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Chapter 2.3.

Business Use of Information Technology in Nebraska

Connie Hancock, John C. Allen and Rebecca Vogt

About the authors: Hancock (chancock1@unl.edu) is Extension Educator, Allen (jallen1@unl.edu) is Professor and Vogt (rvogt2@unl.edu) is Survey Research Manager, The University of Nebraska, Lincoln, NE.

Abstract
The rapid development and diffusion of information technology has important implications for rural communities. Businesses in rural communities can use information technology to increase their productivity and expand their markets. To help businesses explore the possibilities information technology holds for them, the University of Nebraska-Lincoln Center for Applied Rural Innovation developed the Nebraska Electronic Main Street Program. This innovative, community-based program is managed by a team of University Cooperative Extension Educators. This unique model of management has involved the reallocation of the educators' time from county programming responsibilities to regional and statewide efforts. A survey of rural Nebraska businesses was conducted to determine their current technology use as well as their future training needs. The results indicate business owners view information technology as key to their future development and growth. However, many require training on how to use some Internet applications. Extension can play an important role in educating business owners how to use these applications.

Introduction

The rapid development and diffusion of information technology (IT) has important implications for rural communities which are faced with continuing out-migration of population and a decline in local retail sales. The participation in the global economy, through the use of information technology, could change the trends of these communities.

From an economic development perspective, it is critical that Nebraska businesses and entrepreneurs have the technical access and knowledge to use IT to remain competitive and expand market opportunities. The emerging technologies provide enormous potential for Nebraska businesses. These same conditions create a possible negative outcome for rural businesses if they lose market shares to new cyber competitors. It is these current and future

businesses which will provide the employment opportunities and become the engine for economic growth.

Background

To help businesses explore the possibilities IT holds for them, the University of Nebraska-Lincoln Center for Applied Rural Innovation (CARI) (http://cari.unl.edu) has developed the Nebraska Electronic Main Street Program (NEMSP) (http://connecting.unl.edu/emshome.htm) which utilizes a curriculum developed by the University of Minnesota Extension Service. Dr. John Allen, Director of CARI, created the conNEcting Nebraska Technology Management Team (http://connecting.unl.edu/) in response to demands by rural business owners and managers. The Team consists of 6 Extension Staff: Five are Extension Educators located throughout the state of Nebraska in local Extension offices, while the sixth member is the coordinator for the High Plains Learning Center. The team is responsible for the management of the community-based curriculum - marketing, pricing, teaching,and train the trainer. In addition to the NEMSP, they also promote the Master Navigator program (http://connecting.unl.edu/mnhome.) The Master Navigator program provides an opportunity for people to learn how to navigate the Internet and how to use it in their everyday lives, whether it be at home, school, work, or just for fun and learning. Participants learn how to surf the net, use search engines, learn about email, utilize resources on the Internet, and about different browsers. An optional pre-session is available for participants to learn more about Windows and the features it has available to make working with the Internet more friendly.

This team is unique in that it provides statewide support for programming, as well as, maintains local programming in the counties the individual team members serve. The opportunity provides them with the experience of building consensus, creating a unified program throughout the state and reaping the success as a team. Since the creation of the team two years ago, the members have looked for ways to sustain the programs currently available and move forward to create additional programs as they saw the needs of the clients changing.

To be more responsive to the needs of Nebraska business owners, a survey of rural Nebraska businesses was conducted to determine their current technology use as well as their future training needs. This study provides those of us in Extension empirical data to direct programming at the community level.

Methods

The population of interest for this study was businesses in the 87 non-metropolitan counties in Nebraska. Approximately 850 self-administered surveys were mailed to businesses in August, 2000. A total of 382 completed surveys were returned for a response rate of 45%. The surveys were mailed using the total design method. The sequence of steps used were:

1. A pre-notification letter was sent requesting participation in the study.
2. The questionnaire was mailed with a cover letter approximately seven days later.
3. A reminder postcard was sent to the entire sample approximately seven days after the questionnaire had been mailed.
4. Those who had not yet responded within approximately 14 days of the original survey were sent a replacement questionnaire.

The survey included questions about the businesses, their current use of technology and needs they may have for training on how to use computers and other IT for their business.

