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A Grounded Theory Approach to Understanding Mu-Fi Interventions on the Digital Divide

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ABSTRACT
Grounded theory is the most rigorous method of providing preliminary research in an area where research is scarce. Using grounded theory, this paper explores the extent to which a recent government initiative failed to achieve its goal. Specifically, the study explored the role of U.S. municipal wireless broadband networks (Mu-Fi) in bridging the so-called “digital divide.” Grounded theory was useful as it allowed the researcher to present an interdisciplinary and holistic vision of Mu-Fi vis-à-vis a complex and evolving division between groups with access to ICT to those without. The paper aims to stimulate discussion about how governments may effectively remedy this social ill.

Keywords
Grounded Theory, Municipal Broadband, Digital Divide

INTRODUCTION
As we move further into the 21st century, several research communities are currently constructing definitions, analytical frameworks, and conceptual models to answer research questions raised by the digital divide (DiMaggio & Hargittai, 2002; Hoffman, D. L. & Novak, 2000; Kvasny, 2002; Norris, 2001; NTIA, 2000; Schement, J. & Forbes, 1999; U.S. Census Bureau, 2003). Some of these include, but are not limited to: What is the digital divide(s)? Is bridging the digital divide incontrovertible for furthering democracy and self-governance? How can we measure the digital divide over time? Concomitantly, there has been little in-depth analysis undertaken to ascertain if municipal wireless broadband networks, or Mu-Fi systems, are in fact efficient and sustainable endeavors in achieving digital divide goals as predicted by their proponents and public elites.

At the time of this study, there was no evidence that municipal broadband intervention directly resulted in a decrease in the digital divide (Gillett, S. E., Lehr et al., 2004). A caveat needed to be spelled out immediately. Little was known about municipal wireless networks and their purported benefits, including promoting digital inclusion (or eliminating technological exclusion).

This is where grounded theory was most appropriate—where researchers have an interesting phenomenon without explanation and from which they seek to discover theory from data. In this paper, the term grounded theory was used in a more generic sense to denote theoretical constructs derived from qualitative analysis of data.

Findings from this research study hold significance for the IS academic community and society at large. First, from the perspective of academic discourse, this study contributes to the scientific knowledge of the nature of the socio-cultural context of Information Communication Technologies (ICT) usage, which relates to living, working and learning in an information society. Second, because of the rapid expansion of ICTs and the emergence of the Information Society, it is important to study its effects on people and their relationships.
Municipal wireless broadband networks (Mu-Fi) can be defined as a government-community effort to design, develop, implement and employ wireless broadband services for a specific coverage area, for specific users and for a particular moment in time. As a public entity charged with providing high quality services for citizens, some governments feel compelled to act; providing readily available low-cost mesh networks is one way to act (Tapia et al., 2005).

Mu-Fi systems gained popularity among public officials and city residents from 2003 to 2008. Officials gave several reasons for creating a municipal wireless broadband network (Fuentes-Bautista & Inagaki, 2006; Gillett, 2006). Some cities wanted to enhance public safety and promote economic development all while raising the “value-added” of their municipalities by providing broadband internet access. Other municipalities were actively seeking to address social inequalities and bridge the digital divide in their cities. Generally, public officials argued that municipal wireless networks were essential to improve local quality-of-life and serve as a much needed ICT tool to combat social inequalities.

