Achieving Development Outcomes through Technology Interventions in a Nonprofit Organization

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Abstract

Concern over the digital divide has focused primarily on the fear that specific groups of people will be left behind in an increasing technical world. Less, however, has been said about the probability of an organizational digital divide, for example, that nonprofit organizations may not have access to developing technical capability. The fundamental belief is that nonprofits are at a disadvantage when it comes to adopting and maintaining current information technology systems due to a variety of challenges that they face. This study focuses on a single in-depth case study of a local nonprofit organization in adopting and using technology through a contextualized approach described as IT Therapy. Results from the case are analyzed in light of their impact on socio-economic development.

1. Introduction

Current research has investigated the effect of ICTs on human, social and economic development. Human development is seen to be a key determinant of successful ICT adoption in developing regions. This concept according to [39] suggests that people need to be in control of their lives in order to take the opportunities presented to them. Authors of past research suggest that human development entails access to services such as healthcare, education and governance [10], [15], [27], [34], [38]. The research on social development suggests that implementations of technology in eGovernment [8], [22], [40], [45], healthcare [5], [18], [25], [26], education [12] and the environment have had the effect of bringing about better lives for people in underserved communities. Economic development perspectives measure growth in terms of income generation, job creation, and/or reduction in poverty [48], [37], [1]. While these numbers are used in making policy decisions, they often overlook the informal sector where most of the resource constrained organizations operate. They do not represent the extent to which actual development (or the lack thereof) is taking place within the most underserved communities.

This research suggests that while human, social and economic development perspectives are important and ICT adoption has the potential to enable those outcomes to be achieved, little has been done to find the connections between these concepts [3], [9], [23], [30]. Those researchers make an effort in this direction by bringing to light the different perspectives that are being used in implementing IT for spatial data infrastructures. This paper suggests that when ICT implementations address all three issues, they increase the chances of success of those implementations, particularly with regard to resource constrained organizations such as nonprofits.

Concern over the digital divide has focused primarily on the fear that specific groups of people will be left behind in an increasing technical world. Less, however, has been said about the probability of an organizational digital divide, for example, that nonprofit organizations may not have access to developing technical capability. The prevailing belief is that nonprofits are at a disadvantage in maintaining current computer systems. Nonprofit organizations use computers, Internet and other networking technology for a number of tasks, including volunteer management and support, donor management, client tracking and support, project management, financial accounting, program evaluation, research, marketing, activism and collaboration. Because of their limited budgets, nonprofit organizations may not be able to upgrade their hardware or software, buy computers or Internet tools, or provide technology training for staff to the degree of for-profit businesses. This means that, often, nonprofit organizations can be on the wrong side of the digital divide. Nonprofit organizations are extremely diverse in size, mission, and nature [14]. As a result, nonprofit organizations differ in their use of technology and the impact that technological changes make upon them [16].

It then appears that there is a need to apply a systematic approach to facilitating the adoption and use

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of information technology in nonprofits. In this study, we do just that by investigating a single in-depth case study of a local nonprofit organization in using technology to overcome some of their challenges using a contextualized approach described as IT Therapy [49], which has been proven to be a successful method in assisting similar resource constrained but for-profit microenterprises in underserved communities. Results from the case are analyzed in light of their impact on socio-economic development.

2. Background

2.1. Nonprofits and Information Technology

There is a growing literature on the potential benefits of using computer and networking technology in nonprofit organizations. Ferraro [11] emphasizes the benefits that more immediate access to information has had on service-providing nongovernmental organizations. The Internet is frequently cited as a cost-effective tool for fundraising [50], [46], recruiting members and volunteers, announcing jobs, and coordinating advocacy efforts [51]. Additionally, using appropriate software can help nonprofits streamline financial management, cut costs, and offer services more effectively [28].

Although the benefits of computer technology for nonprofits seem well established, there is a fair amount of anecdotal evidence that nonprofits suffer from "the digital divide." Until very recently, nonprofits have failed to see the significance of changing technologies on service delivery [20]. For example, in 1986, one of the most frequently cited works on the future of the nonprofit sector included an extensive list of future research but failed to mention technology [41]. More recently, attention has turned to the role of computer technology in the nonprofit sector, as evidenced by the subject of a recent Independent Sector's annual symposium, "The Impact of Information Technology on Civil Society." In the last decade, a few studies have explored the degree of utilization of technology by nonprofits, but a good base of systematic research is lacking. In 1990, a small team of researchers completed a study on ten "cultural" nonprofits (those involved in the performing and visual arts) in Cleveland, Ohio. The major conclusion was that nonprofit cultural institutions engage in only a limited way with Information Systems (IS) and other computer technology. They attribute this deficiency to an overwhelming lack of strategy regarding the uses of technology and the inability of these nonprofits to contribute funding or staff to develop IS applications [44].

