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ITB12837

This paper appears in the book, *Emerging Trends and Challenges in Information Technology Management, Volume 1 and Volume 2* edited by Mehdi Khosrow-Pour © 2006, Idea Group Inc.

Making Good on Municipal Promises: Can Municipal Wireless Broadband Networks Reduce Information Inequality?

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INTRODUCTION

Broadband access is commonly believed to be essential for all, yet is not available to all. The skills necessary to use information and communications technologies are not universally prevalent, yet seen as becoming more centrally necessary to navigate everyday tasks. In order to fill the gap, municipalities are stepping in to offer wireless broadband access, turning the top-down traditional means of supplying telecommunication service and policy on its head. These municipal actions have provoked a flurry of responses from concerned constituents, including fixed line operators, and state legislators and the U.S. Congress. Currently legislation pending exists at both state and federal levels to address this issue.

The basic premises upon which this research rests are the following**;**

(1) Access to and skilled use of the internet are linked to social, political and economic success in the United States.
(2) Access to and skilled use of the internet are not evenly distributed across all populations in the United States. A digital divide exists (for various values of digital divide),
(3) Various levels of government have sought to narrow the gap via policy and programs at all governmental levels.
(4) A lack of understanding of the digital divide, and the effects of the government actions on this divide demand additional study,
(5) Recent actions in over 100 American cities to become internet service providers of wireless internet access to their citizens provide a unique opportunity to study the digital divide and observe the effects of government actions,
(6) The language that many of these cities are using to explain their entrance into the ISP arena is to address both cost and access issues for disenfranchised citizens, attempting to narrow the digital divide.

BACKGROUND

Information technology has become central to our knowledge economy and thus wedded to wealth, power, and prestige. There is a strong common belief that people who have access to and the skills to use the Internet are (1) more successful economically, with respect to education, jobs, earnings, (2) socially participate more in terms of political and civic engagement, (3) and receive more government services and other public goods than those who do not. (Katz & Rice, 2002; Kennard, 2001; Oden, 2004; Oden & Strover, 2002; Tufekcioglu, 2003) "Immediate and asynchronous connectivity together with the diversity of information accessible via the computer can, furthermore, increase social inclusion and social position. (Oden, 2004:5) Increased access to the internet also provides greater access to education, income and other resources (Benton Foundation, 1998; Bucy, 2000; Hoffman & Thomas, 1998, 1999; R. Strover, 1999).

"The Internet boosts immeasurably our collective capacity to archive information, search through large quantities of it quickly, and retrieve it rapidly. It is said that the Internet will expand access to education, good jobs, and better health; and that it will create new deliberative spaces for political discussion and provide citizens with direct access to government. (DiMaggio, Celeste, & Shafer, 2004)

Computerization and use of the Internet are also associated with higher wages (Freeman, 2002; Goss & Phillips, 2002). Internet users tend to consume more information offline than nonusers, and to be more active in other ways as well, (Robinson, Kestnbaum, Neustadtl, & Alvarez, 2000). Shah et al. found that informational use of the Internet had a significant positive impact on community participation (Shah, McLeod, & Yoon, 2001).

Information Technology skills and access are public goods because like education and libraries they are capable of providing positive externalities associated with economic growth and democratic governance. (Mossberger, Tolbert, & Stansbury, 2003:5) Critical technological skills raise the level of human capital in the economy particularly in the context of a knowledge based economy. Computer and information technologies are tools for participation in the economy and the political arena. This provides a strong case for government intervention to provide access to all citizens, not just those who are already advantaged.

While the U.S. has made significant gains in broadband adoption it still lags far behind other countries (Bleha, 2005). For example, among industrialized nations, the U.S. is ranked 13th in per-capita broadband penetration, trailing such countries as South Korea, Canada, Japan, and Sweden. The U.S. also trails these countries in terms of the average speeds available over their broadband connections (Little, 2005). Recent commentary has characterized U.S. broadband among the "slowest, most expensive, and least reliable in the developed world, and the United States has fallen even further behind in mobile-phone-based Internet access."(Bleha, 2005) These dismal statistics have not gone

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unnoticed. President Bush recently announced that he wants to make universal, affordable broadband access available by the year 2007 (Bleha, 2005).

