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Networking with E-commerce in Rural America

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Rural businesses often face substantial hurdles in participating in today's economy. Many rural businesses are small and find it difficult to marshal the resources needed to compete in the new digital economy. And remoteness often hinders many rural businesses as they try to gain access to the capital, infrastructure, and technology needed to operate in today's global and instantaneous marketplace.

While these hurdles are formidable, e-commerce may be a key to overcoming the limitations of both size and distance. Electronic technologies obviously allow rural firms to interact and communicate with distant suppliers and customers. But perhaps the greatest benefit of e-commerce is that it supports business networks. Networks create economic opportunities that are simply not available to individual rural businesses. Rural businesses are beginning to take advantage of e-commerce, but its full promise remains untapped.

E-commerce in today's economy

The definition of e-commerce is clearer today than ever before. E-commerce is the purchase of goods or services over a computer-based network. It occurs when a customer or firm orders or pays for a good or service using the click of a mouse. Activities such as advertising, marketing, or information searching—functions that are commonly performed over the Internet—are not considered e-commerce. But they are considered e-business.

Most e-commerce activity takes place between businesses. Business-to-business activity (B2B) arises when one firm orders or purchases online a good or service from another. The bulk of B2B activities take place in manufacturing and wholesale industries as manufacturers sell to wholesale firms and wholesalers sell to retail firms. In 1999, e-commerce activity accounted for 12.0 percent of manufactured shipments and 5.3 percent of wholesale trade sales (Chart 1). During the same period, 11 percent of manufacturers' total cost of materials were purchased online. In contrast, e-commerce accounted for less than 1 percent of service revenues and retail sales, industries where businesses more often than not sell products to the consumer (B2C activity).

As more businesses have embraced the technology, B2B activity has spawned the development of business networks. Large firms are increasingly outsourcing more assembly functions to networks of supplier firms. In these supply networks, large firms generally purchase material inputs from other firms, both large and small. As a result, supply networks are electronically automating the ordering, payment, and flow of goods.

E-commerce use by large and small firms reflects the development of these electronic networks. While large firms are purchasing materials electronically, both large and small firms are using e-commerce to sell products. The largest firms, those with 2,500 or more employees, purchased 33 percent of their materials with e-commerce technology (Chart 2). In contrast, small firms purchased only 6 percent of their

materials with e-commerce technology. Still, the share of e-commerce shipments by small firms, 12 percent, was only marginally less than the share among very large firms, 17 percent.

Rural e-commerce activity

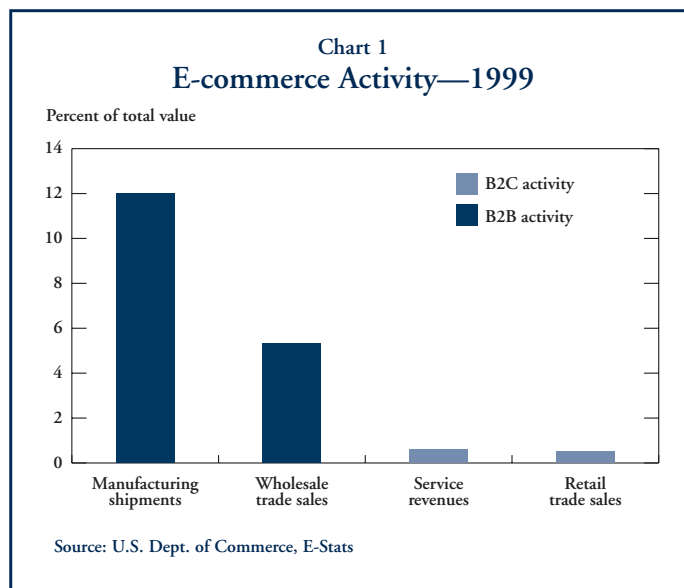
As new networks of B2B activity emerge, rural businesses are taking part in their development. While it is not yet possible to precisely measure the volume of e-commerce activity in rural areas, looking at manufactured shipments across various industries provides a fair indication that rural businesses are using the technology. E-commerce activity by food and agricultural firms and a growing number of examples of other rural firms developing innovative e-commerce strategies reveal that many rural businesses are embracing e-commerce.

