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TOWARDS A FRAMEWORK TO ENHANCE THE TECHNOLOGY CAPACITY OF COMMUNITY-BASED ORGANIZATIONS IN URBAN CONTEXTS

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Abstract

This paper presents a strategic framework for conducting action research in partnership with community-based organizations. The framework was developed through projects conducted in three urban communities in Pennsylvania – Harrisburg, Steelton and West Philadelphia. Using empirical data from these case studies, we present the research model as well as methodological considerations for conducting research in an urban context.

Keywords: Community informatics, action research, digital divide, organizational divide

Introduction

The digital society represents the economic, social and cultural change enabled by information and communication technologies (ICT). However, the diffusion of ICT does not occur in an equitable fashion. Increasingly communities can be physically close, but economically, socially and technologically distant. Moreover, residents in communities on the wrong side of the divide become marginalized due to differential access and use of modern technology. As a result, there are entire communities that are underrepresented in the IT workforce.

In this study, information and communication technologies consist of personal computers, application software such as Microsoft Office, broadband communications, Internet-based applications such as email and the WWW. Powerful changes radiating from ICT are producing new ways of working and learning, new means of communicating and forming communities, and new goods and services. Used creatively, ICT can be powerful tools for tackling some of our toughest social challenges as well as fostering economic growth (Presidential Memorandum on e/Government, 1999).

While advances in ICT have provided unparalleled opportunities to improve the human condition, these same technologies also reproduce long-standing social inequities. Irrespective of the outcomes, the emergence of the digital society will not occur in a vacuum. According to Drucker (1992), the digital society will depend upon three distinct areas: the public sector (government), the private (business) and the social sector (non-profit). Most IS research has been conducted in the domain of private business. Substantially fewer studies have empirically examined the emergent use of ICT in the social and public sectors (Kvasny, 2002; Lee 2003).

To increase our knowledge of ICT adoption and use in the social and public sectors, we adopt a community informatics research approach. Community informatics is a technology strategy that focuses on the use of ICT by geographic communities to foster economic and social development (Romm & Taylor, 2001; Gurstein, 1999; Keeble & Loader, 2001). In this approach, community-based organizations (CBOs) represent viable social and economic enterprises that can profit from the use of ICT. However, CBOs have not traditionally realized the potential benefits and may be unwittingly marginalized by technological advances. One unintended effect is the emergence of an “organizational divide.” Kirschenbaum and Kunamneni (2001) define the organizational divide as an organization’s lack of technology capacity to either use ICT to advance its mission or share its resources with

constituents. Local organizations are storehouses of information. Building the technology capacity of CBOs enables them to disseminate relevant content online, to build community networks and applications, and to use ICT to help address pressing social problems. Alleviating the organizational divide moves us closer to a more equitable society in ways that goes beyond physical access to computing artifacts; it seeks to use ICT as a mechanism for strengthening and sustaining entire communities.

In what follows, we present the research model as well as preliminary findings from research that is currently underway in the three communities. Next, we discuss the methodological considerations for conducting research with organizations that serve urban communities. The paper concludes with a discussion of the implications for future research.

Motivation and Background

A deeper understanding of the state of ICT adoption in communities is necessary for several reasons. First, there is a growing need for context appropriate policies and strategies that broaden the participation of historically underserved communities in the digital society (Kvasny, 2002; Kvasny & Keil, 2002; Kvasny & Trauth, 2002). Policy solutions tend to focus on technology fixes such as delivering basic computer training courses, wiring public schools and libraries, and providing computing resources with Internet access in poorer communities (Norris, 1991). The focus on public access points is a necessary, but insufficient solution (Schement & Forbes, 2000). Technology solutions must be coupled with programs that cultivate a self-sustaining culture of ICT use within the community (Kvasny & Keil, 2002).

Second, CBOs represent what Castells (2000) calls “the last good place within a community.” Residents in urban communities turn to CBOs for leadership, guidance and support. Building the technology capacity of these grass-roots organizations can translate into positive outcomes for the community at large. However, as more resources and transactions move to online channels, the lack of ICT use negatively impacts the organization’s ability to secure resources and funding, to operate cost effectively, to generate meaningful program outcomes, and to efficiently communicate with their constituents and potential partners.

The survival of CBOs is to some extent dependent on their ability to adapt to the emerging digital society. The key question then is not whether inner city organizations should employ ICT, but how to deploy it in ways that advances the organization’s competitiveness (Porter, 1995). However, for many CBOs, securing the requisite information and technology infrastructure has proven quite challenging. A study of technology acceptance in 75 faith-based organizations, for instance, revealed that 47% did not have fax machines and 65% did not have email capability (Lee, 2003). Additionally, limited financial resources and technical expertise posed significant barriers to the adoption of technology, creating a negative impact on behavioral intention.

