August 2015

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Recommended Citation
Available at: http://lib.dr.iastate.edu/iowaagreview/vol6/iss2/1
Re-Energizing Supply Chains

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The Internet is fast becoming the focal point for new investments in agriculture. Venture capital is funding Internet startup companies that want to transform the way business is conducted in agriculture; and traditional agricultural suppliers and processors are making online investments. But what is likely to be the outcome of such investments?

Although it is difficult to foresee exactly what will happen, it is likely that in five years the Internet will be as much a part of agriculture as the tractor. Two areas where the Internet is likely to have a large effect on production agriculture are in procurement (farmers buying inputs, and processors/manufacturers buying output), and in the establishment of supply chains of differentiated products.

Procurement by Farmers—The Old Way and the New

Many Internet sites are set up to sell farmers the necessary inputs for crop and livestock production. Why would a farmer want to buy on the Internet? The most obvious answer is that farmers will buy on the Internet if they think that they can get a better deal than from a traditional supplier. A better deal often is synonymous with a lower price. The computer can present product information and prices, take the farmer’s order, take the farmer’s money, schedule delivery, and obtain the product directly from the manufacturer or wholesale distributor. Thus, the computer linked to the Internet can eliminate a number of steps in the procurement process, significantly reducing the cost of a sale to a farmer. This lower cost, combined with sufficient competition, means that farmers will often pay a lower price for their inputs when they buy them over the Internet.

Internet sales will likely bring increased price transparency to agricultural inputs—in that through Internet auction sites, the price of pesticides, seeds, and fertilizer delivered to a farm and stripped of all other potential value traits will soon become apparent. It is likely that these prices will be much lower than the prices that a farmer has paid in the past. But this separation, or unbundling, of the materials’ price from other value-enhancing components will enable farmers and suppliers of these components to determine their true price through negotiation or auctions. Thus, a farmer will likely be able to order a customized bundle of input attributes that includes the price of materials plus the price of the other traits that the farmer wants. That is, input traits will be rebundled to create customized inputs that meet the needs of individual farmers.

Will these customized bundles be bought over the Internet? Yes, and soon, especially for inputs in which price is the primary determinant of value, and for producers who add their own value to the material, such as application and transportation. But for those farmers and inputs where the cost of material is relatively unimportant, then Internet purchases might be further in the future, awaiting more sophisticated auction software that allows more detailed and customized bundles of inputs and services to be created. Such auction sites are developing, such as Perfect.com (http://www.perfect.com), but the difficulties in providing customized—and automated—Internet markets means that they will not appear immediately. Rather, in agriculture, they will evolve slowly in the next
three to five years.

An intermediate step that may become a reality is for connected agents to create customized bundles of inputs for farmers. Such agents would match a farmer’s needs regarding equipment, seed, chemicals, fertilizer, customized applications, and scouting with what is being offered from the Internet and from local resources to create least-cost bundles that meet or exceed a farmer’s required level of services. Current agricultural input dealers that may feel threatened by the new Internet sales sites are logical candidates to fill these agent positions. For some, the Internet may evolve from a threat to an opportunity.

**Processors/Manufacturers of Farm Output**

Will Iowa farmers sell their corn and soybeans for cash directly over the Internet? Probably not. The marketing system that has evolved over the past 100 years is quite efficient at handling large quantities of commodities. But what the Internet can provide farmers and processors is the ability to advertise current cash prices. Such advertisement via a website can allow farmers to easily locate the best place to sell their output. And it offers processors the ability to source farm output more readily without having to raise their offer prices a significant amount. For example, a local feed mill may find that it needs more grain than it expected. With farmers watching cash prices over the Internet, the grain mill should be able to find all the grain it needs with a moderate upward adjustment of its offer price.

Of perhaps more interest to Iowa farmers is the possibility that they will be able to forward sell their hogs and cattle to processors over the Internet. Currently, cash prices for hogs are set in a rather thinly traded Iowa/Southern Minnesota cash market. Cattle prices for a given week are set in a negotiating session that lasts approximately 15 minutes at the beginning of the week. It would be beneficial to livestock producers to see bid and ask spreads for forward delivery widely disseminated over the Internet. Such price information would benefit producers by giving them the same information as meatpackers about the future scarcity or abundance of animals. Local Internet auctions could complement the existing price discovery mechanisms available on the Chicago Mercantile Exchange.

**Supply Chains of Differentiated Products**

In the future, the most important impact of the Internet on farmers might be its ability to allow some farmers to move away from growing and marketing commodities to growing and marketing differentiated products. Instead of producing a 250-pound hog for market, some farmers will be able to produce a 250-pound “free-range” hog that was fed only organic feed. Other producers will be able to produce a 200-pound hog with particular meat characteristics that come from its unique genetics. Consumer demand for differentiated products is growing. The difficulty for producers is to find these consumers and to produce to specification.

