

What is Unique About E-Agribusiness?

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Abstract

Basic definitions are established for the various interfaces between information technology and the business process. Core factors in the shift of business to a New Economy driven by innovation and the speed of transaction are examined. Under-recognized roles and reactions of basic economic and strategy principles are further described. By better understanding the business, technology and economic forces involved, researchers can provide benchmarks to help agricultural industry sectors improve their overall management and understanding of profitability. At the least, we raise questions for consideration by ourselves, and others studying the effect of new-networked technology on the business of agriculture.

Introduction

An increasing number of agribusinesses are looking to the Internet as a marketing, management, service, and coordination tool. As a business tool, the Internet has proven to be an enamoring concept for many individuals and corporations. Presence online is increasingly seen as a necessity to business existence. Goals are expressed as: garnering more customers, increasing public awareness of the company and its products, promoting strategic or policy-related positions, and selling more products. There are many widely varying predictions of the potential of doing business over the Internet. Yet, confusion abounds concerning exactly what is happening, how much potential exists, and what businesses should be doing to take advantage of it. The very nature of E-Business can be confusing, even to the experienced marketer. Both suppliers and customers perceive many obstacles to successful E-Businesses, E-Marketing, or E-Commerce. In order to successfully cultivate online market share, companies are compelled to design marketing strategies specifically for the Internet economy. Early evidence indicates building new market models based on rapidly changing technologies is not easy. Therefore, the purpose of the paper is to compare traditional business and E-Business models and integrated strategies based on the current literature and industry discussions of the most appropriate models. In this context, the unique elements of E-Agribusinesses are presented, leading to three main questions:

1. What is E-Agribusiness and how does it relate to E-Business more generally?
2. Does E-Business, enhance the ability to market food or agricultural products? Are there first mover advantages or disadvantages in either E-Business or E-Agribusiness sectors?
3. What is unique about E-Agribusiness? Is this uniqueness any different to the issues addressed by E-business in other sectors?

Procedures and Methods

The paper reports on the first phase of research being conducted in the Department of Agricultural, Environmental, and Development Economics at The Ohio State University. The findings presented come from a detailed literature review of E-Agribusiness and additional academic literature from related disciplines (namely business management, marketing, information and technology management, communication theory, and sociology). This literature was also placed in context through monitoring related trade media and discussion with other academics and practitioners working in this arena. Close attention was paid to formulating definitions that would hold up in ongoing future research. Additional insight comes from the research and education programs of two of the authors in the areas of E-business

planning and information technology adoption in agricultural and small businesses. We examine adoption of key technologies and the effect that has on future understanding of the E-Agribusiness environment. A comparison will be made to general E-Business trends and functions to address the question: “Is E-Agribusiness really unique?”

What is E-Agribusiness and how does it Relate to E-Business?

Definitions

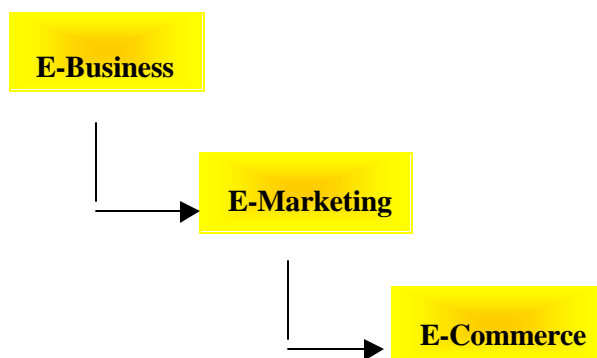
Many of the elements of E-Agribusiness have been around in practice and literature for years. Yet, their unique application in the context of rapid technological change made it relevant to compose definitions of the following terms:

E-Business: business that uses computer media and involves a minimum of two players. E-Business focuses on management and strategy. E-Marketing, E-Commerce, and E-Agribusiness are subsets of E-Business.

E-Marketing: moving elements of marketing strategies and activities to a computerized, networked environment such as the Internet. In more detail, E-Marketing is the strategic process of creating, distributing, promoting, and pricing goods and services to a target market over the Internet or through digital tools (Boone and Kurtz, 2001, p.117) .