The federal government of the United States has become aware of this great need and has begun to act upon it. During the Clinton/Gore administration, the presidency championed the Internet and used the power of the federal government to encourage its growth. The Internet's rapid diffusion in the U.S. during the late 1990s was influenced by a wide range of federal policies: the privatization of the Internet early in the decade; the decision to exempt online sales from federal tax; Commerce Department grants for projects that brought new communication technologies to low-income communities; and the federal "E-rate" policy of subsidizing investments in Internet technology by public schools and libraries (DiMaggio et al., 2004). Such efforts follow a long tradition of 'universal service' programs that attempt to provide low cost telecommunication services both to low income persons and those living areas where it is costly to provide such services (i.e. rural areas)(Stone, Maitland, & Tapia, 2005). These efforts follow a long tradition of the federal government to address issues such as universal access to electric power, access to transportation, access to telephones and other services. However, despite efforts to provide low cost access to the all segments of the U. S. population, a digital divide exists.

These policies concerned with universal access to telecommunication services, including internet access have not been successful in combating the digital divide. The costs of these services is only partially funded by the federal program and relies on state-level universal service programs to cover part of the cost and hence is administered by the Federal-State Universal Service Joint Board (Preiger, 1998). Additional efforts at the state levels include programs to improve the benefits of internet access (see S. Strover, Chapman, & Waters, 2004) and tax incentives for fixed line operators to deploy broadband 'last mile' networks. While together these efforts provide billions of dollars in subsidies each year, they have not been sufficient to guarantee ubiquitous low-cost broadband access. One likely reason for this is that these programs are targeted at incumbent local exchange carriers (ILECs) rather than at potential users of the technology. If, for example, a high cost area does not present an attractive investment to the ILEC, the carrier may be less likely to apply for the subsidy (Stone, Maitland, Tapia, forthcoming). The slower adoption of broadband service in the U.S. is likely due in part to high prices (Cooper, 2004) Prices for broadband access via wired media (DSL or cable) have steadily risen to hover around the $60.00 per month mark, making broadband connectivity too expensive for many lower income households.

Thus, it is in this context, where broadband internet access is becoming essential and yet Americans face relatively high prices for that access as compared to other industrialized nations, that municipal governments are attempting to provide this service.

THE DIGITAL DIVIDE THEORIZED

The digital divide refers to the fact that there are persistent gaps in access to the internet based on race, ethnicity, education and income. Depending on the source of data, White Americans are 14 to 22.6 percent more likely than African Americans to have access to the Internet and 6 to 22.5 percent more likely than Latinos. Americans with a college degree are 21 to 34.1 percent more likely to have access. Americans that earn more than $30,000 are more likely to have access than those who earn less. (Mossberger et al., 2003; Pew Internet and American Life Project, 2000; U.S. Department of Commerce, 2000).

The digital divide reflects ongoing social inequalities in the US, explained by both the lack of vision as well as entrenched social, economic and political systems (Bagasao, Macias, Jones, & Pachon, 1999). 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 (DiMaggio, 2001; Kling & Lamb, 2000; Kvasny, 2002). 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. Moreover, while more individuals are gaining access to the internet daily, the gap between the haves and have-nots is widening in terms of use, technical competence and information literacy. It is unclear whether this digital divide is caused by economic issues (e.g., cost of basic services), education, or social issues (e.g., perception of the use of the internet). If mere access to information services does not affect the digital divide (or even exacerbates the divide), then new understanding is required to assist policy development and cyber infrastructure implementation and dissemination. Without such an understanding, tax dollars can be wasted and well-intentioned investments in the national cyber infrastructure could actually exacerbate the digital divide.

The discussion as to the nature of the digital divide has two principal voices; those that have conceived it as a technological penetration, or simple access issue, and those that have seen access to information and communication technologies as only the tip of the iceberg, meaning that the divide is more than digital, it is cultural, educational, and socio-economical.