However, Mu-Fi failed to fulfill its promise. There were several questions and concerns that were not being sufficiently addressed in the Mu-Fi program. These questions come under three major categories: First, ICTs are subject to social shaping. Every municipality is unique, and the social milieu lends itself to different possible outcomes. A Mu-Fi in Longmont, Colorado, or San Mateo, California, will face different challenges and work differently than a Mu-Fi network in Minneapolis, Minnesota. Second, quality-of-life criteria remain undefined. Quality-of-life elements may include everything from the national ranking of the local school system to crime rates to access to public transportation (Ziegler & Britton, 1981; Oppong et al., 1988). In other words, priorities vary. Third, Mu-Fi is a relatively new concept, and the line between municipal wireless systems and universal service (i.e. public policy strategies regarding such universal requirements as telephone service or the sewer system) is blurry. Even though pro-Mu-Fi city officials may assert that broadband access has come to qualify as a universal requirement, like telephone service, and that Mu-Fi systems are essential for alleviating the digital divide, those claims require substantiation by responsible research. At the time of this study, no empirical evidence existed to support or to debunk the claim that Mu-Fi would promote universal access and, thus, bridge the digital divide.

The digital divide reflects ongoing social inequalities in the U.S., explained by both the lack of vision as well as entrenched social, economic and political systems (DiMaggio & Hargittai, 2002). These systems of social inequality not only shape diffusion rates, but they also shape the use of IT in ways that reinforce existing inequalities rather than mitigate them (Norris, 2001; Gillet et al., 2004; Kvasny, 2002; Schement & Forbes, 1999; Ortiz & Tapia, 2008). Thus broad patterns of social inequality in education, work, consumption opportunities, and democratic participation are at the heart of the digital divide and continue to broaden the gap.

This research provided some of the first in-depth analysis to determine if Mu-Fi systems were, as proponents claimed, in fact are an efficient and sustainable means of closing the digital gap. How effective are the Mu-Fi systems? Can they last over time? Will they fulfill their promise of broadband for all? These were some of the questions the study aimed to address.

By 2008, municipal leaders of more than 400 American cities thought they could answer these questions affirmatively. They were offering municipal wireless broadband access, turning the traditional top-down means of supplying telecommunication service and policy on its head. Some of these city leaders formed armed rhetorical camps, promising abundant benefits such as digital inclusion, enhanced governmental services, and local economic development. Under a halo of positivism, the proponents of Mu-Fi claimed that the beneficiaries of Mu-Fi would use their WiFi cloud to find work, improve community relations, start business ventures, and aggressively network themselves into higher income brackets. The general assumption was that, with the digital divide narrowed, government expenditures on poverty relief, for example, could be redeployed for other services, such as road construction and schools.

Not everyone, however, was so enamored with Mu-Fi systems. Municipal deployment plans provoked a flurry of criticisms from concerned constituents, including the lobbying group Incumbent Local Exchange Carriers (ILEC), several state legislators, and members of the U.S. Congress. Opponents argued that municipal broadband deployments compete unfairly against ILEC companies and undercut incentives for private infrastructure investments (Tapia & Ortiz, 2006). The debate was framed largely in polarizing terms.

While the proposed government-led high-tech initiatives had the potential of impacting or accelerating digital inclusion efforts, these cities failed to meet their objective. Therefore, this study, by way of grounded theory, is able to offer an interdisciplinary and holistic approach to assess the perceived impact of Mu-Fi on the digital divide.

THEORETICAL UNDERPINNINGS
Rationale for Analytical Induction – the Structured Form of Grounded Theory

In order to explore Mu-Fi and their claims of bridging the digital divide, this study employed an analytical induction (structured form of grounded theory) methodology of inquiry. Grounded theory describes the manner in which theory develops from data collection and analysis (Bowers, 1988). It was developed by Glaser and Strauss (1967), who identified an opportunity to move away from the traditional construct of verifying theory (Glaser & Strauss, 1967). In contrast to experimental design, grounded theory does not conform to the expectations of a pre-determined hypothesis, because theory is constructed rather than tested (Annells, 1996; Bowers, 1988; Glaser, B., 1978; Mey & Mruck, 2007; Strauss, A. & Corbin, 1998; Strauss, A., 1978). The theory is, thus, grounded in the data from which it was generated rather than being drawn from a pre-existing body of knowledge.