E-Commerce: business conducted over the Internet in which a financial transaction or binding commitment to exchange of goods/services occurs (Ernst and Ehmke, 2000). E-Commerce is a subset of both E-Business and E-Marketing as shown in the following E-Business Continuum (Figure 1).

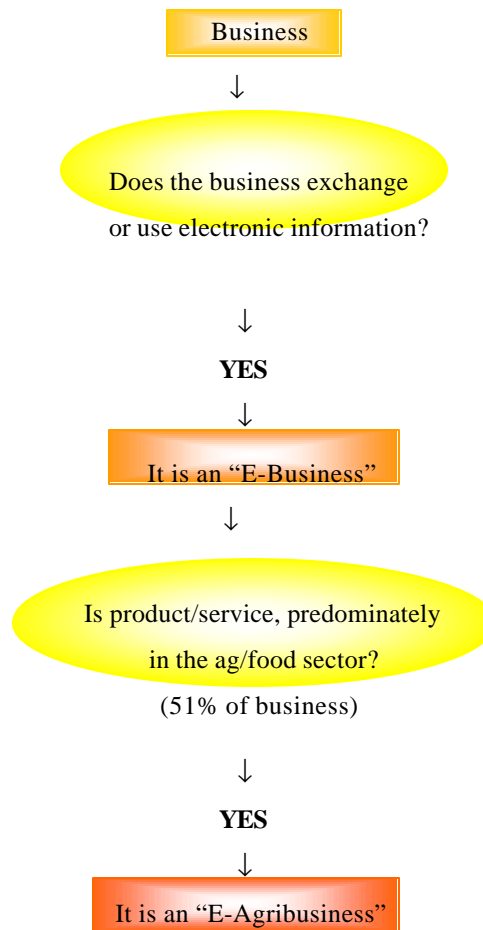
Figure 1: The E-Business Continuum



Agribusiness: includes the agricultural input sector, the production sector, and the processing-manufacturing sector: farmers, providers of farm inputs, processors of farm outputs, manufacturers of food products, and those who transport, sell, and/or prepare food products (Beierlein and Woolverton, 1991, p.3).

E-Agribusiness: is simply an E-Business that has a focus on agricultural foods or services. That definition can be determined by applying Figure 2 as follows:

Figure 2: Defining an E-Agribusiness



E-Business Models Defined

The three E-Business markets most commonly discussed are – Business-to-Business (B2B), Business-to-Consumer (B2C), and Consumer-to-Consumer (C2C). Decisions on the business model are driven by the market the E-Business is entering, plus product, firm, and industry attributes. These are critical because of implications on the integrated strategies of a firm. Media reports and literature from the past two years show the consequences of not adequately evaluating business models – well-profiled downfalls of E-Businesses now blamed on the application of unsustainable business models. The desire for first-mover advantage drove much of the early dot.com craze. Business models were centered on using unique technical ideas to capture large amounts of venture capital available in a robust economy, regardless of the business viability of the idea. Some firms were simply launched with the idea of burning through venture capital and making profit on the “flip” – sale of the intellectual assets to another company who might or might not apply them to a productive business venture. Businesses are now beginning to understand that first mover advantage should not be priority (Butler, 2001) there may be first mover disadvantages.

Hanson (2000) describes two main business models for an E-Business: the improvement-based model and the revenue-based business model. Improvement-based ventures use the Internet to create internal efficiency savings, increase marketing effectiveness, and change consumers’ attitudes. These are indirect benefits because they do not immediately lead to a new sale and do not immediately generate revenue from customers. Yet, cost savings and efficiency are often major reasons firms attempting E-Business. Other leading reasons for improvement-based Internet ventures are category and brand building, expanded customer service, and product enhancement through online information or products.

Revenue-based business models on the Internet take either the provider-based revenue approach or the user-based approach. Provider-based models have fees paid to the web site by other companies wanting to reach the site’s users – content sponsorship and retail alliances are prime examples. Revenues in user-based models come directly from transactions – product sales, pay-per-use fees, user subscriptions, and bundled sales.