Realizing that CBOs play an important role in providing services that improve the life chances of residents, this study focuses on organizations within three urban contexts in Pennsylvania: the municipal government and faith-based organizations in Steelton, faith-based organizations in Harrisburg, and the Lancaster Avenue Business Association in West Philadelphia. Harrisburg is the capital city, located in the southeastern quadrant of Pennsylvania. According to the 2000 Census, the population of Harrisburg has declined from 52,376 in 1990 to 48,950 in 2000. This represents a 6.5% population decrease. Additionally, the school district is on the state’s empowerment list. Appendix A contains a comparative profile of each community.

The Borough of Steelton is situated in the southeastern quadrant of Pennsylvania, less than one mile below the southern boundary of the capital city of Harrisburg. Steelton was once a booming community that attracted residents as employment opportunities increased in the steel plant and in the interdependent railroad industry. With the demise of the railroad and steel industries, the community has been forced to revitalize its employment and economic base. Steelton is a distressed urban community, and the school district is on the state’s empowerment list. The borough’s population has grown from 5,152 in 1990 to 5,858 in 2000.

Of the three field sites, West Philadelphia is the most distressed. Our efforts in this community have concentrated on the Lancaster Avenue commercial district in the center of the Belmont neighborhood. Many of these blocks have taken on a bleak and desolate appearance with 22.1% of the housing units lying vacant. In addition, many of the occupied buildings have seriously deteriorated. Poverty is widespread in this part of West Philadelphia, and this is an underlying cause for the physical deterioration. Over the last several decades there has been a substantial loss of middle class population, widespread poverty, property deterioration and abandonment, main streets that have declined and do not present the best face of the community, deteriorating infrastructure, and too many incidents of crime against people and property that have had devastating impacts in the Belmont neighborhood.

Research Model

Urban communities such as these are faced with long-standing inequities such as widespread poverty, property deterioration and abandonment, deteriorating infrastructure, social disorganization, teenage pregnancy, illiteracy, unemployment, and crime. These trends are persistent and have affected the quality and perception of life in these communities. Community informatics researchers typically employ action research methods to develop culturally appropriate and locally relevant solutions to counter these worrisome trends. Rapoport (1970), states, “Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework” (p. 499). In the IS research community, there is a growing interest in action research as a practical way to strike a useful balance between relevance and rigor (Baskerville & Wood-Harper, 1996; 1998; Avison, Lau, Myers, & Nielson, 1999; Baskerville & Pries-Heje, 1999; Avison, Baskerville, & Myers, 2001). In what follows, we present a framework adapted from the Community Outreach Partnership Centers Program (Vidal, Nye, Walker, Manjarrez, & Romanik, 2002) and the Action, Reaction, Integration Model (Romm & Taylor, 2001) to inform the research partnerships.

Partnerships and Activities

Figure 1 depicts a community informatics approach for a community-university partnership in which each party brings its expertise to bear upon these urgent problems and assists in the development and execution of highly tangible solutions to redress the problems. Two dimensions—academic institutions’ specialized expertise and community organizations’ ability to engage with community residents as active participants in this effort—provide a basis for understanding the variety of roles that partnerships will play in the success of projects. By partnerships, we mean commitment among multiple parties to invest resources in pursuit of mutually beneficial ends. Because partnerships require investment, the parties to a partnership must contribute something of value, whether money, talent, reputation, community connections, or other assets. While universities have an abundant supply of specialized expertise, community organizations have an abundant supply of local knowledge and connections that are critical to the success of this partnership. Through these partnerships, activities will be designed, resource commitments will be defined, expectations of benefits will be clarified, and activity performance will be monitored.

The three categories of activities (action, reaction and integration) outlined in Figure 1 are adapted from community-based action research projects conducted in Rockhampton, Australia (Romm & Taylor, 2001). Action activities, such as providing public access points to the Internet for youth in urban communities, are intended to increase the demand for ICT products and services. In our research, we are assisting in writing grant proposals to obtain computers and Internet access in churches and small businesses, and assisting to develop programs for increasing ICT literacy. Since many residents do not have computers and Internet access in their homes and places of work, and since many residents are inexperienced users, our approach has been to place public access points in organizations that residents frequent. Moreover, many of the organizations that provide services to residents lack the technology acumen to augment the delivery of their services. Thus, the intent is to initially engage community interest in ICT, to build the capacity of organizations to obtain computing resources and to deliver computer-supported services, and to raise ICT literacy skills within the community. The latter will increase the vocational competencies of community participants and their potential of becoming employed in the IT workforce.

We are currently working with two community partners on initiatives to promote demand for ICT products and services. Both projects are focused on establishing the technology infrastructure to support ICT use in communities. In Harrisburg, we received a grant to outfit a computer lab in a church. The lab will be used to introduce ICT to participants in existing programs such as a food bank, senior services, women’s shelter, and after school programs. Moreover, the lab will be the centerpiece for a youth summer camp through the provision of a hybrid introductory technology course. In Steelton, we have submitted a grant with the borough government to provide a citywide network that links churches, schools, fire and police department, Boys and Girls Club, and Senior Center. This network will be used to support communication and build social capital among these community partners.

