. First, it can help VO leaders understand IT volunteers and the constraints under which they operate. The framework is a guide to thought, identifying issues that can influence the effectiveness of IT volunteers, and, therefore, the ability of a VO to use IT to support its mission. Second, the framework identifies issues that MIS researchers could study. MIS research does not offer easy solutions to IT management problems. In fact, if there is one thing we have learned, it is that the mythical "silver bullet" is just that: mythical. However, MIS research can identify stumbling blocks to success, and suggest ways to avoid them.

The discussion proceeds as follows. First, the context in which IT volunteers operate is examined. Second, attributes of volunteers are discussed, considering such issues as why they volunteer, what they want to work on, and what constraints they face. Third, a framework is presented that helps organize questions about IT volunteering.

Volunteer Organizations (VOs)

Febbraro, Hall, and Parmegiani (1999) suggest that VOs are (1) organized, (2) private, (3) self-governing, (4) use volunteer

labor, and (5) do not distribute profits. Organizations fitting this definition vary widely in resources, scale, and management expertise. While those like Habitat for Humanity are large and well-organized, many VOs are small groups working in their local neighborhoods. Small VOs typically have no IT staff (PSRA, 2001). Their budgets are limited, and they would rather spend what money they do have on their missions, not on IT.

Norms of cooperation are more prevalent among VOs than private companies (Ticher et al., 2002). Certainly there are tensions between some VOs, such as rival religious and political organizations. Brown and Kalegaonkar (2002) show how goal fragmentation among nongovernmental organizations reduces the sector's overall effectiveness. Nevertheless, cooperation is central to the basic philosophy of most VOs, while competition is central to the basic philosophy of most businesses.

Some VOs are affiliated with larger organizations. Different central organizations have different degrees of control over individual VOs. For example, individual Catholic churches and individual Unitarian Universalist churches belong to larger organizations, but Catholic churches are more constrained by their central body than are Unitarian Universalist churches.

External agents can force a VO to innovate. For example, some funders require VOs to submit reports on the services they provide to clients. This can prompt VOs to do more data gathering and reporting than they might otherwise.

Support organizations are important to many VOs, helping them do things they have difficulty with on their own. Of particular interest here are nonprofit technology assistance providers (NTAPs), organizations that help VOs use IT (McInerney, 2003). CompuMentor (<http://www.compumentor.org>) is an

example. Created in 1987 and based in San Francisco, CompuMentor offers a broad range of consulting and other services. Through its Web site TechSoup (<http://www.techsoup.org>), CompuMentor helps VOs exchange IT advice, buy discounted IT products, and find IT services.

There is some research on VOs' use of IT. Office automation (e. g., word processing) and communication (e. g., email) are common (Forster, 2003). Record keeping applications such as client management, fundraising, and volunteer tracking are also in general use (Forster, 2003). Many VOs have Web sites, using them for things like promotion, fund raising, advocacy support, and volunteer recruitment (Cukier & Middleton, 2003).

Custom database systems can have significant value for VOs (Ticher et al., 2002). However, implementing database systems that are sustainable over the long term is challenging (Duffy, 2000), requiring both technical and organizational sophistication. Further, keeping data up-to-date takes continuous effort, even as a VO's leadership and goals change.

Volunteers

Let us turn to the volunteers. First, we should consider their motivations. People volunteer so they can express values like altruism, learn new things, form relationships with others, develop job-related skills, protect their egos (e. g., avoiding guilt), and enhance their egos (e. g., boosting self-image) (Clary et al., 1998). Altruism is a particularly common motivation (Bussell & Forbes, 2002). Volunteer satisfaction depends on the match between their motives and the outcomes of their volunteering experience (Hynes & Nykiel, 2005).

Many volunteers have a limited desire to work on tasks not directly related to the goals of the VO. For example, someone

working in a food bank might be more interested in packing food than entering data. This effect may be moderated by their reasons for volunteering. Someone volunteering to improve their job skills might be more willing to perform IT tasks than someone motivated by altruism. Further, while volunteers often share social norms of cooperation rather than competition, this may depend on their motives for volunteering. For example, two volunteers motivated by ego enhancement might not want to share social power.

An important difference between the private and volunteer sectors is that volunteers can refuse to follow the VO leadership's instructions with little penalty. For instance, someone might simply refuse to document a business function if that task doesn't match her motives for volunteering. People can also leave VOs at any time, taking their expertise with them. This can have dire consequences if, for example, the only person who knows an important computer password becomes disenchanted with a VO and leaves.