What’s Unique to E-Business?

The onset of an Internet economy brings several “new rules” to the marketing and management process (Strauss and Frost, 1999). Several are consistent with our findings and are developed further in this discussion.

Consumers have increasing power – even more dramatically in an E-Market. Buyer attention is a scarce commodity due to the still limited number of people who have Internet access so the competition for their attention is fierce. This makes customer relationship management even more important in an electronic market.

Speed and time compression are, perhaps, the most dramatic changes from moving to an online market. The increasing velocity of marketing functions is enhanced by the transparency of the Internet environment. Competitors know instantly what other firms in their industry are doing, and can imitate successful marketing very quickly. Suppliers and customers can communicate asynchronously as schedules permit. Time zones disappear for managers who need to collaborate with business partners halfway across the world or from coast to coast. Conversely, this adds increased pressure on the firm to deliver faster.

Geographic location no longer gives a firm utility in terms of collaborating with partners, supply chain firms, or customers. As a result, most E-Markets are larger than the local or regional market that may have preceded them. It has been argued that the Internet creates a “global economy” as business reach is no longer constrained by traditional process and technology. No doubt global reach leads to a potential for international E-Marketing. But barriers to trade still exist – different local sales laws, tariffs and taxes can cause difficulties; costs of international marketing strategies are increased by cultural requirements for differentiated products or presentation online; and transportation costs may be greater for some products in a global market.

Managing information is key to Internet marketing. Customer information is relatively easy and inexpensive to gather, cheap to store, and fruitful to mine - if the firm has a plan. However, businesses are increasingly swimming in data. Converting that data to knowledge is one of the keys to future success in a digital economy. Data management – and, more importantly, knowledge management – brings new costs in equipment, personnel, and management structure. At the same time, security concerns involving networked communication increase both direct costs in infrastructure, and indirect costs in customer relationship management (CRM).

Intellectual capital and entrepreneurship are often more valuable than physical assets in an E-Business environment. However, recent evidence in the “Internet shakeout” has demonstrated that the industry does not necessarily understand how to value these assets properly. Regardless, intellectual capital cannot completely replace basic business planning.

IT& E-Commerce Adoption

One of the greatest challenges to evaluating the viability of E-Business and E-Agribusiness is understanding the scope of adoption of E-Business technologies and practices. Department of Commerce and U.S. Department of Agriculture statistics are combined with reports from industry analysts to establish the following framework:

More than half of all Americans have access to computers at home – this number is growing steadily as the cost of computer chips and monitor or display elements decline exponentially. Internet access is growing at an extremely fast rate – an estimated 56 percent of Americans are currently online. And, according to the U.S. Department of Commerce, Internet adoption grew 41 percent in the U.S. and Canada between 1999 and 2000 (U.S. Department of Commerce, 2000). Among farmers and agribusinesses, the numbers are less available. As of 1999 (the last national statistics reported), 47 percent of farmers used a computer; 29 percent were online; and 14 percent did some amount of E-commerce (Morehart and Hopkins, 2000). Seventy-five percent of farms with annual sales exceeding \$250,000 used E-Commerce. Crop inputs were the leading purchase for farmers nationally. New data will be available in the summer of 2001, but indications from our own observation and research are that Internet use and computer use for business purposes continue to grow at a fairly rapid pace – nearly on track with the meteoric adoption rates of the U.S. urban/suburban populations (Ernst, “Outlook 2001”). Likewise, rural Internet access and use is at 39 percent, but grew 75 percent between December 1998 and August 2000 (U.S. Department of Commerce, 2000).

Does E-Business Enhance the Ability to Market Food or Agricultural Products?

E-Business Strategy

Firms traditionally take two paths to gain distinctive advantages. The first is to attempt to be the low-cost (and therefore low-price) competitor. But, being the low-cost producer may not be enough to gain a long-term advantage because competitors can gain the same efficiencies. Within this Internet economy the term “long term” clearly takes on a different meaning. The second path is to attempt a differentiated strategy by finding a unique market position against competitors. A frictionless market implies that customers have almost perfect information and can compare prices around the world using online intelligence agents (e.g., shopping bots) to search out the best deals. This environment forces businesses selling over the Internet, and those that compete against Internet sales, to lower prices and differentiate themselves. Each strategy a firm may use to differentiate itself in a networked economy has advantages and disadvantages, as we show in Table 1.