Initially, the researcher had assumed Actor Network Theory was key to this study but he realized the crucial feature of this research was not the theory of nets/networks, but the actor part of the term. Actor network theory is not enough to underline the multiple realities of the Mu-Fi experience. theory (Glaser, B., 1978). Grounded theory does not claim to be capable of generalization; it is descriptive, not prescriptive (Glaser & Strauss, 1967). Rather than being finite, precise and prescriptive, grounded theory is a dynamic method that has continued to develop over the past few decades (Creswell, 1998). The objective of analytical induction is a strategy that involves the scanning the data for categories and developing typologies (Creswell, 1998). Analytical induction is particular to qualitative studies and is a way of dealing with observational data using an iterative process of developing categories. While pure grounded theory and analytical induction are advocated for theory development and testing, there are few examples of this being employed. This research study is a vivid example of how this approach can be carried out.

The emic perspective of analytical induction adopted for this study explores the data using the categories and themes that emerge and develop from the words of the participants themselves. These themes are unique to this research and provide a framework for understanding the post implementation impact of Mu-Fi. Since there were no existing studies about the impact of Mu-Fi on the digital divide or related fields, this study creates emergent theories (Strauss & Corbin, 1998; Corbin & Strauss 2008)).

Rationale for Epistemology

The epistemology for this research study is qualitative, interpretive and critical. Qualitative research is grounded in the ideals of description, narrative, and experience (Merriam, 1998). When trying to understand the complex lives of people – culture, context, lived experiences, and intricacies of a specific case – qualitative methodology provides the opportunity for thorough, deep involvement. Through interviews, observation, and immersion, this study develops a rich, thick description and understanding of the subject matter (Merriam, 1998). Qualitative research helps the reader to understand participants’ stories and behaviors (Strauss, A. & Corbin, 1998).

The study is interpretative for several reasons: it attempts to understand the deeper structure of phenomena within its cultural/contextual situation; it reveals the story behind the statistics; and it lends itself to multiple degrees of open-endedness. This study also performs the critical role of critiquing the status quo by exposing structural contradictions and distortions in belief systems and social practices by calling for changes in practices.

As mentioned above, this epistemology was most appropriate for this particular study. All cities differ in their approaches to designing, implementing and using municipal wireless broadband networks for alleviating the digital gap. In order to understand thoroughly each unique city and their respective situations, deep, rich data was collected through qualitative methodological strategies. By understanding the stories of these cities, the research provides empirical data and practical implications for practitioners policy analysts, government officials, and telecom decision makers.

Rational for Theoretical Framework - Technological Enthusiasm

Several theoretical frameworks inform this research. To investigate the complex role municipal wireless systems play in alleviating the multifarious digital divide, we need multiple theories to account for complex human nature and diverse perspectives. This study adapts the term technological enthusiasm (TE) from the IS literature to connect substantive, autonomous, deterministic, optimistic theories like technological determinism, technological utopianism, and ICT for development (Bijker 1995; Castells 2001; Hughes 1989; Segal 1985). All these theories share a common bond with a movement whose advocates focus on technology as instruments of a new social order. This study does not classify or compare these theories, but rather draws on existing models of substantive, autonomous, and deterministic theories as a
foundation to propose a suitable conceptual theoretical framework for a new research problem. The research draws on the strengths and advantages of multiple theories to offer a new approach to unexplored terrain and, thus, offers a unique perspective on how city leaders engage the dynamic and complex digital divide debate.

