Rural Businesses and the Internet:
The Integration Continues

Jack M. Geller, Ph.D.

July 2009
About The EDA Center

The EDA Center at the University of Minnesota, Crookston is one of more than 40 university centers nationwide, supported by the Economic Development Administration, U.S. Department of Commerce. The EDA Center conducts applied research, provides direct technical assistance and delivers educational programs to economic development agencies that support the economy of economically-distressed communities throughout Minnesota.

Our Mission:
Our mission is to engage university faculty, staff and students with local, county, tribal and regional economic development agencies in support of our Minnesota economy. Our focus is to utilize the capacity of the University of Minnesota, Crookston in partnership with the broader U of M system and economic development agencies to support job creation, capital investment, business recruitment and job retention.

To learn more about The EDA Center go to: www.umcedacenter.org
Acknowledgements

The EDA Center at the University of Minnesota, Crookston would like to acknowledge Minnesota’s Regional Development Commissions, whom without, this study could not have been conducted. When first approached about participating in a collaborative data collection effort for this study, these RDCs enthusiastically jumped in with a high degree of skill and competence. What we discovered together was that conducting a statewide research project in a decentralized and collaboration fashion is both efficient and cost-effective.

We would specifically like to express our gratitude to following organizations:

- Northwest Regional Development Commission – Warren, MN
- Headwaters Regional Development Commission – Bemidji, MN
- West Central Initiative Foundation – Fergus Falls, MN
- Region Five Development Commission – Staples, MN
- Upper Minnesota Valley Regional Development Commission – Appleton, MN
- Mid-Minnesota Regional Development Commission – Willmar, MN
- East Central Regional Development Commission - Mora, MN
- Southwest Regional Development Commission – Slayton, MN
- Region Nine Development Commission – Mankato, MN

For more information about Minnesota’s Regional Development Commissions go to: www.mrdo.org

We also want to acknowledge the work of Michael Schliep, who greatly assisted in the data collection and entry process; and Patti Tiedemann, for her work in graphic design.
Executive Summary

The purpose of this study was to assess both the adoption and utilization of Internet technologies among businesses throughout rural Minnesota. To do that we surveyed 689 rural businesses across all industry sectors, as well as across 9 rural Minnesota regions. Given the sample size, we have estimated the confidence interval, or statistical margin of error to be ± 3.7 percent.

The results of this study provide an interesting update and story of how businesses throughout rural Minnesota continue to integrate Internet technologies into their operations. Highlights of the study include:

- Businesses throughout rural Minnesota continue to be characterized as small businesses, with 69 percent having fewer than 10 employees; 65 percent having a primary market radius of less than 100 miles; and 65 percent reporting gross sales of under $1 million.

- 89.7 percent of rural businesses are now operating online; a significant increase from the 65.5 percent reported in an earlier Minnesota study conducted in 2004.

- Unlike the 2004 study which reported that 38.6 percent of rural businesses connected to the Internet through a dial-up connection, in 2009 that percentage dropped to 4.3%. Today it is clear that throughout rural Minnesota, businesses large and small, with few exceptions, have adopted broadband as their primary method of connectivity.

- Rural businesses are active users of the Internet and continue to integrate it into their business operations. More than half of all businesses in the study report utilizing their broadband connection for everything from selling goods and services online (56.3%) to interacting with government agencies (69.8%). Further, business owners report that securing adequate bandwidth is having a significant impact on everything from their overall cost of doing business (49.9%) to impacting increased business sales (49.3%).

- The majority of rural businesses report satisfaction with their current connection speeds as well as the price they are currently paying; with more than 70 percent reporting satisfaction in both areas.

- While 85 percent of rural businesses currently report that their connection speeds are currently meeting their needs, only 37 percent have confidence that their current connection speeds will adequately meet their needs 2 years from now. Hopefully, such information provides an incentive for communities, economic developers and broadband providers to collaboratively ensure that businesses will be able to access the bandwidth they need.
I.  Introduction

Efforts to advance broadband deployment, utilization and policy have become much more active in Minnesota over the past year. In 2008 the State Legislature commissioned Connected Nation to engage in a statewide mapping project, designed to create maps that document the Internet connections and speeds all across the state. Also in 2008 the Legislature established a 26-member Broadband Task Force, charged with making recommendations to the Governor and Legislature in the development of a statewide broadband plan. And now as part of the Obama Administration’s stimulus package, more than $7 billion has been appropriated toward helping communities across the country jump on the digital bandwagon.