This first group viewed the digital divide through the lens of a decades-old policy commitment to the principle of universal telephone service. The core belief among this group is that since the market drives the rapid proliferation of new technologies, there must be inherent value in those new technologies, which will eventually bring its value and economic opportunity to all social classes (Compaine, 2000; Kolko, 2001; Thierer, 2000).The end product of this point of view is that access is becoming a non issue as information and communication technologies saturate the entire market and costs drop. Those who do not use information and communication technologies choose not to use them.

The contrasting point of view finds that in addition to persisting gaps in access to information and communication technologies, gaps in skills and usage may be a larger social problem. (DiMaggio & Hargittai, 2002; Gordo, 2000; Lazarus & Mora, 2000; Oden & Strover, 2002; Servon, 2002; Van Dijk, 2001; Warschauer, 2003). These scholars have stressed the cultural, educational, political and socio-economic aspects of the digital divide and believe that while direct access to information technology and the internet is being addressed, many other gaps widen. From this point of view government and industry has focused narrowly on addressing the access issue by providing devices to schools and communities. Since these policy makers have not defined the digital divide in terms of skills and competence, they have not invested in training, teaching and technical assistance that would better address the issues. The access divide is not enough to truly understand the problem. Key issues in this are technical competence and information literacy.

MUNICIPAL BROADBAND NETWORKS

Recently over 100 cities in the United States have announced plans to deploy wireless broadband networks. As a public entity charged with providing high quality services for citizens, some municipalities feel compelled to act (Stone et al., 2005). These new wireless technologies, namely Wi-Fi (wireless fidelity or 802.11a/b/g) and WiMAX (802.16), enable broadband internet access without requiring a spectrum license from the FCC. WiMAX is a wireless standard designed to extend wireless internet access across greater distances, as well as to provide last mile connectivity to an ISP or other carrier. These technologies enable networks to have a wireless last mile solution and will be especially useful in bringing broadband access to low density areas. Similar to wired access such as DSL or cable, Wi-Fi can provide connection speeds of up to 54 megabytes per second.

Local municipalities have become involved in the development and deployment of internet services within their boundaries principally as a cost saving effort. Wireless broadband is substantially less expensive to deploy than other broadband solutions. Wireless technology's ability to use ubiquitous airwaves and unlicensed spectrum generates tremendous cost savings compared to wired deployments. Since there is no need to install wired infrastructure, wireless deployments can deployed more quickly and less expensively in dense, developed, urban areas.

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In addition to its low cost, wireless broadband solutions also offer portability and are evolving to mobility. This ability is critical for implementing new public safety applications and supporting mobile government employees (public works, inspections, social workers). Other stated benefits of municipality involvement in the development and deployment of Wi-Fi networks are to better promote the growth of local economies, to improve the delivery of municipal services, to improve inter- and intra governmental communications, to shepherd quality of life issues. (Gillet, Lehr, & Osorio, 2004) In some cases the main reason for deploying a wireless network is to close the digital divide. The language that many of these cities are using to explain their entrance into the ISP arena is to address both cost and access issues for disenfranchised citizens, attempting to narrow the digital divide (Stone et al., 2005).

As municipal wireless deployments have become more high profile in the last twelve months, private sector providers have expressed a number of concerns. Private providers understandably express concern that cities providing wireless broadband service have an unlimited base from which to raise capital, act as a regulator for local rights of way and tower permitting, own public infrastructure necessary for network deployments including street lights, and are tax-exempt organizations. Several reasons have been discussed for dissuading municipalities from developing and deploying broadband networks. The key arguments center around cost, competition and a failure to stimulate economic growth and social equity as expected. It has been argued that these broadband networks may cost more than the cities anticipate, resulting in money and attention being diverted away from other public interests (Thomas, 2004). Another argument that has been made against the development of municipal broadband networks is the impact it might have on competition and the telecommunications market (Thomas, 2004). Following this line, the city would have unfair regulatory and economic advantages. In addition there is currently no evidence that economic development and a lessening of the digital divide will directly result from municipal broadband deployment. (Thomas, 2004)