Most volunteers have other responsibilities besides their VO work. Even highly motivated people might only spend a few hours per week volunteering. This can lead to (1) task fragmentation, where several volunteers are needed to perform a task that, in a business, one person would handle; (2) projects taking longer to complete; and (3) slow accumulation of expertise based on experience.

Volunteers bring many different skills to VOs. In classifying skills, we can readily identify technical expertise (i.e., ability to use IT in various ways), domain expertise (e. g., accounting knowledge, project management skill, writing ability), and organizational expertise (familiarity with the VO, including its goals, procedures, and resources). We will add relationship expertise to the list, that is, the ability to

work with other people. This can strongly affect productivity (Goleman, 1995).

Of course, "expertise" is not a unified concept. For example, someone might possess the technical skills needed to create a newsletter, but not to maintain a Web site. "Expertise" is a useful abstraction for this discussion, but is too coarse-grained to predict whether a particular person has the particular technical skills needed to work on a particular project.

Finally, a volunteer with expertise, motivation, time, and equipment might not be effective if he or she has poor work habits (CompuMentor, 2001). Someone who doesn't check email, keep commitments, or document work, might be more of a liability than an asset. An IT novice who makes slow progress with unsophisticated technology can often contribute more to a VO than an unreliable expert.

Framework

The issues discussed thus far can be arranged in the framework shown in Figure 1. It shows that IT effectiveness depends on the match between a task, technology, and an IT volunteer. This notion was derived from ideas about task/system fit (Vessey, 1991; Vessey & Galletta, 1991).

IT tasks are performed in organizational environments that influence goals, available resources, and other factors. VOs exist in their own broader environments, labeled "external" in Figure 1. This includes VO groups (e. g., a national organization to which local groups belong), clients, funders, assistance organizations, and others.

Figure 1 identifies important attributes of each of the three central constructs: tasks, technology, and volunteers. IT tasks are defined by their skill requirements, time demands, and other resource needs (e. g., money). Three types of skills are listed here: organizational, domain, and relationship. They were discussed above. Important IT

volunteer attributes are skills (organizational, technical, domain, and relationship), motivation source (that is, the reasons why people volunteer), motivation level, work habits, time availability, and equipment availability (IT volunteers working with small VOs may use their own equipment). Finally, technology attributes include availability (what VOs or volunteers have or can acquire), the types of tasks supported by the technology (e. g., word processors aren't particularly useful for accounting), and the skills and time required to use the technology.

Using the Framework

Issues raised by the framework are grouped into the following categories, starting at the center of the figure and moving outward:

- The volunteers themselves;
- The relationships between volunteers and tasks;
- The relationships between volunteers and technology;
- How organizational variables affect IT volunteers; and
- How VOs' external environments influence IT volunteers.

In cases where issues could fall into more than one category, the category that seemed the best fit was chosen.

Recall that this paper is concerned only with IT volunteers. The discussion omits issues that, while important, are not directly relevant to volunteering.

IT Volunteers

The reason why an IT expert volunteers is one of the most important issues VO leaders and researchers can consider.

Questions include:

1. What motivates people with IT expertise to volunteer? Why do others choose not to volunteer?
2. Do psychographic variables predict

- IT volunteerism (e. g., education, family background, values, and faith orientation)? Are IT experts who volunteer different from IT experts who don't? For example, do IT experts who volunteer value cooperation more than those who do not?
3. Are IT volunteers' motives and skills correlated? For example, do volunteers motivated by ego enhancement have poorer relationship skills?
 4. Are IT volunteers different from volunteers without IT skills?
 5. Do IT volunteers have good work habits (e. g., tracking commitments)? Can this variable be predicted? Can work habits be improved?
 6. Are there typical profiles of IT volunteer expertise? Are some skills more readily available among IT volunteers than among the general population of IT experts, and vice versa?
 7. How much time do IT volunteers give (i.e., availability)? What predicts availability?
 8. How can a particular VO estimate the IT capabilities of its volunteers? How can it find out if important skills are missing?
 9. How can a VO persuade people with IT expertise to volunteer? To keep volunteering? For example, what IT volunteer recognition programs are effective?
 10. How can a VO persuade volunteers that working on IT and associated administrative tasks is a valuable contribution to the VO's goals? How can volunteers be encouraged to follow good IT practices (e. g., data backup)?
 11. How can a VO persuade

- volunteers with limited IT expertise to develop IT skills? If volunteers agree to this goal, how can training actually occur? Would an apprenticeship model match VO norms? Would a combination of classroom training and apprenticeship be more effective than either one alone?
12. Can a VO offer people technology training in exchange for IT work? Would these people work well with true volunteers?