TE refers to the tendency of public elites to idealize their technological project, suppress dissent and pursue the unalloyed good of technological progress. As a theoretical framework, TE is useful for several reasons: First, none of the individual theories identified in this theoretical framework are new. What is new to the Mu-Fi arena is the application of this combination of theories in the context of the digital divide. This framework and the study within which it will be used offers a new way of contextualizing and examining assumptions and beliefs associated with the Mu-Fi movement. Second, individually, these theories are incomplete and cannot satisfactorily explain the isolated successes of Mu-Fi networks. Collectively, they contribute conceptual clarity for interpreting Mu-Fi findings. Third, TE allows us to determine a particular pattern of policymaking and to discover why government-led broadband initiatives began to emerge in the U.S., and why they continue to proliferate. Lastly, this new theoretical framework can explain both simple and complex behaviors of public leaders. Through a qualitative methods approach, the study seeks to make known tacit and otherwise unavailable constructs that underpin the success (or failure) of Mu-Fi networks in tackling the digital divide. Specifically, TE helps us understand the relationship between Mu-Fi and the digital divide. Grounded theory, on the other hand, is the vehicle used for determining impact as it can guide the bottom-up work such as this one in understanding the effectiveness of Mu-Fi on

APPLICATION OF GROUNDED THEORY TO THE MU-FI SPACE

In light of recent efforts to measure the effects of Mu-Fi in society, the following study aimed to determine if Mu-Fi had a perceived impact on alleviating the digital gap. The study relies on a multiple case study dataset of five U.S. cities\(^1\); using qualitative data to support or disprove the idea that Mu-Fis are bridging the digital divide. The case studies proved to be interesting, rich, and diverse accounts of attempts in five cities to design, deploy, and use Mu-Fi broadband programs. This study also relied on a large quantity of primary data. The five cities studied met a selection criteria, and represented a typology of different community strategies and successes when dealing with Mu-Fi networks. The cities that met these criteria were: Tempe, Arizona, Portland, Oregon, Federal Way, Washington, Corpus Christi, Texas and Madison, Wisconsin.

Interviews afforded a way of understanding the depth and breadth of these community broadband deployments at the individual level of analysis. Interviews were structured and semiformal around a broad interview guide. The interview guide contained several categories – basic access, expectations, general technical knowledge, usage behaviors, and general perceptions of municipal systems. The sample consisted of 49 interviews. The interview subjects ranged from experts in the field to public officials to end users. Interviews were digitally recorded and transcribed. The aim was to enable the researcher to transfer the meaning from the recorder to paper without missing significant points made by the participants (Creswell, 1998). The key recurring themes extracted via open coding of the transcripts are listed below:

THEME 1: Unanticipated social, political, and technological complexity.

This theme exposes problems including the unforeseen social, political, and technological hurdles faced by cities. Public officials were unaware of the complexities of design, implementation and use; many viewed their Mu-Fi networks as helping to meet the ultimate goal of creating a brighter future for all citizens. Regardless, the complexities varied from city to city.

In almost all cases, the actual process was more involved and complex than imagined by project managers at the outset. Technological challenges (i.e., network coverage dead zones), geographical barriers (i.e., indoor signal penetration), and numerous ISP-related issues all conspired to derail the project in each city. The main variation was the degree of complexity of each individual obstacle. However, the citizenry was not nearly as enthusiastic as the politicians. Although participants’ expressed how cities viewed these networks as powerful agents of change, many interviewed for the study expressed dissatisfaction with the Mu-Fi network. It is particularly interesting to see how community leaders understood the potential benefits of wireless services in their city versus those perceived by the local government. In sharp contrast to community leaders’ opinions, most public leaders and telecomm operators viewed their complex network (a) positively, (b) with strong expectations of creating a very bright future for their citizens, and (c) with open-ended outcomes.

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\(^1\) This study is part of a larger, multi-year study using qualitative interviews and descriptive quantitative data to understand U.S. cities’ social, economic, and political environments around the digital divide.
THEME 2: Variable mismatch between city’s professed intentions and the populations real needs

This theme explored a disconnect between what community residents sought versus what cities wanted to provide. Portland measured success by the number of users connecting to the broadband service; yet most users found that the municipal government was less than eager to provide more than Wi-Fi nodes throughout their city.