The apparent reason for all of this attention to broadband deployment and utilization is the belief that as our economy continues to transform from one that produces goods to one that delivers services, that access to and utilization of a wide variety of Internet and digital technologies will create new economic opportunity for rural places. For example in a May 2009 report, titled “Bringing Broadband to Rural America,” FCC Commissioner and Acting Chairman Michael Copps cites a study that concludes that communities that have access to broadband services grew disproportionately in employment, the number of information technology-oriented businesses, and the number of businesses overall. Further he suggests that just as rural electrification created a new group of home appliance for consumers, so will a broadband-connected rural America want Internet Protocol (IP) - enabled phones, smart meters, telehealth, distance learning, video relay services, online music, streaming movies, interactive gaming, and a host of other broadband-related products and services. “Simply put, broadband buildout to rural Americans promotes and encourages sustained economic development, to the benefit of us all (Copps, 2009 p.8).” 

But the reality is that there have been very few studies that have attempted to examine the adoption, diffusion, and utilization of the Internet among Minnesota businesses; this is especially true for businesses throughout rural Minnesota. In 2005 the Center for Rural Policy and Development published the results of a 2004 study examining the adoption and utilization of Internet technologies among rural businesses in Minnesota. And while this study was a first of its kind, its sample size was modest, surveying 275 businesses and yielded a statistical margin of error of ± 6 percent. More importantly, we have been unable to find any more recent Minnesota data in this regard. Accordingly, we have attempted where appropriate, to use this 2004 study as a baseline for this current effort.

Given the continuing attention to the relationship between broadband deployment and economic activity in rural areas, The EDA Center at the University of Minnesota, Crookston conducted an assessment of the adoption and utilization of the Internet among businesses across rural Minnesota. Working in concert with Minnesota’s Regional Development Commissions, 689 rural businesses were contacted to learn about their adoption and utilization of the Internet, the impact it has on their business and their plans for the future.

II. Methodology

Data for this study were collaboratively collected across nine Minnesota rural regions between April 1, 2009 and June 30, 2009. Each of the nine data collection sites utilized a common questionnaire and followed a centralized protocol designed by The EDA Center.

The primary method of data collection was telephone interviewing with the business owner, manager or IT professional. However, on occasion the data was collected during a face-to-face interview at the business site; and occasionally where appropriate, the data was collected with staff-assisted online surveying.

As noted above, a total of 689 surveys were collected across all data collection sites, giving the study findings a ± 3.7% margin of error at the 95% confidence level. Simply put, this means that if this study was replicated 100 times in a row, the findings can be expected to be within 3.7 percent of these reported findings, 95 out of those 100 replications.

III. Characteristics of the Businesses in the Sample

As noted earlier, 689 businesses throughout rural Minnesota were surveyed for this study. As recognized often, the majority of businesses in rural Minnesota are characterized as small businesses and it was no different in this study, with 69 percent of the businesses having less than 10 employees; 65 percent reporting a primary market radius of less than 100 miles; and 65 percent reporting less than $1 million in annual gross sales. In addition, 70 percent of the businesses reported their business as a sole location, while 14 percent reported being a branch of a multiple-location business; and 16 percent report being the headquarters of a multiple-location business (see figures 1-4).

![Figure 1. Number of Employees](image1)

<table>
<thead>
<tr>
<th>Number of Employees</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>45.5%</td>
</tr>
<tr>
<td>5-9</td>
<td>23.3%</td>
</tr>
<tr>
<td>10-49</td>
<td>22.3%</td>
</tr>
<tr>
<td>50+</td>
<td>8.9%</td>
</tr>
</tbody>
</table>

![Figure 2. Primary Market Area of Business](image2)

- Within 100 miles: 64.9%
- Within Minnesota: 11.6%
- Nationwide: 16.0%
- Global: 7.4%
Figure 5 partitions the businesses in the sample by industry group. As one can see, approximately 27 percent of businesses in the sample can be characterized as main street retailers, while 14 percent were characterized as professional services; 12 percent were food, accommodations and tourism; and 9 percent were characterized as manufacturing firms.
IV. Adoption, Access and Affordability

In spite of the fact that the sample was comprised of a majority of small rural businesses, 89.7 percent reported having at least one computer that was connected to the Internet. Interesting in that was almost identical to the percentage of businesses reporting that they utilize computers in their business (91.9%). In other words, one is almost assured that if the business uses computers in its operation, that it is also connected to the Internet. As a point of reference, when a similar question was asked in the 2004 study, only 66 percent of businesses reported purchasing an Internet connection.