Let's take one of the questions above, and see how addressing it could help VOs. Consider question 10, "How can a VO persuade volunteers that working on IT and associated administrative tasks is a valuable contribution to the VO's goals?" Suppose a VO has a Web site with a request for information (RFI) form. Site visitors are invited to enter their names and addresses, and literature is mailed to them. Someone in the VO has to actually do the work of mailing literature in response to RFI requests. How VO leaders describe the task may affect volunteers' interest in doing it. If the task is presented as an administrative burden that someone "has to do," people might be reluctant to take it on, and those who do might not take it very seriously. On the other hand, VO leaders could describe the task as one that contributes to the VO's goal of informing people about their mission. Volunteers might see the task as worthwhile, and complete it more assiduously.

Tasks and IT Volunteers

Besides volunteers themselves, there are questions about how the attributes of volunteers and tasks interact.

13. What tasks do IT volunteers perform? Are there some they prefer more than others? Are

- people with different attributes (e.g., different motivation types) more willing to perform some tasks than others? Can tasks be changed to be more attractive?
14. Are volunteers more successful at some tasks than others?
CompuMentor (2001) lists tasks they believe are suited to volunteers.
 15. What skills do various tasks (e.g., maintaining a Web site) require of IT volunteers?
 16. How should IT volunteers' time be allocated across tasks?
 17. Some IT volunteers work only a few hours per month, so tasks must be broken into small pieces and distributed to several volunteers. What issues does this introduce?
 18. How can tasks be designed to reduce the need for skills few IT volunteers possess?
 19. CompuMentor (2001) suggests that IT volunteers are best used for well-defined, short-term tasks that are not urgent. What should a VO do if it has tasks that do not fit these criteria, and it cannot afford to hire professionals?

Again, let's take one of the questions, and see how it might affect practice. This time we'll take question 14. Perhaps a given IT task could be partitioned to better appeal to people with various goals. Consider, for example, the task of maintaining a Web site. A socially-motivated volunteer might be more interested in talking to other people about new content, rather than the technical work of changing HTML code (the computer language in which Web pages are expressed). A technically-motivated volunteer might be more interested in the underlying system. So, rather than hand-

coding the Web site, a task which mixes content and technical tasks, perhaps the VO should use a content management system (CMS). A CMS is a Web site management tool that separates the task of maintaining content from that of maintaining the technical artifacts (templates, menus, etc.) in which the content is embedded. Each volunteer works on what he or she likes best. The final result may be a Web site that is both technically capable and filled with high-quality content.

IT Volunteers and Technology

The following questions are about the interaction between IT volunteers and aspects of technology.

20. Software tends to be written for commercial environments. Vendors might make assumptions about, for example, the availability and motivation of IT staff. Do these assumptions hold for VOs and their IT volunteers?
21. The technical expertise available to a VO changes over time as volunteers enter and leave the organization. Are some technologies less vulnerable to these changes than others?
22. Do the technologies VOs are using, or want to use, match what their IT volunteers know? What happens when they don't?
23. Ticher et al. (2002) suggest that some VOs have poor IT security practices. What is the extent of the problem? What role do IT volunteers have in both creating and ameliorating security issues?

Consider question 21. Suppose a software company builds an information system that records potentially sensitive financial information about people. The application will have a permission system to

limit the number of users who have access to the data. When the software is used in a business with fulltime employees, only one or two people might be needed to maintain the data. Permissions can be relatively coarse in this case. For example, there might just be two permission levels: data access (users can access all data but not change any of it) and data update (users can access and change all data).

The situation might be different when a VO tries to use the same software. Since volunteers have limited time to give, data maintenance tasks might be divided up into small pieces and distributed across volunteers. The software would need a fine-grained permission system, where users are given access only to the data they need to do their small parts of the total job. The two-level permission system described above would be inadequate. Instead, the application might need, say, ten permission levels, giving access and update permissions to different parts of the overall data set.

VOs and IT Volunteers

IT volunteers work within a VO, which they influence and are influenced by. What are some of the organizational issues that affect IT volunteers?