Other trends in the literature include the presumption that nonprofits are technologically disadvantaged and describe efforts to alleviate this problem, rather than diagnosing the problems first. Evidence of this assumption is the donation by some private organizations and online nonprofits of volunteers, services, and on-line tools to these disadvantaged nonprofits free of charge [7], [19], [33]. Others have discussed the use of more traditional techniques such as partnerships with for-profits to creatively finance computer systems [24].

Finally, some caution that perceived difficulties with technology may in fact be difficulties managing technology, a very different problem indeed. Kleintop [21] focuses on management of information technology in nonprofits, making a strong argument that good management approaches and techniques are essential to addressing any underlying problem of a lack of resources.

2.2. Information Technology for Development

Steinberg [42] suggests that the high versatility of ICTs have the potential to address a country's development strategies - provided an enabling environment exists. In this vein, in order to investigate the achievement of development in nonprofits, this research will draw upon the field of Information Technology for Development (ITD). The field of Information Technology for Development (ITD) is built on this notion and entails the implementation, use and management of Information Technology infrastructures to stimulate human, social and economic development [32]. IT for Development research is not limited to developing countries and considers communities and regions in which people have limited access to funds, social services and education needed to sustain them. IT does not have to imply the adoption and use of highly complicated technology and equipment. Technologies such as the cell phone which is now considered one of the most essential pieces of technology to humans around the world can be utilized in its simplest form to assist the rural poor in underserved regions.

ITD research has made contributions in providing equitable access to information and knowledge in areas such as education and literacy [35], [36]; healthcare [18], [26]; software development [6], [43]; reduction in poverty [4], [17]; better government [31], [43] and off-shore outsourcing [13], [29]. However there is limited research that considers the effect of IT implementations on nonprofits and their contributions to development.

Qureshi [32] highlighted a number of effects that may come about when IT implementations intervene

within a society's economic as well as social spheres. Through a process model (figure 1) of IT for development, Qureshi [32] takes into account both positive and negative impacts that technology might have on development (through a cyclical relationship). The stated effects in the model are: access to information and expertise, competitiveness and access to markets, administrative efficiencies, learning and labor productivity, and finally poverty reduction.

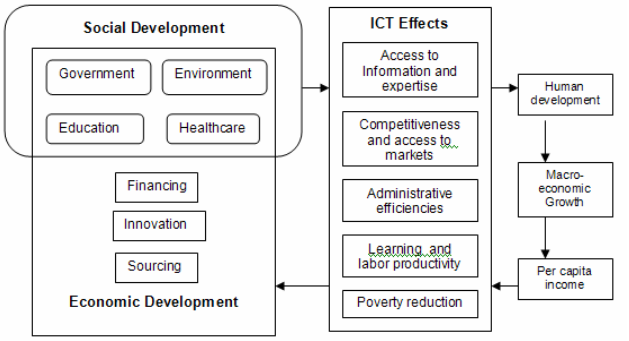

Figure 1. Model of Information Technology for Development (Qureshi, 2005)

For the context of this study, the social and economic sphere that we are concerned with is the nonprofit organization. We use the effects from the model to analyze outcomes from the case study outlined in the following sections to obtain insight of the extent to which information technology adoption and use in the nonprofit organization may facilitate socio-economic development.

3. Methodology

This study used an inductive interpretive case study [47] to understand how a nonprofit organization may adopt IT. An action research methodology [2] was used to apply IT interventions within a nonprofit organization in Western New York and the results analyzed. The research design used is shown in figure2 below.

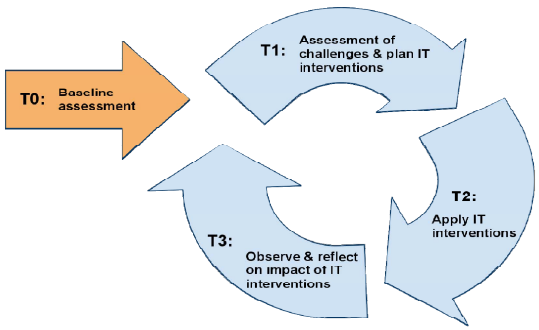

Figure 2. Research design

As seen in the figure above, there were four distinct stages at which activities were conducted. At T0, the researchers interviewed the main contact person (board trustee) to understand their past, present, and future use of technology and how the trustee thought IT could benefit the organization. Stages T1 through T3 comprise the action research cycle that was conducted. At T1, the researcher once again met with the trustee to inquire about any of the immediate IT needs and also got an in-depth understanding of the organization. Equipped with that information along with the information obtained from the interviews at the T0 stage, the researcher then planned what type of IT intervention was appropriate to apply to the organization. At T2, the actual IT interventions were applied. At stage T3, the researcher evaluated whether the IT interventions applied to the organization actually met and/or solved the needs expressed by the trustee. If not, then modifications were made and additional IT interventions were applied. Iteration between stages T1 through T3 represents the cyclical nature of the action research approach and has been referred as IT Therapy [49] in previous research. The researcher then integrated all the data from the interviews and observations and carried out a case analysis to discover how IT may be adopted by the non-profit organization.