Table 1. E-Business Differentiation Strategies

Differentiation Strategy	Advantages	Disadvantages
Gain speed and first-mover advantages	Cutting costs, meeting needs, decreasing risk, lowering prices	Requires flexibility, increases risk, may require a large amount of capital
Build brand name	Easy name recognition, gives buyers assurance	Requires a large amount of capital
Use portal development	Builds barriers to entry	Requires a large amount of capital, delaying profitability
Pursue niche strategies	Focus and become an expert in one competitive arena	May be risky
Enhance customer relationships	Build barriers to entry, can meet customer needs better	Possible loss of power

Source: Based on Kleindl (2001, p. 227).

Kleindl (2001, p.113-132) noted seven types of strategies that will help the E-Businesses to develop business models that gain competitive advantages. Our work focuses on several of these in more detail, raising additional questions for academics and practitioners alike.

Pricing and Purchasing Strategy. Expansion of online purchases is driven by products, lower prices, knowledge of the business, and seller-provided ordering and confirmation. Consumers use the Internet as a channel to collect information, compare prices, discuss, and purchase.

The Internet's ability to offer pricing information to buyers at any time creates a dynamic pricing market. This implies that products will sell for something other than list prices. The Internet allows customers to obtain information and prices from more sources, tending to make the product demand curve more elastic as businesses bid against each other. Much of the pricing strategy is centered on cost savings from lower fixed costs (fewer brick-and-mortar assets), and lower variable costs (reduced staffing). We assume, in general, that the fixed costs or fixed-plus-variable costs of infrastructure in an E-Business are equal to or higher than traditional stores. Yet, the failure to accurately observe and measure costs has been a dominant problem for early E-Businesses. Firms have used online pricing incorrectly, making prices as

low as possible since E-Commerce is a scale-driven business. With greater understanding of costs, companies set prices similarly across all channels (Durfee, 2001). The result is one of two broad strategies: Skimming pricing sets high initial prices and, essentially, taxes individuals who purchase products when they first come to market. Penetration pricing decreases prices to capture market share. In the competitive E-Business marketplace, firms are attempting to capture market share, often by selling at prices close to or below cost, or even giving products away.

It is critical that E-Businesses understand the motivation of their online customers. Some are motivated by the ability to better manage time (transaction costs). Some are simply following the lead of friends. Some are after price advantages. Farmers, for example, often lack time. However, as a group they are slow to adopt E-Commerce practices. Understanding that behavior and its reasons is critical to future strategy.

Service Strategy. Firms adopting a service strategy for their Internet ventures focus on one of two areas in an effort to reduce costs, improve quality, and increase speed of services. The first is in supporting individuals or businesses that specialized in providing services to the customers. The second focus is enhancing the service component of a business by meeting customer needs before, during, and after the sale. CRM systems combine software and management practices to serve the customer from order through delivery and after-sales service. Information technology (IT) can be used to manage and conduct customer service aims to gain a competitive advantage and improve internal business processes. Offering information over the Internet is typically very inexpensive and there are many tools available for this purpose. However, firms do risk losing or never developing appropriate relationships with their customers if they use technology without providing an appropriate sense of personalization to customers. This is a considerable factor in the agribusiness sector where business relationships are historically based on personal relationships.

Business Process Strategy. This strategy works to automate business transactions and workflows. To facilitate the flow of purchasing, information technologies link a firm to the members of its supply chain. This increases efficiency in the logistical process, sales and marketing, manufacturing and finance. Supply-chain management is a strategic tool for a firm's competitiveness. It allows the firm to lower costs, serve customers better, and speed up cycle times. By implementing supply-chain management systems, industry leaders are able to outperform their rivals in a number of measures. The root of electronic supply-chain management is found in electronic data interchange (EDI) systems. EDI systems are often based on proprietary software and network systems, which usually leads to higher overall costs. As the number of variables influencing managerial decisions increases so the process becomes more important. The reason lies in having more information. On one hand, this leads to better decision making.