24. Are IT experts drawn to some VOs more than others? Which ones? Why?
25. What do particular VO strategies and tactics demand of IT volunteers?
26. What frustrations do IT volunteers have with VO leadership, and vice versa?
27. What do IT volunteers think about the organizational cultures of their VOs?
28. How should VOs track IT volunteers? What performance variables should they measure? How do IT volunteers react to

measurement?

29. How often do IT volunteers become VO leaders? What happens when that occurs?
30. Do VO leaders budget for IT volunteer training?
31. Can VO leaders predict when an important IT volunteer is thinking of leaving? What can be done to preserve important information?

Consider question 27, "What frustrations do IT volunteers have with VO leadership, and vice versa?" MIS researchers have known for some time that managers' willingness to participate in and even lead IT projects affects the chances of project success (Franz & Robey, 1986). Ideally, the people with the best understanding of the business process to be supported should define system goals, with IT experts as consultants. Unfortunately, managers often say to IT personnel, "You're the technology experts. You build the system." This is a recipe for failure. It is just as unreasonable to expect IT personnel to become marketing experts as it is to expect marketing personnel to become IT experts.

The same, no doubt, applies in VOs. Suppose a VO is building a Web site, the main goal being to attract new members. The project leader should be the most senior person in charge of membership issues, (e.g., the board's membership coordinator). Whether that person knows much about Web sites is less relevant than the fact that (1) the project leader knows about membership, and (2) the project leader has the organizational authority to, for example, ensure that the site's content is updated with new membership information. IT people can handle the technology, but technology that does not serve VO goals is useless.

The VO External Environment and IT Volunteers

32. NTAPs could help VO leaders learn about the possibilities IT provides, as well as predict and overcome the problems that inevitably attend IT projects (Ticher et al., 2002). What do VO leaders need to know? How should this information be communicated?
33. What IT tasks should NTAPs help VOs with? What should they avoid?
34. Suppose an NTAP worked with open source developers to create software to serve many VOs. What skills would be needed to administer and use it? How many IT volunteers would have those skills? Could some of the tasks be taken over by the NTAP?
35. Could NTAPs partner with, for example, universities to offer training in various locations?
36. How can NTAPs attract and keep volunteers of their own? Some firms allow employees time off work to volunteer (Bussell & Forbes, 2002). Would companies offer IT expertise to NTAPs?
37. Can NTAPs and/or VOs trade volunteer time? For example, one VO might help another with system administration, in return for accounting advice.
38. How do funders influence VOs' need for IT skills? How do VOs react?
39. Can funders help VOs acquire the skills they need to, for example, comply with reporting requirements? Should funders partner with NTAPs that already have support resources in place?

One of the most intriguing possibilities for VO IT is the continuing development of sector-wide cooperative institutions. There are some already, like techsoup.org, but more could be done. For example, imagine an NTAP that offers free Web server space, CMS software, and consulting to any sexual abuse support VO in North America. A few experts with basic funding could build a capable technical infrastructure supporting hundreds of VOs from Halifax to Mexico City. The cooperative norms of VOs make this possible.

Conclusions

Ticher et al. (2002) recommended against using volunteers for IT work (and for good reason). However, many VOs have no choice. They either use volunteers, or do not use IT.

VOs have a potential advantage over commercial firms: their norms of organizational cooperation. Groups of VOs and NTAPs may be able to create IT support structures that are not feasible in the private sector. For example, suppose a volunteer at a local library worked on cross-referencing literature on ethical decision making. He or she might store the information in a database system created by an open source software team. The team might have been organized by an NTAP, and its infrastructure needs underwritten by a foundation. The library volunteer's output could be available to other VOs around the world. Volunteer, VO, software team, NTAP, foundation: a loose federation able to do significant work.

MIS researchers could help. They are in a unique position, possessing both the technical skill and organizational insight needed to help VOs. They could be important contributors to the design of nontraditional IT support structures. However, this will not happen unless VO leaders and MIS researchers start building relationships with each other.

One can imagine two different ways VO leaders can think about IT problems. Some leaders, probably most, will consider only the immediate goals of their own organizations. Their interest is limited to today's need to create a Web site, build a donor database, etc. There is nothing wrong with this, of course. However, there will be little accumulation of knowledge. The next VO needing a donor database will face the same challenges, as will the next, and the next.