4. The Case

MH is a non-profit historical society located on a main street in a small town in western New York. It was formed in 1965 to restore a Victorian house after it was burned in a fire. Since then they have succeeded in bringing the grand estate back to its former glory. MH is comprised of a board of 21 officers who serve as the trustees of the organization. MH is host to a variety of programs and activities such as evenings for quilters and spinners, as well as various other programs throughout the year. Their main business plan is to teach the surrounding communities about history and generate enough income to cover all expenses. The driving passion of MH is to maintain the Victorian House's heritage, allow generations to come to enjoy its Victorian grandeur, and teach younger generations the importance of knowing their history. They believe in the power of community and the importance of history. They believe too many people take history for granted and forget that we wouldn't be where we are today without what happened yesterday.

They also believe that technology plays a very important role in people's lives today and understand that this will only increase as time passes. They would very much like to expand their member base as it increases revenue for the society. They are trying to target younger members in order to help maintain the

society in the future. With almost all the trustees being part of an older age group, the adoption of new technology has been a barrier for expanding. They have however stepped into the realm of social media with a Facebook account but did not properly maintain their account. They also had problems with alternate accounts being made on their behalf which they did not want. The lack of funding is also another major barrier in expanding their member base. To host events, purchase new technologies, and even just spread the word takes money which is hard to come by for an organization such as a not for profit.

MH would like to better utilize new technologies and a landmark of this success for them would be to increase their presence within the community as well as with younger generations. They would also like to increase their member base with new members in the process. A long term goal of their success would be to keep the Victorian house intact and maintained for many years to come. The trustees would like reassurance that this goal can be achieved and they need new trustees willing to step up and take on responsibilities and they know the next generation to take their place will most likely be found with technologies.

5. Results

5.1. T0: Baseline Assessment

The main contact person through whom the researcher worked with was RW – an existing officer and trustee. The responses from administering the baseline assessment in MH revealed that the Historical Society in the past had purchased two printers, two PCs, wireless internet connection, and a projector. Ten years ago, a board member and trustee, ED, started the society's website using his own Internet Service Provider account. Recently, the society purchased an additional printer. This new all-in-one printer deals with copying, scanning, faxing, and printing papers. They still had the original website, which is now a little over ten years old. They currently have multiple paper calendars to organize events and members get to know about the events by word of mouth and monthly newsletters.

The current needs of the historical society are an updated website that can be easily passed down to future trustees. The ease of passing down the technology is critical because if one officer holds onto it and only has access, future generation officers of the society may be constrained in moving the organization forward. Another need is to include having an updated (electronic) way of handling events. With this being said, training of existing technology is also needed. The society has a Google Gmail account, but does not use it to its full potential. They could use this for calendar purposes and use this to embed images to members in emails instead of them trying to figure out how to open an attachment. The current trustees of the society are older in age, so the simpler the technology the better. The baseline assessment also revealed that a web presence was not a high priority for the board members. They were aware that a website existed (the old website), but they did not think that this need to be focused on or even updated. Several of the board members did not even know that the society has a Facebook page. This shows that the board had a lack of IT involvement or engagement. **S**ome of the trustees felt that technology was too much for the historical society to handle and would not bring benefits in terms of expanding the society's member base. However, our main contact person, RW, believes staying "in date with technology" is necessary. This means that a website's layout and features should be updated more frequently than ten years. The society's old website was great ten years ago, but RW agrees that it may turn potential members away due to the dated look and feel. Showing that a website is updated shows that the society values and embraces modern technology.

5.2. T1: Assessment of Challenges and Plan IT Interventions

When the researcher first visited MH, they noticed that the "offices" were quite organized in terms of IT. There are a total of two offices, each having a PC with Windows 7 and Microsoft Office starter edition. Each office also had a printer; however the business manager, JJ's office had two printers, one being an "all-in-one" printer. JJ had several papers on her desk and several of them were calendars for the upcoming events in the society. She had several paper calendars which made it difficult to see which ones were sent to ED (the trustee managing the old website) to place on the old website. This part of the infrastructure was poor.