These interviews revealed the tendencies and tensions about the digital divide debate. Corpus Christi claimed that governmental service efficiency via automated meter reading technologies was the impetus for the creation of their network. For Portland, the first goal of the project was to expand low-cost internet access to city residents and businesses. The city operationalized and measured this goal in consultation with Metro Fi (their broadband provider) based on monthly number of active users and target levels. The city wanted to see numbers equate to roughly 2 percent (or 11,000) of Portland’s residents by the end of 2007 and up to 4 percent (circa 22,500) by the end of 2008. One can make the logical argument that these numbers prove that the city is bridging the digital divide. Yet despite the city’s achieving this goal, several participants outside of city hall did not agree with the city’s assessment. Interviewees expressed significant doubts that Portland’s network is narrowing the digital divide even from an access standpoint given the myriad issues mentioned in Theme 1.

THEME 3: Inability to anticipate future costs and maintenance

This theme explored the inability of public elites to anticipate future costs, needs, and maintenance of the project. There is a very clear issue of resource allocation as a municipality-community contested space. As the Portland case revealed, the city altered its municipal project after redefining its digital divide strategy. Madison built their Mu-Fi before abandoning the digital divide focus. Federal Way built their project and later abandoned it. Both Corpus Christi and Tempe changed an initially narrow focus to public Wi-Fi and sought funds to support their new focus.

Mu-Fi networks alone are not successful at bridging the digital divide, because they only address the issue of access. As pointed out earlier, digital inclusion programs need dedicated funding to keep them robust and to ensure their longevity. Another key component is to ensure that underserved communities are able to make meaningful use of new technological opportunities. Corpus Christi seemed to have attempted to address issues beyond access with regards to the digital divide. Many Portland residents expressed doubts that the city would switch from the current wireless platform to a higher standard. Many city officials were certain that they might not have the capital necessary to build up the network or expand its capacity. This opinion had uncertain origins. They could have acquired it through trial and error, critical examination, or from expert advice. Despite the unclear origins all subjects, at the time of the interviews, seemed confident they knew how to make use of resources. They stated that officials were confident that the network would help them eliminate a social ill, but they uniformly failed to share in that optimism.

THEME 4: Merely momentum players using digital divide to justify their projects

This theme suggests that cities merely begin the process of redressing the digital divide. However, it also reveals that core competencies are critical to sustain and maintain Mu-Fis. The data suggest that people, a Mu-Fi’s greatest asset, were neglected: its citizens. Subjects felt their feedback went unheeded or ignored. Public elites’ Mu-Fi knowledge remains defined, contextualized & framed by government.

For most of the cities examined, the primary users of the network seem to be university students. And, although cities are eager to expand coverage to include other segments of the population, additional development has been stalled. An important question is whether cities are implementing Mu-Fi networks simply for the sake of having one, or if they really have their citizens’ interests at heart; namely, at least in part, giving the underprivileged the tools they need for internet access. Regardless, it is clear that there are several social ills that Mu-Fi has been posited as a cure for. Mu-Fi has been idolized as a force for positive change in all capacities. Most city officials interviewed said their network would eliminate scarcity, reduce unemployment, reduce poverty, and improve the general quality of life. However, when probed further, they were uncertain as to how the project would achieve these lofty goals.

THEME 5: Multiple relationships with conflict, coop. and interdependence

This theme demonstrated how municipalities’ realities can differ vastly from what Mu-Fi systems were set out to do. Most public officials interviewed felt that partnerships were a necessary component in the successful implementation of their
networks. This study posits that while some participants do recognize some design-reality gaps, they need to challenge their old assumptions and accept that some Mu-Fi systems do not ascribe to what they were set out to do. Interestingly, the interviews revealed that partnerships are key and a necessary step in attempting to tackle to the multifarious digital divide, but an insufficient component if used single-handedly.