The process of introducing a new agricultural product into the marketplace is a complicated set of sequential steps. First, somebody (a firm or an individual) must define a customer demand that is not being met as well as it could be. Then, a supply chain of producers, distributors, and retailers must be set up. There needs to be a mechanism to identify who and where the buyers, producers, and distributors are. Next, potential producers need to be persuaded to find financing and produce the product, and retailers need to be persuaded to sell the product.

Two characteristics of agriculture that make it difficult to introduce a
new product differentiated at the farm level rather than at the processor level are the geographic spread of potential producers and the biological/climatological interactions that are key to the production process. The spread of farmers makes it difficult to organize them so that they are all producing the same product according to specifications demanded by the retailer. The biological process means that it may be necessary to find producers with the right land and climate interactions.

The Internet, and information technology more broadly defined, can help overcome both of these potential obstacles. The cost of finding potential producers of a new product can be greatly lowered by establishing a website dedicated to the product. The website could use GIS (geographic information systems) tools to make sure that the producer can take advantage of producing products appropriate to the given climate, processing, and transportation infrastructure.

Furthermore, new products can be displayed digitally and their features and benefits demonstrated. Interactive features of a demonstration website allow potential partners to ask specific questions about the product and to share their thoughts and ideas with other potential partners. All potential partners including producers, buyers, and financiers can go through a process of learning by communicating in an interactive and low-cost manner.

The next hurdle that must be overcome is the mutual uncertainty by retailers and producers concerning whether deliveries will be made and accepted. This hurdle is overcome typically by vertical coordination through contracts or integration. With land intensive production, contracting is more likely because of capital requirements of developing the land. This cost must be compared to the benefits of the entrepreneur retaining control of the product.

One example is a program put together by E-Markets (www.e-markets.com) for Optimum Quality Grains. In the mid-1990s, Optimum developed an export market for high-oil corn. It had the required corn seed and the technical knowledge of how to grow and handle the specialized corn. What it did not have were growers. Optimum first tried to obtain growers through a traditional network of local elevators, but failed. It then asked E-Markets to design a website showing the locations, number of acres, and delivery times that Optimum Quality Grains required to meet its export demand. Farmers connected to the Internet were able to see, in real time, the demand for this product and were able to sign-up online and take advantage of this opportunity. The contracts were filled within six weeks.

Often a key factor in the successful introduction of a new product is the assurance that the product will be on the shelf year-round. This is a problem for perishable products, given the seasonal nature of agricultural production. The solution in some cases, such as for lettuce, is multi-site operations that are located in Salinas Valley, California; Imperial Valley, Arizona; and Mexico. Sun World went through a lengthy process of recruiting growers from the United States and New Zealand to build a supply network of kiwi fruit. The Internet will lower the cost and accelerate the process of building this type of international supply network, thus facilitating the establishment of new products.

The Potential of the Internet

The Internet’s ability to lower the cost of transacting business and its ability to match buyers and sellers means that it will be a major influence in agriculture. The potential value of the Internet in farming, and how widely it will be used in agriculture and all other businesses, is limited only by the ingenuity of people.

The new venture capital flowing to e-commerce businesses devoted to agriculture means that more human ingenuity is being devoted to figuring out how agricultural business can be improved through the Internet. One thing is certain: as agriculture becomes more efficient at producing the food that people want to eat, the ultimate beneficiaries will be consumers and the producers who successfully venture early into new ways of buying, selling, and producing.

Examples of Agribusiness Related Websites

- www.agriculture.com
- www.e-markets.com
- www.rooster.com
- www.vantagepoint.com
- www.XSAg.com
- www.farms.com
- www.directag.com
- www.bayag.com
- www.sprayparts.com
- www.farmcredit.com
- www.newholland.com/na/
- www.icecorp.com
- www.mpower3.com
- www.ag1.com
- www.SellMeat.com
- www.agdealer.com

Agriculture information services
Grain marketing
Cargill, DuPont, and Cenex Harvest States
Coop joint venture for purchase of ag inputs and selling of ag products
Deere, Farmland, Growmark joint venture for crop-management and record-keeping
Purchase ag inputs
Auctions for livestock, chemicals, grain and real estate
Purchase seed and ag inputs and information
Buy and sell equipment parts
Purchase sprayers and ag parts
Online banking and financial resources
Machinery listings and specs on farm machinery
Grain commodity exchange
Data management services
Information and management services
Meat and poultry marketplace
Purchase ag equipment in Canada