E-commerce activity involves many industries that do business in rural America. Manufactured e-commerce shipments are concentrated in five manufacturing industries. Food products is the fifth largest subsector of manufacturing with e-commerce shipments totaling \$37.5 billion in 1999 (Chart 3). In addition to shipping products electronically, the food products industry purchased \$11.2 billion of materials online in 1999, making it the sixth most active e-commerce purchasing industry. The important presence of food products manufacturing firms in the rural economy suggests that many rural businesses use e-commerce technology.

E-commerce use by agricultural input industries suggests that many other rural firms have also adopted e-strategies. Many rural agricultural input firms are part of the chemical and machinery industries, the

third and fourth largest manufacturing e-commerce industries. An August 1999 survey of agricultural input firms revealed that roughly half of the firms ordered supplies online and a fourth paid for their supplies online.¹ Almost a third of these firms also had customers order products online.

These agricultural input companies adopted e-strategies to capture the cost efficiencies of business networks. Networks



provide improvements in logistics and inventory management. The agricultural input companies expecting greater improvements in logistics and inventory management from e-commerce also expected higher levels of e-commerce activity. By automating purchasing functions, companies can eliminate mistakes and costs associated with the data entry of paper invoices. The cost of purchasing inputs dropped on average 70 percent for firms that moved to electronic-based systems.² The availability of information through automated systems also improves product flows, forecasting for product demand and input supply, and overall business management.

Rural e-commerce activity and network building is not limited to agriculture. For example, Wallis Oil Co., a small company in Cuba, Missouri, reported implementing a paperless transaction process for receiving, billing, and tax reporting for wholesale fuel

transactions.³ They adopted an automated system for inventory management and billing primarily to reduce data entry costs and improve accuracy on product transactions.

Another example of an evolutionary network building process by a rural business is PrintingForLess.com (PFL), a 30 employee printing company in Livingston, Montana.⁴ Originally, a printing company serving Montana markets, PFL was started in 1996 to serve small and home businesses. After adopting an e-commerce business strategy in 1998, sales have grown 174.5 percent. The company is now using a printing network with firms across the country to assist with growing demand.

Electronic networks in the rural economy

E-commerce supports business networks and helps firms overcome the challenge of size and remoteness in various ways. One way is through open networks that allow unfettered access to the electronic network.

catalog listings, product specification, price information, and online purchasing. Internet networks are the most common types of network as 75 percent of manufacturers submitting online orders use the Internet.

One example of e-activity in the agricultural industry is eMerge Interactive, Inc. based in Sebastian, Florida. eMerge Interactive provides online cattle auctions for the beef industry in addition to providing real-time price information and a network of auction facilities. The company has 12 interactive marketing and order-buying facilities. Combined with their online

auction and brokerage service, eMerge Interactive has the capacity to market four million head of cattle annually, 14 percent of the U.S. market. eMerge Interactive is an open network because, after registering, any user can enter electronic auctions and purchase cattle.