The main focus on assessing the problems of MH included updating their old website to a new and professional one. The old website was ten years old and had poor design. Another reason the historical society wanted an updated website was the fact that they wanted something that could be passed down easily.

5.3. T2: Apply IT Interventions

The following interventions were carried out for MH:

The main focus on assessing the problems of MH includes updating their old website to a new and professional one. The tool used was Weebly, which allows owners to easily edit and update webpages. Weebly is a website creation tool that features a drag and drop system that allows a user to make websites without the need to code in a web programming language. The old website was ten years old and had poor design. Weebly provides professional templates that are also mobile-platform friendly. Another reason the historical society wanted an updated website is the fact that they want something that could be passed down easily. Weebly offers web editing permissions, meaning that multiple email accounts could edit the new website and can have editing permission on webpages. The old website files were only on the webmaster's (ED's) personal PC. Weebly provides cloud storage, so the website files are on the Internet as opposed to being locally stored on the webmaster's PC. The impact of the website includes the society having a new website that can be easily passed down from each generation of officers. It now has a professional look and is compatible to mobile phones and multiple web browsers. MH now has a much more organized website that is easy to navigate. Since the website is hosted by Weebly, any officer with appropriate permissions can edit the website, as opposed to having to wait weeks before the website could be updated only by the webmaster. The historical society also has a competitive edge now against other historical societies. They now have a modern-looking website with search engine optimized (SEO) words that will help them to show up on the first page of search engines when people search for 'historical societies in Brockport'.

Getting more web presence was also a task for MH. One strategy used was the idea of the society to purchase a domain name. This domain name will bring quick benefits. For example, members and officers will more likely remember *www.MH.org* (actual organization name is kept anonymous for confidentiality purposes) than *http://www.frontiernet.net/~MH/*. This new domain name improves competitiveness on the web. Currently, the town website appears first whenever someone searches for the historical society. This website has a small article about MH. With the new domain name in place, the society's website should be ranked before this website. This is also due to the SEO words that have been implemented.

In addition, the researcher also provided JJ (office manager) and RW (trustee) with IT training. The intention is that the society's business manager (JJ) can edit and modify webpages. This is important because once the researchers leave, the society needs to sustain themselves in their website technology needs. This is an administrative efficiency because JJ will now be able to maintain everything herself instead of sending ED (the webmaster for the old site) what needs to be edited and then waiting weeks for a reply.

Google calendar was another implemented solution to solve the current issue of multiple paper calendars. JJ's desk was filled with papers that pertained to different events that the society runs. Google calendar essentially converts these paper files into one uniform calendar system. The impact is that Google calendar allows real-time updates on the society's events. All officers and members know where to find the most recent event information. The researcher also synchronized Google calendar with the new Weebly website. As a result, when JJ adds an event on the Gmail account, it automatically updates the website's calendar. This saves JJ from copying redundant information into Weebly.

Another intervention carried out involved the issue of resolving multiple social media pages for MH on Facebook. One page was JJ's official page for the society; the other ones were created by anonymous users who made a page for the society. The researcher contacted the owners of these unofficial pages via Facebook to either shut them down or give JJ administrative rights. A week later, JJ noticed she had rights to edit and delete the unofficial pages. Subsequently, the unofficial pages were taken down to reduce confusion among members on what page to "like" on Facebook. Now a younger generation of users could find MH online and learn about its history. The Facebook page currently has 34 "likes", which are 6 more "likes" since the unofficial pages were deleted.

With the new Weebly website and Facebook pages in place, the researchers decided to link the two together. On the Weebly website, there are social media icons. The only current icon is the Facebook logo. When this logo is clicked, users are redirected to the society's Facebook page. On the Facebook page, the 'about us' section now has the new URL of the website. Therefore Facebook users can now know the new website to visit. JJ now knows to tell members to focus on and follow her page on Facebook instead of explaining to them how to find her page among the other 'competing' pages.

The final intervention the researcher performed was teaching JJ how to embed pictures and files onto an email. Since some members forget to view and download attachments that JJ sends, she felt that embedding them will be more noticeable for members. Therefore, JJ's Gmail account was set up to be able to embed pictures and files directly in the email. The researchers provided her a tutorial on how to embed other file types as well. JJ explains how she always

sends them the monthly newsletter as an attachment and some of the older officers do not see them while reading the email simply because they do not know how attachments work.