On the other hand, it is possible to make worse decisions or have more problems in finding a solution because of the overwhelming nature of the data. Firms can spend too much time looking at the data rather than the trends. Therefore, they need to have a method defined for evaluating information and its implications.

Information Technology Strategy. Motivations to go into an E-Business are typically the reduction of costs or enabling new business which can be reached through applications of IT that lead to an expansion of the existing market. IT is an enhancing or enabling tool; it provides new opportunities, but it does not remove us from the normal strategic process. Because of is, one of the main goals of a business can be enhanced with IT: customer satisfaction, the improvement of customer relations or the empowerment of customers. Further, businesses may be using IT to enhance a product or to customize a product for their customers. Therefore, IT is generally a value-adding proposition for businesses. All of these points are factors in the decision of moving from “bricks to clicks.”

A final, significant point related to IT strategy: budgeting must be strategic and not an unplanned or “cash” expense. This is particularly important to agribusinesses and other firms with limited IT experience. IT needs to be a formal part of a budget, and regarded in a manner similar to budgeting for development or budgeting for evaluation services.

E-Business Management. To capture advantages from E-Business models, firms must adopt management systems flexible enough to respond to the rapidly changing environment that is inherent in this new economy. Further, in an E-Business environment, where businesses are forced to be innovative in business models, new products, new business processes, and management practices, they must be able to overcome process inertia. Pursuing new business models requires an innovative orientation. In order to seize new market opportunities and gain competitive advantages in an E-Business environment, businesses must evaluate the strengths and weaknesses of their current value chain and then devise business systems that are flexible and innovative. Becoming competitive in an E-Business environment requires restructuring the value chain. But changing from one business model to another is a very difficult process. It requires a reengineering of procedures, processes, and standards. Reengineering, however, is not the key to management strategy. Nor is deciding whether enough value can be gained from taking a first-mover position or waiting until other firms have set the standard (and incurred the cost of setting that standard) for the sector. The key is integrating strategies between the various business units within the firm. How does this new E-Business venture influence other products? How do IT and marketing activities blend? These are the practical questions for management.

Discussion: What IS Unique about E-Agribusiness?

Many of the issues faced by E-Agribusinesses are the same as those firms in other sectors. However, there are several critical differences. Characteristics of the agricultural sector and its participants may offer some inherent impediments to the implementation of E-Business practices. Resistance to changing business practices, tradition, and lack of familiarity with IT may be more of an issue in agricultural sectors. Likewise management traditions may make the idea of rapid development and deployment of new business models and strategies harder for agricultural firms than for businesses in other industries. Place, industry structure and participant demographics are also constraining factors. All these raise additional questions for discussion.

As previously stated, the leading “new” element that E-Business adds to the business environment is one of speed and dynamics. Therein lies a potential impediment to E-Agribusiness. At first glance, it may be assumed that agricultural markets move at a rapid pace. However fast the traditional commodity trading environments may appear to be, they are driven by demand and supply dynamics that are in many ways predictable. E-Markets, on the other hand, add less predictable factors of changing IT and broader market regions for more players of varying sizes and experiences. The rapid process shifts that ongoing evolution in E-Business technology brings are alien to traditional agribusiness. Attitudes toward change on the part of individuals involved in agricultural management, and a lack of IT skills and initiative, may make the concepts of rapid development and deployment of new business models centered on information technology harder for agricultural firms than for businesses in other industries (Ernst and Tucker, 2001).

Some assume that niche products (e.g., specialty crops and locally processed foods) from agriculture are ripe for direct marketing online. Demographics of consumers of high-quality produce and similar foodstuffs match those of the major Internet users. However, customer’s desire to see, smell, handle, and even taste products before purchasing will continue to be an impediment to some E-Agribusiness for the immediate future.