The expectation that technologies like Mu-Fis will improve quality of life measures and promote digital inclusion efforts have propelled public elites to form partnerships “loosely” and “poorly crafted” with the hope of leapfrogging into the new information economy. It can be argued that this is done out of fear of being left behind or outperformed by other cities. This phenomenon has been promulgated by the perceived benefits that Wi-Fi seems to afford citizenry, at least in principle. It may well be an illusion to believe that cities can catch up to other cities that are subject to different dynamity and complexity (different rates of technological adoption and resource allocation, for instance).

THEME 6: Lack of well-targeted, Mu-Fi strategies and policy mixes

This theme revealed the importance of reinforcing the diversity and richness of approaches in technology diffusion, adoption, and training in relation to solving the so-called digital divide. However, most participants revealed that the nature of cities’ strategies in addressing the digital divide is less involved than one might imagine. This is especially true for Federal Way, whose leaders had a strong desire for the network to succeed, yet city leaders mostly interested in addressing the “leakage problem” (diminishing the number of residents who left the city for recreational purposes by offering wireless in the local mall).

For Madison, the story is somewhat similar, in that MCB defined “bridging the divide” in terms of low-cost access to their downtown area. Yet Madison’s policymakers seem more ambivalent than Federal Way’s because the city is a nominal partner and refuses to engage the digital divide directly. From a legislative perspective, (as corroborated by the interviews), it is likely that Madison’s refusal to engage the digital divide and offer multiple solutions was prompted by the state’s telecom restrictions and/or the business model adopted. In contrast, Portland who also refused to face the multifarious digital divide head-on, does not have any legislative state barriers and has, at the time of the interview, abandoned its plans to address it via its Mu-Fi network. The analysis revealed that these cities started to engage the digital divide, but did not critically examine the multiple ways it could tackle this social ill, despite a lack of legislative support in some cases, what was interpreted as cities’ passive-aggressive attempt to be seen as self-generating and autonomous.

THEORETICAL IMPLICATIONS

The present study has several theoretical implications. First, the structural approach of the digital divide is not enough to explain and solve the social ills of municipal residents. The present study examined the perceived impact of municipal wireless networks on the digital divide. Even though the influence of the Wi-Fi network on the overall communities is generally weak, this only partially explains the limited success of these initiatives. Certainly, each city will define success differently. Particularly, some public elites will point to the success of their project in their downtown core. To Mu-Fi decision makers, this is clearly a sign that the project is promoting digital inclusion. Thus, the emergent themes suggest that differing definitions of the digital divide may be explained by understanding how city leaders construct differently the operational and symbolic roles of wireless broadband.

Second, the study provides theoretical implications for studies of the Internet and government-led ICT deployments. The relationships of Internet use to government interventions in hopes of alleviating the digital divide can be examined with diverse approaches, as many as definitions of the digital divide, and as many as elements of government market interventions. The contribution of TE to the Mu-Fi literature focused on the association of the digital divide with the delivery of government-led wireless broadband initiatives, and found that Mu-Fi’s over promise, over simplify and under deliver. Given that the digital divide is a multi-dimensional social phenomenon, the themes suggest that current Mu-Fi design does not have the potential of ultimately alleviating the gap.

Third, this study offers a more nuanced view regarding the existence of the different types of success attributed to Mu-Fi. In light of the themes, it appears that we only get part of the story from the commonly held assumption that success is true for cities that simply deliver and build wireless hotspots throughout their municipal jurisdictions. Sometimes, it is equally (if not more) important to involve local community stakeholders in the decision-making process from the outset. Thus, researchers
studying the implications of government-led broadband systems on digital inclusion should be particularly careful when they only invoke the technological challenges as part of their arguments.

THEORETICAL CONTRIBUTIONS

Both TE and emergent themes contribute to our understanding of the interplay between government-led broadband interventions and the complexity of the digital divide. This study contributes to our understanding of the research question of how organizations like city governments have designed, implemented, and adopted Mu-Fi networks.