5.4. T3: Observe and Reflect

There were several knowledge barriers and staff resistance in the society as the researcher attempted to apply interventions at MH. ED, the webmaster of the old website, was initially resistant to changing the website's design or hosting. He thought that his local Internet subscription provider account did the job sufficiently and he did not have the time to learn a new tool (Weebly). After emailing ED and having a meeting with him, he began to see the benefits of the new tool. The ease of editing and the ability to pass down the website editing ownership was something that the old website could not do. Another thing that was in consideration was that the board officers may not have the knowledge in adopting this new tool. The researchers thought that since the society was comprised of mainly people of an older generation (age 55+), that introducing Weebly would cause resistance. However, at the board meeting with the trustees where the newly developed website was presented, they all seemed to have higher technology awareness than the researchers had initially assumed. Several officers were looking at their smartphones and tablets during the presentation.

The board officers initially did not see the value of having web technology. They did not want a lot of photos of MH online because the trustees thought it would violate a security issue with preserving the history behind the house. They did not want someone online being able to completely see all of the insides of the house from the pictures, they wanted people to come take a tour and visit it in person. Therefore it took several iterations before finalizing the right number of photos to display on the new website.

6. Discussion

All of the interventions carried out for the Historical Society may be attributed to forms of socio-economic development from the IT for Development model [32]. First, there was social development in terms of education and environmental aspects. The environmental aspect in this study deals with community involvement. As the new website was being planned and formulated, the researcher also went around and asked about searchable words that someone would type in a search engine to try to find information about the historical society. Essentially, the officers were all contributing to SEO meta-words for the website. This was a good way to involve the current officers with the technology adoption process. The researcher also received a few emails after the meeting containing more words that could be used as keywords for the website and webpages. Also, the trustees and JJ were more aware of the access of information that they could receive from the Internet. This in turn contributes to their education. Especially for JJ, the researchers showed her new Google tools and Gmail features she was unaware about and where can go to find more information about these tools. The introduction of Weebly also expanded JJ's skills in terms of website editing. She was aware that Weebly had a help button (their knowledge base) that contained several features that she could read and learn about in the future.

Some of the outcomes that were observed contributed to human development. This includes the learning of new skills and empowerment that JJ and RW (trustee and our main contact) gained through their time with us. After training JJ on Weebly, she now has web editing skills and feels in control of the Google calendar system. She feels very confident in adding, editing, and deleting events using Google calendar. RW also learned parts of Weebly during our fieldwork. We showed him how to perform basic editing functions using the drag and drop technique. He feels that as technology advances, the easier it is for common people to perform "difficult" tasks, such as creating a website. With JJ as the main website content editor and RW serving as the 'back up', RW feels that the historical society is fully in control of the new website and electronic calendar system. Table 1 below summarizes the outcomes observed in the non-profit organization as a result of the technology and training interventions applied.

Table 1. IT for Development Outcomes

Intervention	Impact	Development outcome (IT for Development model)
Update website into new modern look	The society has a new website that can be easily passed down from generation of officers. Has a professional look and is compatible to mobile phones and multiple web browsers.	(1) Administrative Efficiency (2) Competitiveness
Get more web recognition through a new domain name	The new domain name is easy to remember and will provide a higher ranking on search engines.	(1) Competitiveness
Provide technical training on web site maintenance	The society's business manager (JJ) can edit and modify webpages.	(1) Administrative Efficiencies
Create a new electronic calendar system	Google calendar allows real-time updates on the society's events. All members know where to find the most recent event information. Paper calendars have been removed from the cluttered desk of the business manager.	(1) Administrative Efficiencies
Delete all non-official Facebook pages	Only one official Facebook page is present online. Members are no longer confused on which one to join.	(1) Administrative Efficiency (2) Access to new Markets
Link website and Facebook page	The new website has a social media icon for visitors to click and follow the society on Facebook. The Facebook page has the new URL on the information page.	(1) Administrative Efficiency (2) Competitiveness
Embed images/files through emails	The business manager can now embed images and files through email instead of sending attachments. Some members forget to view and download attachments.	(1) Administrative Efficiency

7. Conclusion

This paper described an in-depth case study of a nonprofit organization's adoption of technology. This study outlined *a* very contextualized and systematic approach towards this end. This approach entails understanding first how the organization perceives or views IT and then understanding the business forms the foundation on which appropriate IT interventions need to be designed and applied to create the most impact.

The main contribution from this study is the evidence that nonprofit organizations are very similar to micro-enterprises in that they are resource constrained in various aspects and are in dire need for external support – especially when it comes to information technology assistance. Findings from the case study shed insight for researchers and practitioners involved in using IT to assist nonprofit organizations using the same IT assistance method that has been used in resource-constrained micro-enterprises in underserved regions.

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