Respondent Profile

Most of the respondents (96%) owned, operated or managed the business. The average length of time they had done so was 15 years. Fifty-four percent had owned or operated the business for at least 10 years.

Many of the respondents used various technologies in their homes. Seventy-one percent used a computer in their home, while 61 percent used Internet access. One-quarter (25%) had attended a computer training course in the past three years.

Business Profile

Twenty-two percent of the businesses were in retail trade, while 18 percent provided professional and related services.

Most businesses (72%) were located in a retail office space or manufacturing site. Ten percent were located in the respondent's home, four percent were on the respondent's farm and 14 percent were in another location. Almost one-half (45%) of the businesses were in or near communities with more than 20,000 in population. Twelve percent were in communities with less than 1,000 people.

These businesses employed, on average, 13 people including the respondent. Eighty percent of the businesses, though, employed 10 or fewer employees. The median number of employees was four. Thirty-five percent had gross annual sales in 1999 of $500,000 or more. Twenty-nine percent had fewer than $100,000 in gross annual sales.

Results

Current and Expected Future Use of Technology

Information technologies are widely used by Nebraska businesses for a variety of business operations. Seventy-nine percent reported using a computer in their business, 75 percent used cellular phones and 74 percent used fax machines in their business. Just over one-half (58%) of the businesses used Internet access and 31 percent had a Web site.

When asked to describe their level of expertise with computers and other information technology, 19 percent classified themselves as non-users. Twenty-six percent reported being a basic/elementary user, 36 percent felt they were an intermediate user and 19 percent classified themselves as proficient users.

Computer usage is highest for record keeping, accounting and payroll applications. Fifty-five percent of the businesses extensively using a computer for these applications. Internet usage was highest for e-mail, with 19 percent extensively use the Internet for this purpose. Overall, relatively few businesses extensively used many current applications of Internet technology. However, Table 1 shows businesses expect these applications to be important to the future of their businesses.

Table 1. Current and Expected Future Use of Internet Applications

	Present Usage	***Future Usage***	
	Used Extensively in Business	*Somewhat Important to Business*	*Very Important to Business*
Online banking and other financial services	3.0%	27.6%	11.4%
Link to vendors and suppliers	3.0%	34.2%	16.9%
Post catalogs/prices/ services on the Web	2.5%	25.5%	13.6%
Complete sales and/or purchases with online payments	0.6%	28.4%	8.6%
Use Internet for inventory control and management	1.7%	25.1%	7.1%
Use Internet for customer information and support	3.6%	38.0%	19.3%

In addition, 41 percent of the businesses expect to expand or restructure their businesses using information technologies in the future. When asked, "What areas will create the greatest challenges for you as you expand or restructure your business using information technology?" their responses centered on needing a better understanding of the opportunities available rather than the technical aspects of the Web. Seventy-one percent said they needed an understanding of the opportunities available in using the Internet, and 63 percent need an understanding of how their industry is using the Internet.

Future Training Needs

Most businesses seem eager to learn how to use information technologies in their business. Fifty-six percent said they were interested in learning how to use a computer and other information technology in their business practices.

The preferred method of delivery for this training is the traditional classroom. Seventy percent felt "very comfortable" with using the traditional classroom for training on how to use information technology. Video tapes, CD-ROM, and interactive TV classrooms utilizing satellite delivery were other delivery options respondents were comfortable using.

There is a need for training in the specialized skills, which are required for successful Internet business strategies. When asked about the source of these skills, few respondents personally had these skills and most did not have anyone in their business who possessed the skills. Most of the businesses have to rely on someone else in their community for the skills shown in Table 2.

Table 2. Location of Specialized Skills for Successful Internet Business Strategies

	Not available	*Respondent has skill*	*Someone in business has skill*	*Someone in community*
Conceptualizing Web site attributes	32.6%	2.7%	18.3%	46.3%
Developing a basic Web site	27.2%	3.0%	18.7%	51.1%
Programming Web-based applications	33.1%	1.2%	15.5%	50.2%
Developing graphics for the Internet	33.8%	1.8%	16.9%	47.4%
Graphic animation	39.5%	1.3%	11.8%	47.5%
Developing security services for online transactions	44.2%	0.6%	11.0%	44.2%
Making electronic payments	35.1%	8.5%	15.0%	41.4%

Technology Infrastructure in Community

Table 3 shows that many businesses "don't know" if their community has adequate technology resources. Furthermore, when asked if bandwidth is a barrier to their business plans today, over two-thirds (67%) said they didn't know. Ten percent said it was a barrier and 23% indicated this was not a barrier for them. Thus, it appears that more education is needed on these technical areas. The majority of the businesses seem to be unfamiliar with this area.