When asked the type of Internet connection they utilize in their business 96 percent report purchasing some type of high-speed connection. That is significantly higher than the 61 percent reported by rural businesses in 2004. Not surprisingly, 53 percent reported that they purchase a DSL connection from their local telephone provider; while other common responses included purchasing a high-speed cable modem connection (17%) or a fixed wireless or satellite connection (14%). Approximately 5 percent of rural businesses reported having a separate high-speed leased line and 4 percent reported still using a dial-up Internet connection. Interestingly, when those still utilizing a dial-up connection were queried why they have not yet purchased a high-speed connection, 50 percent reported that a broadband connection was not available, while the other half reported a variety of other responses.

Businesses were also asked about the price they paid each month for their Internet connection and responses ranged from a low of $20 to a high of several thousand dollars. In fact, 5 of the large firms participating in the study reported paying well over $1,000 per month for their Internet service. However, the median price paid each month across all businesses was $50.
We also asked respondents about their perception of the affordability of their Internet service. As Figure 8 documents, the overwhelming majority (71 percent) perceived their Internet costs as either “very affordable” or “priced about right,” while 25 percent reported their costs as “too high” and 4 percent perceived their costs as “outrageous.” Most interesting was that there was little relationship between how much one actually paid and their perceptions of affordability. Regardless of the price point, the majority of respondents perceived the price to be either “very affordable” or “priced right.”

![Figure 8. Perception of Internet Costs](image)

### V. Is Broadband Meeting Their Needs?

One concern often expressed is that while broadband services are generally well deployed throughout rural Minnesota, the current speeds offered by providers may be inadequate and in fact, may hamper business growth or local economic development efforts. To address this issue we asked businesses in the study whether their current Internet connection speed is currently meeting their business needs. In addition, we asked business owners to project 24 months from now and determine whether their current connection speeds would adequately meet their projected business needs 24 months from now (i.e. 2011).
As one can see from Figure 9, 85 percent of rural businesses in the sample reported that their current connection speed is adequately meeting their needs, while 15 percent reported that their current connection speed is inadequate. However, when we asked rural business owners to project out 24 months from now, only 37 percent were confident that their current connection speed would adequately meet their need; while 32 percent reported no and another 31 percent were unsure (Figure 10).

We also asked business owners whether they planned to increase their use of the Internet in their business over the next 12 months; and not surprisingly, 54 percent responded affirmatively. Finally, we also questioned whether rural businesses would further integrate Internet applications into their business if they had more access to appropriate technical assistance. And here we see that virtually the same percentage (53%) responded affirmatively as well. These figures are documented in Figure 11.
VI. **Utilization of the Internet**

As noted earlier, 89.7 percent of rural businesses surveyed reported purchasing an Internet connection. Among those businesses that reported purchasing such a connection, we asked a series of questions regarding the business activities they engaged in online. These findings are documented below in Table 1.

<table>
<thead>
<tr>
<th>Function</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have a business website</td>
<td>72.0%</td>
</tr>
<tr>
<td>Have a business e-mail address</td>
<td>89.5%</td>
</tr>
<tr>
<td>Sell products and services online</td>
<td>56.3%</td>
</tr>
<tr>
<td>Purchasesupplies/order parts online</td>
<td>81.1%</td>
</tr>
<tr>
<td>Contact suppliers and customers</td>
<td>84.2%</td>
</tr>
<tr>
<td>Contact Colleagues</td>
<td>73.6%</td>
</tr>
<tr>
<td>Engage in Video Conferencing</td>
<td>29.4%</td>
</tr>
<tr>
<td>Learn about industry trends</td>
<td>74.9%</td>
</tr>
<tr>
<td>Distance Learning/Education</td>
<td>43.5%</td>
</tr>
<tr>
<td>Bank online</td>
<td>57.1%</td>
</tr>
<tr>
<td>Allow telework from home</td>
<td>35.5%</td>
</tr>
<tr>
<td>Interact with government</td>
<td>69.8%</td>
</tr>
</tbody>
</table>
As one can see from Table 1, 72.4 percent of businesses online report having a company website and 89.5 percent report having an email address they use to communicate with customers/suppliers. Further, it is apparent that these rural businesses have integrated the Internet into their business fairly well with the majority reporting their utilization of the Internet into all of the functions we asked about with a few exceptions. These exceptions include utilizing their Internet connection to participate in video conferences (29.4%); engage in distance learning (43.5%); and allowing employees to engage in telework from home (35.5%).