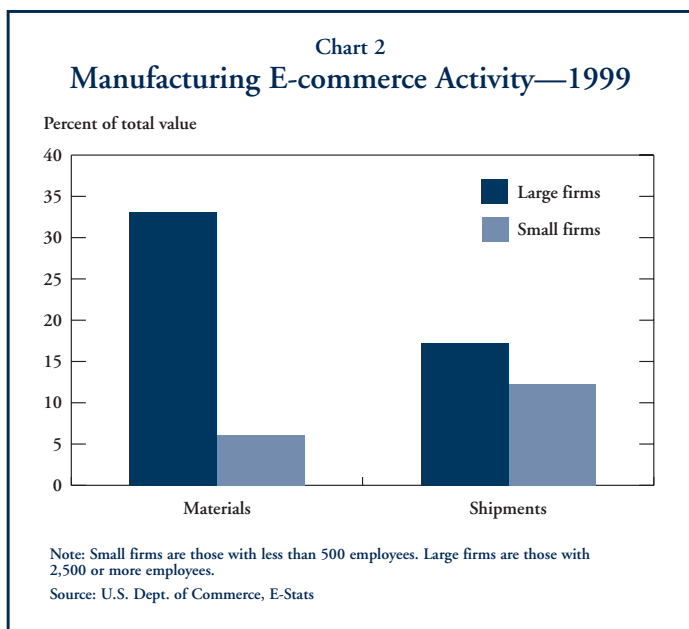
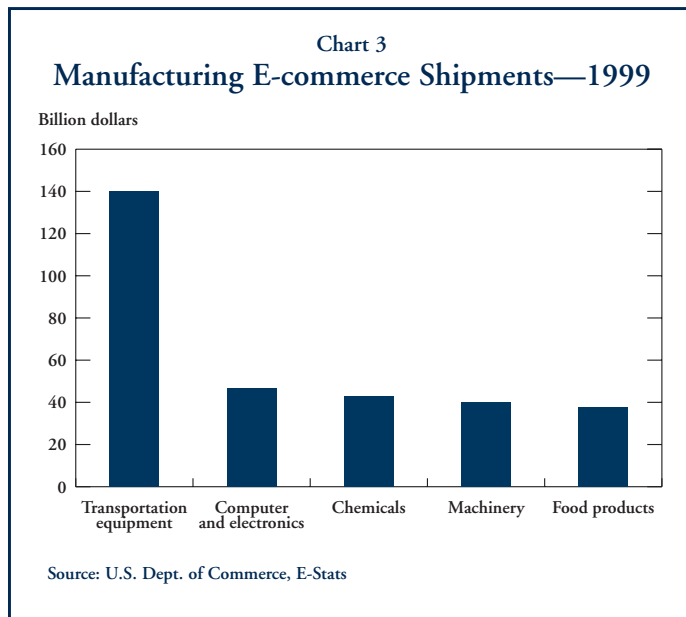
Another example of an open network is Woodnet Development Council, Inc. of Orofino, Idaho, a non-profit organization that helps build business net-

works. Woodnet helped develop a cooperative for woodworkers and a network of specialty plant growers in the Pacific Northwest. Yew woods, medicinal herbs, and even custom ordered wood products are available for purchase over the Internet. An online wood swap area also exists where woodworkers can buy,

sell, and trade specialty wood, equipment, and other goods or services.

In contrast, closed networks restrict membership or access to prespecified suppliers or customers. In these networks, two or more firms partner to develop an electronic network solely between these firms. These networks not only allow for the purchase of goods and services, but also seek to integrate e-commerce activity into back office operations. Companies share proprietary information between network participants with the goal of coordinating business activities between multiple departments inside each firm and across firms.

A common closed network is an electronic data interchange (EDI) network. Perhaps the most famous EDI network is the private network developed between Wal-Mart and its suppliers. Upon checkout, Wal-Mart scanners instantaneously feed information via a company satellite to its distribution centers. At the warehouse, a new product is readied for shipment, and suppliers can get real-time sales information through the EDI network. This information exchange allows suppliers to plan better production schedules, cut lead times, and dump products that do not sell. By sharing information, Wal-Mart and its suppliers form collaborative network relationships to cut waste from the distribution channel.



Another way is through closed networks that tend to be proprietary.

Open networks do not restrict membership or access to the electronic network. Internet-based electronic networks are generally open networks because access is typically not limited. Many of these networks provide

Another example of a closed network is AgentSecure.com, an Internet site geared toward rural and suburban independent property/casualty agents. Agents in small, rural markets generally experience difficulty generating a large enough business volume to get contracts with large insurance carriers. By pooling the business of many rural agents, AgentSecure.com is able to negotiate contracts with large carriers. It is a closed network because rural agents must submit for qualification before being allowed to do business with the company.

Currently, most e-commerce activity comes from manufacturers with closed networks as their primary electronic network. Two-thirds of the electronic shipments and payments of manufacturers originated from firms with EDI networks (Chart 4). In contrast, manufacturers using the Internet, an open network, as their primary network accounted for only 5 percent of the electronic shipments and 13 percent of electronic purchases.

Challenges to tapping e-commerce networks

Rural businesses are beginning to tap the benefits of open and closed networks. However, many rural businesses continue to face challenges to taking part in e-commerce networks. The lack of high-speed access, the costs of technology and technical support, and the lack of local partnerships limit the ability of rural businesses to develop e-commerce networks.