While opportunities for partnerships between private providers and local governments exist, many companies have sought legislative relief at the state level to regulate or restrict a municipality's ability to provide wireless broadband services to the public. In the last twelve months, fifteen states have responded by considering such legislation. (Baller Herbst Law Group, 2005)

Recently policy makers at the state and federal level have proposed legislation to prevent local municipalities from entering the wireless internet provider sphere. The state legislation proposed, pending or passed prohibits municipalities from providing telecommunication services directly or indirectly. In some cases state legislatures have prevented municipalities from expanding existing Wi-Fi networks. In other cases, state legislatures have not out rightly prohibited the development and deployment of municipal Wi-Fi networks, they have created nearly insurmountable organizational and bureaucratic barriers so that these networks have effectively been outlawed. The central argument on the part of the state legislatures is that the public funding and support of municipal Wi-Fi networks will unfairly impact competition in municipal markets between traditional private telecommunications providers and new ventures funded in part with public tax funds.

As states have considered this restrictive legislation, the U.S. Congress has also started to take interest. Congressional leaders have agreed for some time that the Telecommunications Act of 1996 needs to be rewritten to reflect the many developments in telecommunications over the last decade. In preparation for this legislative overhaul, three bills dealing with municipal broadband have been introduced at the federal level. In some ways, the three bills mirror the spectrum of options that are reflected in state legislation. The first bill was introduced by Representative Jeff Sessions (R-TX), and prohibits state and local governments from offering a broadband service in any geographic area in which a private provider is offering a "substantially similar service." This legislation is viewed as the most prohibitive of the three introduced bills. On the Senate side, two competing bills have been offered for consideration. The McCain-Lautenberg bill grants municipalities the right to deploy wireless broadband networks for public access while Senator Ensign's bill (also cosponsored by Senator McCain) requires cities to inform private providers of plans to build a municipal broadband network, allow bids from private sector companies to deploy, own, and operate the infrastructure, and give preference to non-governmental organizations in the required bid process.

The impact of this potential legislation on municipal wireless broadband initiatives is high. Congressman Sessions' bill could prohibit all future municipal deployments unless the network is already operation when the bill becomes law. As a result, many cities have accelerated the timetable for their initiative to insure that their network is grandfathered. While streamlining innovative initiatives can provide benefit to communities, many cities may choose less than optimal business models, financial assumptions, and technology solutions in order to beat the legislative deadline. This acceleration, then, could have the opposite effect that lawmakers intend – instead of urging municipal leaders to carefully consider and plan their broadband initiative, they are urged to rush through to make sure their community's broadband needs are met.

The intent of the legislation proposed is to ensure cooperation and communication between the public and private sector when considering wireless broadband networks for public access. However, while legislators have been grappling with ways to restrict municipalities from owning and operating wireless broadband networks, city leaders have been creative in developing business models that support their community's motivation for deploying the network. Wireless technologies create possibilities for ubiquitous, low cost internet access. This possibility has consequently raised questions of *who* will fund, own, design, deploy and manage these networks and under what terms and conditions. The debates over these questions have resulted in legislation that aims to achieve three objectives: measuring local resident support, developing a sound financial plan and maintaining a level playing field with private telecommunications carriers. While these goals have merits, the policies by which they will be achieved in many cases will lead to negative consequences.

CONCLUSION

This chilling effect created by the legislative tools has several dimensions. While some municipalities may speed up network deployment to 'beat' the deadline of the enactment of restrictions, others may either roll back their plans or the project may be abandoned altogether. In these latter cases, the result is the diminished potential of wireless networks. Some local governments may scale back efforts to provide services to citizens, restricting broadband service to government employees. While these local governments may continue to enjoy the benefits wireless networks as consumers of broadband services (policing, code enforcement, etc.), private citizens and small businesses outside of the government domain could be excluded. The broader implications of this are missed opportunities for economic development and the possibility of a deepening digital divide. However, even if municipal broadband networks are not deployed to the public, there may yet be positive outcomes. With broadband serving as a disruptive technology and municipalities playing the role of entrepreneur, the actions of these entrepreneurs may spur private sector innovation, or at least wider broadband deployment.

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