VII. The Impact of Bandwidth on Business

Lastly, we asked these businesses about the impact of their Internet connectivity on various aspects of their business and business strategy. Specifically we asked businesses if they were unable to acquire the bandwidth they needed, how it might impact various aspects of their business. Further we asked business owners to rank the impact on their business utilizing a scale of 1-5, where 1 is equivalent to a minor impact, and 5 representing a great impact. These findings are documented in Table 2.

<table>
<thead>
<tr>
<th>Table 2. Impact of Bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>Impact on cost of doing business</td>
</tr>
<tr>
<td>Impact on Increased Sales</td>
</tr>
<tr>
<td>Impact on Productivity</td>
</tr>
<tr>
<td>Lose Business Opportunities</td>
</tr>
<tr>
<td>Impact on Expansion/Growth</td>
</tr>
<tr>
<td>Impact on Employee Training</td>
</tr>
<tr>
<td>Impact on Relocation Decisions</td>
</tr>
</tbody>
</table>
Based upon the responses in Table 2, business owners seem to increasingly affirm the importance of being able to access adequate bandwidth for their Internet applications. Utilizing a scale of 1-5, approximately 40-50 percent of respondents rated the impact of having adequate bandwidth on their business between 4 and 5 for the majority of areas listed. However, there are some notable and important exceptions. Specifically, it appears that few business owners report that accessing adequate bandwidth has much impact on a business’s ability to provide employee training, and most importantly, few businesses reported that accessing adequate bandwidth would have a major impact on relocation decision-making.

VIII. Summary & Conclusions

The purpose of this study was to assess both the adoption and utilization of the Internet among businesses throughout rural Minnesota. To do that we surveyed 689 rural businesses across all industry sectors, as well as across 9 rural Minnesota regions. Given that the sample was considerably larger than past studies, we have estimated the confidence interval, or statistical margin of error to be ± 3.7 percent.

The results provide an interesting update and story of how businesses throughout rural Minnesota continue to integrate the Internet into their operations. In this study we found that 89.7 percent of rural businesses are now operating online; a significant increase from the 65.5 percent reported in an earlier Minnesota study conducted in 2004. Further, unlike the 2004 study which reported that 38.6 percent of rural businesses connected to the Internet through a dial-up connection, in 2009 that percentage dropped to only 4.3. Subsequently, it is clear that throughout rural Minnesota, businesses large and small, with few exceptions, have adopted broadband as their primary method of connectivity.

The data also suggests that DSL continues to be the most available and popular mode of connectivity for rural businesses, with cable modem and wireless connections also popular. This finding is quite consistent with the finding that almost 70 percent of all businesses surveyed were small businesses, comprised of fewer than 10 employees. While almost 5 percent of the businesses in the study reported connecting with a separate leased line, such responses were left for the larger businesses in the study.

It is also quite evident from the findings that rural businesses appear to be generally satisfied with their current connection speeds as well as the price they are currently paying; with more than 70 percent reporting satisfaction in both areas. However, broadband providers should specifically take note that while 85 percent of rural businesses currently report that their connection speeds are currently meeting their needs, only 37 percent have
confidence that their current connection speeds will adequately meet their needs 24 months from now. Hopefully, such information provides an incentive to broadband providers to seek ways to increase bandwidth capacity to their rural business customers in the near future.

The study also demonstrates that rural businesses are active users of the Internet and continue to integrate it into their business operations. More than half of all businesses in the study report utilizing their broadband connection for everything from selling goods and services online (56.3%) to interacting with government agencies (69.8%). Further, business owners report that securing adequate bandwidth has a significant impact on everything from their overall cost of doing business (49.9%) to increased business sales (49.3%).

These types of findings clearly suggest that rural businesses are increasingly dependent upon their Internet connection as a vital component of their business strategy. And when simply asked if they plan to increase their use and integration of the Internet into their business over the next 12 months, 53.9 percent responded affirmatively. Accordingly, this study provides strong evidence that rural businesses; even small rural businesses, are continuing to integrate the Internet into their operations to increase sales, decrease costs, increase productivity and transcend some of the traditional time and distance disadvantages attributed to being located in a rural location. And while this study was not intended to, nor directly makes an effort to measure the impact of broadband and other digital technologies on rural economies, it is clear that as local businesses continue to adopt and utilize such technologies, these impacts will become self-evident.