Hopefully, a few VO leaders will take a different approach, building long-term relationships with funders, technology companies, MIS researchers, and others. Perhaps they will be NTAP leaders with a broad vision that extends beyond today's problems to tomorrow's solutions. Eventually, the next VO that needs a donor database will find that a standard package with software, server space, training, and consulting help is already available. The VO can focus on its mission, knowing that a loosely-coupled, sector-wide IT support structure is clearing away some of the obstacles in its path.

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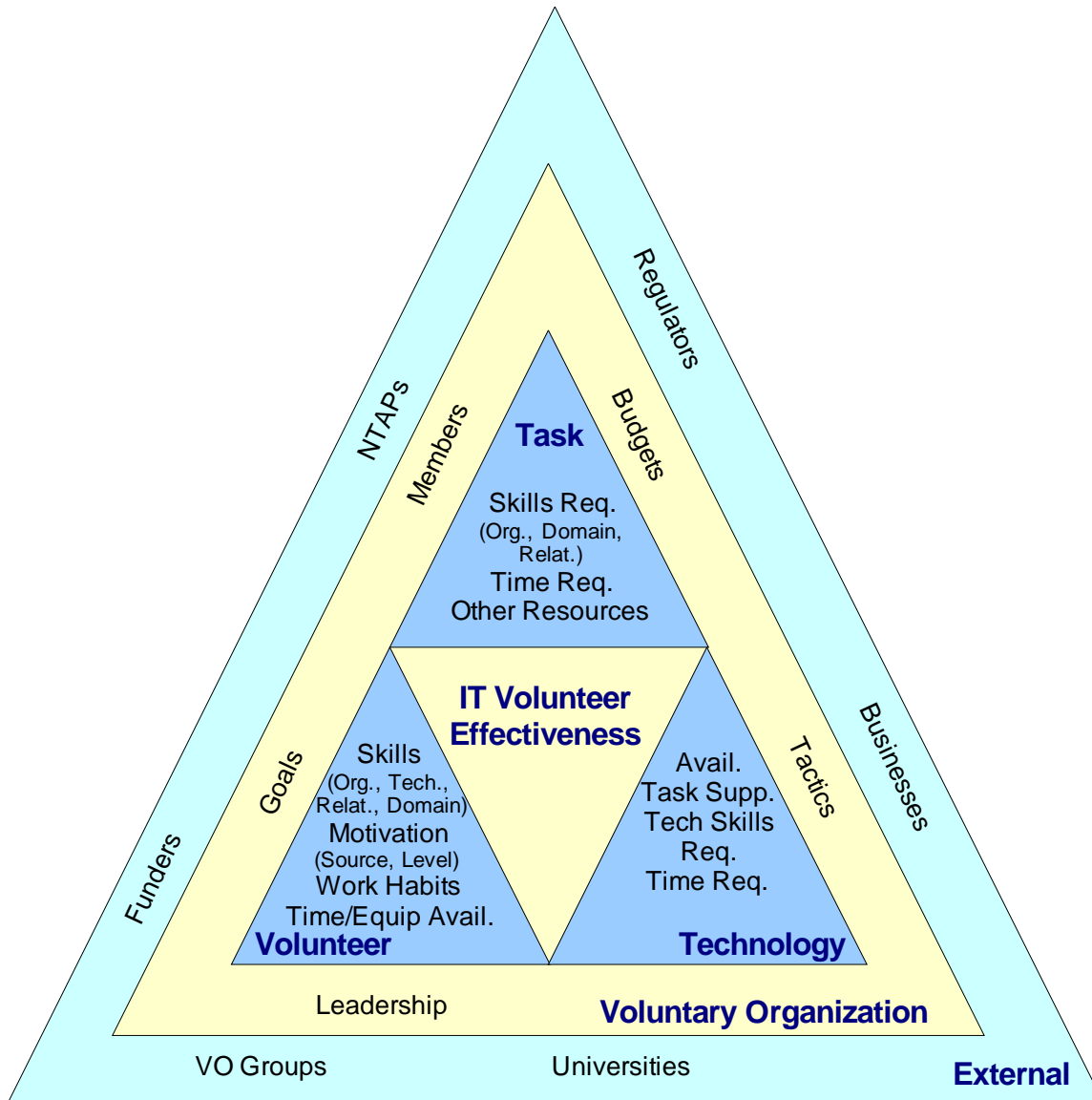


Figure 1. *VO IT Volunteer Effectiveness Framework*