The findings of the case studies suggest that complexity, responsiveness to the community, reaction to resource shortages, patterns of relationship building, diversity/richness of approaches, stakeholders’ knowledge base, effective integration of policy, and the perceptions of the project enhancing community identity and participation were relevant themes that emerged from the data and contribute to a better understanding of the digital divide. Hence, improving the likelihood that a successful Mu-Fi initiative will be successfully designed, implemented and adopted increases when these themes are carefully considered, leading to a better understanding of the digital divide.

The application of grounded theory and the adoption of technological enthusiasm as a framework help to analyze the findings of the case studies. The following “nuggets of knowledge” were extracted from these case studies:

- Grounded theory helps us understand the context of cities’ values and their differing reality “on the ground.” There is a distinctive view in government that technology determines social change. The difficulty with this scenario is that these claims are difficult to substantiate empirically.
- Technological enthusiasm posits that policy initiatives start from the assumption that access to the technology is necessarily desirable and hence access per se is the policy change to be met in order to achieve the socio-economic potential of ICTs like wireless broadband. When employing Mu-Fi, it is clear to have a crystal strategy at the outset. Grounded theory helps us achieve this goal.
- Although other approaches may be plausible, a grounded theory approach revealed technologies like Wi-Fi have been idolized and framed as a force that can fix the social fabric of life by eliminating scarcity, like unemployment, poverty, poor quality of life, amongst others
- The theoretical framework employed reveals that a poorly informed Mu-Fi initiative will give rise to a policy rationale suffering from short-sightedness. The grounded theory approach in this study confirmed this assumption.

CONCLUDING REMARKS

The application of grounded theory was useful for this initial investigative study about the perceived impact of municipal wireless broadband on the digital divide. It allowed for the inclusion of many different aspects or views of the digital divide and made clear the many issues facing some Mu-Fi communities across the county. Further research that takes a focused look at individual municipalities could further enhance the findings of this study.

One of the goals of grounded theory is to build understanding of basic social processes, as well as the pervasive, patterned behaviors that occur over time. Citywide wireless broadband networks are not a natural process, although they have been touted as such by mass media and popular press. By accepting a broadband network as a natural process, we accept and legitimize the technological artifact. Such belief is mythic and highly deterministic (Bijker 1995; Castells 2001; Hughes 1989; Segal 1985); yet it has been intrinsically woven into the fabric of Mu-Fi culture. This study finds that Mu-Fi over-promises and under-delivers.

Whether or not these government-run Wi-Fi portals will serve as a medium that will push us further into the new digital global economy remains a murky issue. In some ways, these Mu-Fi systems fit well in that they do provide basic access in some areas to the Internet (university communities, downtown corridors, etc.). Conversely, it does not serve as a medium that allows universal service for all in its strictest form, especially for at-risk communities. Just like other telecommunication services, internet access cannot be made available only to a certain geographical area of a city if its decision makers truly intend to address the digital divide head-on. It requires that the wireless cloud be made available everywhere and it requires that end-users (experienced or novice) have adequate training, resources, tools, services, and so on, to access, successfully navigate and make use of the resources on the network.
Unfortunately, for Mu-Fi proponents who viewed these systems as a gateway leading to a more equitable society from 2003 to 2008, the stark reality in 2009 is that more and more cities are not taking the high road of successfully tackling the digital divide. Beyond a splash page and loosely formed partnerships, there were no substantial elements that allowed for a digital reduction strategy for these five cities. Today, a fading out effect is noticed as more and more free-based Mu-Fi models are going belly-up, partly due to the dismemberment of public-private partnerships between the cities and key wireless service providers namely, MetroFi and EarthLink. Although some cities tried to adjust to their market conditions and made adjustments and tweaked their Mu-Fi systems, the vast majority have abandoned hope.

The grounded theory approach employed in this study emphasized the generation of theories through the inductive examination of qualitative information. In this study it helps researchers and practitioners develop the right set of questions for future studies. Although the findings are exploratory in nature, the results can suggest hypotheses for use in subsequent analyses of other government-led telecom interventions at the community level.

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