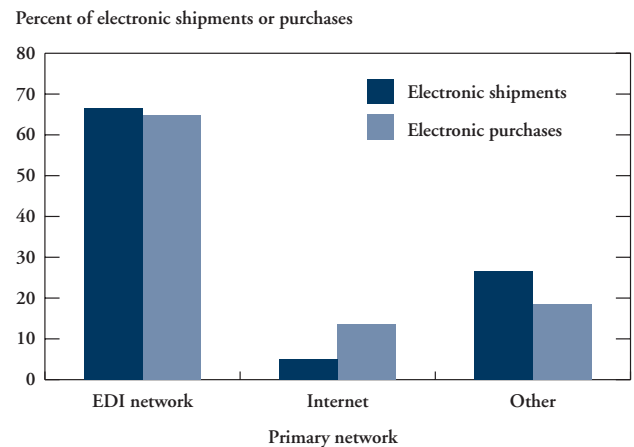
The lack of high speed Internet access, also known as broadband, in remote rural areas limits the ability of rural businesses to connect to the new economy. Previous work by the Center indicates that the costs of broadband deployment in the “last-mile” inhibits investments by service providers and limits access for rural America. But some rural areas, such as Grant County, Washington, have overcome this challenge by using municipal utility companies to provide broadband service.⁵ Rural towns such as Coldwater, Oregon, and Harlan, Iowa, have also responded by building their own fiberoptic networks.

Rural businesses face technology challenges other than the lack of broadband access. The prohibitive cost of implementation of e-commerce technology is another barrier for adoption in rural areas. In some cases, high priced specialized software is required to do e-commerce. Rural areas generally trail urban areas in the presence of computer service firms and technical specialists, further increasing the costs of e-commerce deployment. For example community leaders in Cook, Nebraska, report repair service provision as a major challenge for their community.⁶

In the final analysis, however, it takes more than electronic technologies to fully develop an electronic business network. These networks usually require an existing set of business relationships that many rural firms do not have and find difficult to develop. Despite a tradition of farm businesses joining cooperatives, rural businesses have not grown strong relationships with other local businesses working in the same industry.

Several things are needed to start the development of business network relationships.⁷ Besides a rural business culture that prizes cooperation, the presence of a broker and funding support are necessary for the development and sustained success of many networks. Brokers bring owners together and help identify a common goal or objective for the network. They can come from many sources: community colleges, extension services, nonprofit organizations, and trade groups among others. Funding opportunities for networks can also come from various sources, such as public grants and private foundations. As discussed earlier, Woodnet is a nonprofit organization serving as a broker of business networks in Idaho.

Chart 4
E-commerce Activity—1999



Source: U.S. Dept. of Commerce, E-Stats

Its success as a broker has resulted in financial support from private foundations after initial public grant monies disappeared.

E-commerce opens a whole new avenue for rural businesses to overcome the limitations of small size and remoteness. The failure of many dot.com companies has clouded the picture of successful e-commerce activity for many rural businesses. But, the full benefits of e-commerce emerge when it is used to support business networks. Networking with e-commerce is a promising opportunity that enables small rural businesses to enjoy the benefits of doing business on Main Street.

¹ Henderson, Jason et al. “Distribution Channel Strategies and E-business in Agribusiness Industries,” *Quarterly Journal of Electronic Commerce*, vol. 2, no. 1, 2001, pp. 47-66.

² “The Transaction Evolution: Conquering the Last e-Frontier” *E-commerce World*, vol. 11, no. 8, August 2001.

³ *National Petroleum News*, August 2001, p. 12.

⁴ “An E-Commerce Success,” *American Printer*, vol. 227, no 3, June 2001, p.30.

⁵ “Isolated County Gambles with Broadband Network” *Wall Street Journal*, August 17, 2001, p. B1.

⁶ Ewing Marion Kauffmann Foundation, “A Report on Rural Life in the Heartland,” 2001.

⁷ Stuart Rosenfeld described a list of factors supporting the development of rural business networks at the Center’s 2001 annual conference. The conference proceedings will be available soon.