Table 3. Adequacy of Resources Available to Business

	Don't know	*Not at all adequate*	*Somewhat adequate*	*Very adequate*
Technology infrastructure	55.6%	7.4%	24.7%	12.4%
Bandwidth/Internet access speed	51.9%	12.1%	26.0%	10.0%
Web development professionals	41.7%	11.5%	31.4%	15.4%
Internet access providers	30.1%	7.4%	31.9%	30.7%
Electronic banking availability	41.9%	6.3%	29.0%	22.8%
Educational opportunities about information technology	39.2%	12.1%	33.6%	15.0%
Hardware/software suppliers	31.0%	11.2%	34.8%	23.0%
Infrastructure support personnel	48.5%	9.6%	28.3%	13.6%

Click Here for the slide show summarizing our results.

Conclusion

Computer technologies are more commonly used by businesses than are Internet technologies. This reflects the longer diffusion process for personal computers. The intellectual and technical infrastructures which support the use of the Internet are not as "mature" as they are for computer applications in rural areas. While the technical infrastructure problem is not easily influenced by most individuals, the intellectual infrastructure can be more easily created through education and exposure to information technology.

The businesses expressed a need for a better understanding of how the Internet can benefit their businesses. They also have a desire to learn how to use information technologies in their business practices. Thus, well designed programs (such as the Nebraska Electronic Main Street program) represent an important opportunity for helping rural businesses.

It is crucial that business owners have the knowledge of how to use information technologies to remain competitive and expand their market opportunities. The unavailability of this knowledge to support business utilization of Internet technologies poses a serious barrier to the continued adoption and diffusion of information technology to rural businesses.

Education is key to building the technology skills for Nebraska's citizenry, agricultural producers, and business people, which will ultimately lead to strengthening the rural economy and population stabilization. Extension has a substantial role to play in the education process.

Successful programs, such as the Nebraska Electronic Main Street, can help more rural businesses incorporate information technologies into their business strategies.

Because of the rapid diffusion of this new technology, it is crucial rural Nebraska businesses seriously evaluate the potential impact Internet business applications can have on their long-term viability. While the future is always uncertain, it is clear some portion of that future will be driven by Internet technology. Thus, rural Nebraskans will need to continually consider the placement of their products through the Internet to remain competitive in local, regional, national and even global markets.

Quotes

The emerging technologies provide enormous potential for Nebraska businesses.

Overall, relatively few businesses extensively used many current applications of Internet technology.

Seventy-one percent said they needed an understanding of the opportunities available in using the Internet, and 63 percent need an understanding of how their industry is using the Internet.

When asked if bandwidth is a barrier to their business plans today, over two-thirds (67%) said they didn't know.

Education is key to building the technology skills for Nebraska's citizenry, agricultural producers, and business people which will ultimately lead to strengthening the rural economy and population stabilization.

Web Links

Links
http://www.aiminstitute.org/
The Applied Information Management Institute was created to leverage Omaha's position as a world community leader.
http://technologiesacrossnebraska.unl.edu/
Technologies Across Nebraska creates awareness & education to support communities in decisions regarding use of IT.
http://cari.unl.edu
The Center for Applied Rural Innovation has developed programs focusing on rural viability in the world.
http://connecting.unl.edu/
Connecting Nebraska Technology Training is responsible for 3 major components to enhance the knowledge of a community to move in the IT era.
http://connecting.unl.edu/emshome.htm
Nebraska Electronic Main Street teaches small business owners and managers how to use telecommunications to run their business operations more efficiently and expand their markets globally.

http://connecting.unl.edu/mnhome.htm
Master Navigator provides opportunity for people to learn how to navigate the Internet and how to use it in everyday living.

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