In addition to activities that increase demand for ICT, reaction activities are also being developed. Reaction activities, such as developing a Web portal for small business merchants in the Lancaster Avenue business district in West Philadelphia to stimulate economic development, are intended to increase the supply of ICT products and services to fulfill unmet demand. In West Philadelphia, the economic base to support these businesses is inadequate due to the substantial loss of middle class population and widespread poverty. The physical landscape is also not conducive for enterprise development. Many retail properties are deteriorating and abandoned. The main streets have declined and do not present the best face of the community, and incidents of crime against people and property have driven away shoppers from neighboring communities. E-commerce applications are being explored as a way to overcome these local barriers and sell goods to a broader client base using a computing infrastructure located outside of the inner city.

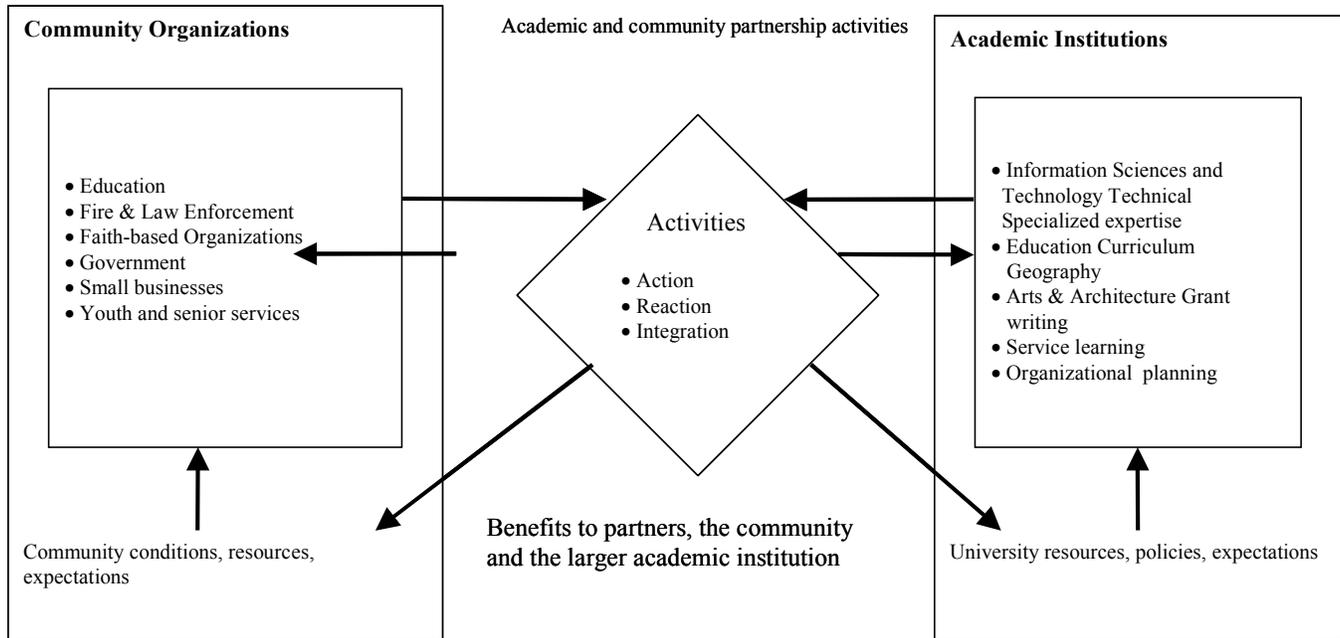


Figure 1. Framework for Analysis between Communities and Universities

Finally, integration activities are designed to bring together the demand for and supply of ICT products and services to perpetuate a self-sustained market within a community. The integration is then hypothesized to produce new demand which, in turn, produces another action-research-integration cycle. At this stage of our research, we have only begun to discuss a community portal in Steelton and a health portal that will serve Harrisburg and Steelton. Our goal is to use portals with locally relevant information as a way to generate sustained interest in and engagement with ICT.

Strength of Partnerships

Not all activities will depend on the same degree upon the strength and reciprocity of partnership relationships for their successful conduct. Some activities may be effectively implemented by weak partnerships; others can only be effectively pursued through strong partnerships among university and community entities. The value of partnerships to the activities is partially explained by the types of resources that these activities demand from universities and community organizations (see Figure 2).