The Internet has made the place utility offered by a business largely irrelevant. A result of this is that most E-Markets are larger than the local or regional market that may have preceded them. However, in E-Agribusinesses, traditional market reach may well be maintained. Some agricultural products, like fresh fruits or vegetables, may develop different market boundaries, depending on the delivery functions made available. The role of E-Business in marketing bulk commodities has also demonstrated some potential. On the input side, despite much interest in developing E-Commerce systems, issues related to handling and servicing machinery or crop inputs continue to be an impediment to wholesale E-Commerce adoption. Much of this relates to service quality uncertainty on the part of buyers.

Agriculture also has some unique constraints related to IT. Internet connectivity is still a greater problem in rural areas and small towns where agribusiness is. The cost of interacting with the rest of ones supply chain via (broadband) IT connection, for example, will typically be higher the further the firm is away from a big city. Inconsistency of IT deployment across regions also creates constraints within an increasingly integrated global industry. As responsiveness and speed of business are critical to the success of E-Agribusiness, any technical constraints are impediments to the growth of the industry. At the same time, farmers have been somewhat slower to adopt computer and Internet technology than the average American. Some of this is related to place. Some is related to age (older individuals adopt computing more slowly) and personality traits that resist spending additional time inside doing record keeping. And some of the slowness to adopt comes from an inability to see returns to the cost of converting existing operations to computerization (Ernst and Tucker, 2001). Each of these aspects make E-Agribusiness unique and, therefore, require further analysis.

Bibliography

- Beierlein, J. G. and M. W. Woolverton (1991), *Agribusiness Marketing*. New Jersey: Prentice Hall, p.3.
- Blank, Christine, (2000) *Mycereal.com: Just Add Milk*, iMarketing News, Dec. 11.
- Boone, L. E. and D. L. Kurtz (2001), *Contemporary Marketing. 10th edition*, Fort Worth: Harcourt College Publishers, p.117.
- Butler, S. (2/02/2001), *E-Commerce: B2B Report*. www.emarketer.com.
- Currid, C. (Nov. 2000), *Finding Your Way in an E-Market*. www.webtechniques.com.
- Durfee, D. (1/16/2001), *Online pricing: Finding what works on the web*. www.ebusinessforum.com.
- Ernst, Stan (2000) *Ag E-business: Opportunities and Adventures*, 2001 Agricultural Outlook series, AED Economics, The Ohio State University. Winter.
- Ernst, S. and C. Ehmke (June 2000), *E-commerce in Agribusiness research project*. The Ohio State University.
- Ernst, Stan and Mark Tucker. (2001) *Perceptions and Adoption of Information Technologies: Implications for Ohio's Produce Industry in the New Economy*. Paper for 2001 International Meeting of Agricultural Communicators in Education, Toronto, Canada.
- EStat (1/11/2001), *Worldwide Internet and E-Commerce Usage*. The Daily eStat, www.estat.com.
- Hanson, W. (2000), *Principles of Internet Marketing*. Cincinnati: South-Western College Publishing, p.124-151.
- Kleindl, B. A. (2001), *Strategic Electronic Marketing: Managing E-Business*. Cincinnati: South-Western College Publishing.
- Morehart, Mitch and Jeffrey Hopkins. (2000) *On the Upswing: Online Buying & Selling of Crop Inputs & Livestock*, in Agricultural Outlook, Economic Research Service/USDA; September.

National Agricultural Statistics Service (1999) *Farm Computer Usage and Ownership*, National Agricultural Statistics Service – USDA, Washington, D.C., July.

Seperich, G. J., M. W. Woolverton and J. G. Beierlein (1994), *Introduction to Agribusiness Marketing*. New Jersey: Prentice Hall, p.4.

Strauss, J. and R. Frost (1999), *E-Marketing. 2nd edition*, New Jersey: Prentice Hall, p.3-6.

U.S. Department of Commerce. (1999), *Falling Through the Net: Defining the Digital Divide*, US Department of Commerce Report, Washington, D.C., November.

U.S. Department of Commerce. (2000), *Digital Economy 2000*. US Department of Commerce Report, Washington, D.C..