The horizontal axis of Figure 2 represents the degree of specialized expertise an outreach activity requires. Generally speaking, the "high specialized expertise" end of the continuum (quadrants A and C) includes applied research activities undertaken by research faculty and students. Activities of this type include the technology training and assistance that we provide through the e-commerce application development in West Philadelphia. Activities on the right side of the continuum (quadrants B and D) require general knowledge possessed by community-based organizations. For example, we partnered with a church in Harrisburg to develop a summer camp which has a strong IT literacy component.

The vertical axis represents the level of participation typically required of community leaders and individual residents to perform a given activity. The "high resident participation" end of the continuum (quadrants A and B) contains activities that require considerable participation by community members. For example, the research in Steelton is being driven primarily by the municipal government through neighborhood meetings to devise a community technology plan. The bottom quadrants (C and D) contain activities that do not require a substantial amount of community participation for their execution. For example, next spring we are offering a service-learning course in which university students will be developing Websites for CBOs. These courses will be taught in ways that are very similar to our regular course offerings and will require relatively lower community participation.

University Participation	
High ←————→ Low	
Resident Participation ↑ High ↓ Low	A: Activities that require both specialized expertise and substantial engagement by community residents—such as the delivery of health care or legal services.
	B: Activities that involve relative general expertise and skills but require substantial engagement by community residents—such as the provision of life-skills classes or after school youth programs for community residents.
	C: Activities that require specialized expertise but little ongoing participation by community residents—such as upgrading the computer and information systems.
	D: Activities that require neither sophisticated technical skills nor substantial resident engagement—such as programs that enable students to perform community service activities for local organizations.

Figure 2. Typology of Activities from a Partnership Perspective

Methodological Considerations

Working in communities challenges some of our taken-for-granted assumptions. For instance, we are finding that some organizations are fearful of technology and see ICT as a necessary evil rather than as a strategic mechanism that may help them to advance their mission. One possible explanation for this reluctance is the fact that a large number of CBOs with whom we are partnering do not have a basic business strategy. Thus, much of our research to date have been around organizational planning and development activities such as securing resources, grant writing and filing paperwork for 501(C) (3) status.

A related challenge is the general lack of technology acumen. Most of the organizations that we have encountered have poor and, in some cases, nonexistent ICT-related resources such as hardware, software, communications infrastructure, and business and specialized expertise. Thus we realize that we must be diligent in our communications with populations that do not have a mastery of the technical vocabulary. For example, we spent approximately four months hearing organizational leaders talk about their facility being “wired.” Upon closer examination, we found that wired meant infrastructure to support electricity, as opposed to being wired for the Internet. We have found that communication is greatly increased when we talk with groups of stakeholders rather than a single leader. The stakeholder groups often talk among themselves to clarify meanings. Listening to these side conversations helps to uncover miscommunications.

Trust is another important consideration. Our initial attempts to partner with CBOs were extremely disappointing because we met much resistance. In general, community leaders were primarily interested in the bottom line – what is the value to my organization? How will ICT enable me to increase membership in my church and/or increase sales? We spent almost a year in the field before we established a level of trust in which more progressive organizations began to fully cooperate. The situation we now face is how to manage all of the opportunities that have been presented to us.

Finally, engaging in partnerships with CBOs has forced us to come to grips with the problems of communication. Currently the infrastructure that is in place to support collaboration and communication among community partners is poor. Community groups primarily rely on U.S. mail and telephone as their means of communication. U.S. mail often leads to several problems such as delays in communication, excessive costs, and one-way communication in which one party sends while the other party simply receives the information. For example, in Steelton blood drives were held on consecutive days. Telephones also tend to be problematic because many organizations lack voicemail and/or personnel to manage incoming calls. Face to face communication is also difficult because organizational leaders are extremely busy and cannot easily find a common meeting time or place. Local government officials and CBO partners have expressed a strong need and desire to implement technology solutions that may help to improve communication between organizations and their constituents.

Conclusions

In this paper, we have presented a framework for conducting research poised to improve the technology capacity of organizations. We have also discussed the methodological considerations and challenges that we have encountered while conducting this type of research. Two issues raised by our research are the challenges in coordinating ICT activities in organizations that lack technical and business acumen that underlie many IS theories, and in the importance of understanding ICT adoption and use by communities that have been woefully under-explored by the IS research community. As we witness the emergence of the digital society, issues of equitable access to and use of ICT resources come to the fore. Understanding how CBOs can best adapt to these technology-enabled changes is one way to increase the likelihood of democratic and equitable outcomes.

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Appendix

Comparative Profile of Communities			
Characteristic	Harrisburg	Steelton	West Philadelphia
Population	48,950	5,858	3671
White	31.7%	62%	1.2%
Black	54.8%	31.1%	96.9%
Hispanic	11.7%	7.5%	1.3%
Median HH Income	\$26,920	\$34,829	\$18,162
HH Size	2.32	2.53	2.75
Poverty	32.1%	15.9%	38.9%
Not in Workforce	36.4%	39.7%	55.3%