E-Business Models

A Study on the Application Model of B2B E-Commerce in the Agricultural Sector*

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Abstract  There are two main application models of B2B e-commerce, which are best suitable for agricultural sector. One is the e-market intermediation model (EMIM), and the other is the Integrative content center model (ICCM). Based on the analysis of these two models in application field of agriculture, a conclusion is drawn that these two models will be the main application ones of agricultural e-commerce at present, while ICCM will be a transition from local e-commerce to integrative e-commerce. The future development of agricultural e-commerce will follow the direction of integrative e-commerce which is based on the supply chain model on the E-Hubs. And a new framework of integrative e-commerce is presented as a conclusion at last.

Key words  e-commerce;  agriculture;  business model;  supply chain

With the development of e-commerce, the rules of doing business have been redefined, and their future is very spectacular. E-commerce has penetrated into agriculture in the end of the 20th century, provides existing customers with another avenue to disseminate product information and link into a new customer base. The quick dissemination of information and communication between businesses and customers has led to expectations of substantial cost savings.

China launched its first agricultural e-commerce website on August 17, 2000, according to the Ministry of Agriculture (MOA) [1]. From then on, agricultural websites have achieved a fast growth in China. The number of agricultural website has increased from 200 five years ago to more than 3000 at present. Out of their totality, 37 percent of websites are by agricultural enterprises and 17.45 percent by institutional departments, leaving another 16.4 percent in the category of science and education [2].

There are 4% of total farms in America by 2000, which buy or sell agricultural products on the Internet [3], and an increasing number of agribusinesses are looking to the Internet as a marketing, management, service, and coordination tool. Within agriculture, business-to-business sales are predicted to grow from $34 billion in 2000 to $124 billion in 2004 [4]. It is predicted that in 2004, agriculture will be the fifth largest industry sector (following chemicals, computing, industrial equipment, and energy) accounting for 8 percent of the total business-to-business online economy [5], which show that agricultural e-commerce will grow at a faster rate.

E-commerce is not defined in a uniform, since many researchers could define it from different point of view. For example, Becker, Farris and Osborn see e-commerce through the value-chain lens “...WWW-era technologies, to permit the seamless integration of information, communication and logistical technology along the entire value chain of business processes from the suppliers of raw goods and services to final customers” [6], while William Chambers et al. describe the relationship among information technology, e-business, and e-commerce [7]. E-commerce that is applied in the field of agriculture is called as agricultural e-commerce.

Electronic commerce is not new, but what is new is the opportunities provided by e-commerce and the potential for profound change because of the
differences between Internet based e-commerce and EDI\(^5\). Internet-based e-commerce is interactive, allows for spontaneous relationships or transactions to occur, has many potential users, and can create both a delivery mechanism and a marketplace. In this paper we will confine our discussion to Internet-based e-commerce.

we must consider many questions while e-commerce is developed rapidly in different fields. For instance, what e-commerce business models are best suitable for which agricultural markets? What is the impact of e-commerce on farms, agribusiness firms, markets, and rural communities? This paper attempts to discuss the business models in agricultural sector, and to give a detailed analysis on each of them. The future development of e-commerce in the agricultural sector will also be explored in this paper.

1 Main Business Models of Agricultural B2B E-Commerce

1.1 E-Market Intermediation Model: “Agriplace”, “XSAg”

AgriPlace is a Verida Internet Corp. e-commerce hub, serving the North American agricultural market\(^9\). The AgriPlace hub provides strategic information, timely, industry-specific news and supporting business services to its e-commerce markets. AgriPlace online markets include GrainPlace(TM), which serves grain market customers with a proven real time fully duplexed exchange trading system, and InputPlace(TM), a crop input supply marketplace over the Internet (including seed and fertilizer). The agricultural hub launched in March of 2000. in August 2000, the online transactions totaled over $2.3 million, which translates into approximately 34 000 metric tons or over 1.5 million bushels of grain traded.

AgriPlace have several e-commerce business models based on Internet: auctions, exchanges, and catalogs\(^10\). It encompasses settlement transactions such as invoicing, payments, information exchange between businesses related to a buy or sell transaction, etc. Fig.1 describes its e-commerce center framework. AgriPlace views itself as a facilitator for a transaction that takes place between a buyer and a seller, emphasize existing buyer-seller relationships, offer related services and various revenue models, and it makes money from membership fees, banner ads, or commissions.

![E-Market Intermediation Model framework](image-url)

In general, the website adopting e-market intermediation model is established by the network corporation or farming association, the purpose is to provide a trading environment for buyers and sellers who are short of enough condition to set up their websites. The e-commerce hub combines its extensive technical and market development expertise with knowledgeable partners to create fully functional marketplaces for vertical agriculture segments. The e-markets use the power of the Internet to expedite customer transactions, solve costly supply chain inefficiencies. The key to the success of e-commerce market exchanges is a high level of liquidity. This ensures enough buyers and sellers to facilitate the price discovery process.

AgEx is similar to AgriPlace which is e-commerce center of e-market intermediation model. AgEx was formed in 1999 and operated mainly for almonds, dried fruit, pecans, walnuts, juice, processed and fresh tomatoes, apples, pulses, and rice. The center also arranged electronic auctions (generally for larger volumes than transacted on their trading floor), and offered information services for each of their different commodities.

1.2 Integrative Content Center Model: “FoodChina”, “Rooster”

FoodChina is a B2B agribusiness e-commerce center and an agribusiness e-marketplace that actually conducts real-time online transactions. FoodChina was
established on September 7, 2000, and was sponsored by eight companies including COFCO, DaChan Greatwall Group, etc. The company now has seventeen shareholders with a total investment of US$8,800,000, and online transactions totaled over $30 million in first half year of 2002.

FoodChina emphasize the three models: 1) E-Procurement and E-Auctions. The key to the success of e-procurement is the selection of qualified companies and the establishment of supplier and purchaser communities around the major products traded. In the hub, e-procurement has been proven to be a successful business model from overseas practices. 2) Agribusiness Communities. FoodChina is establishing three kinds of communities: ① Professional Communities including the poultry farming community and the vegetable growers community, etc. ② Supplier’s Communities in support of e-procurement and e-auctions. ③ International Communities. 3) agricultural trade. The main products include feed, grain, oilseeds, wheat and meat. the center enhance the role of e-trading and e-service in the overall business model To become an agribusiness e-marketplace in the full sense of the term.

FoodChina's framework sketch map

Fig.2  Integrative Content Center Model framework

Many agribusinesses aggregate in FoodChina and release their product contents on the website, in the meantime, many purchasers also land to the FoodChina. As a typical bilateral Integrative Center, FoodChina services for both of the two sides, nevertheless, the center is secund towards the sellers. Fig.2 describes FoodChina’s framework sketch map.

Integrative Content Center Model is applied widely in the agricultural sector. Three of the United States' largest agriculture companies, Cenex Harvest States Cooperatives, Cargill and DuPont Corp., announced the formation of a new Internet marketplace (“Rooster”) for farm retailers, cooperatives and manufacturers. As Content Center e-commerce model, Rooster being similar to FoodChina issues the Content information of products on the e-hub, the users enter the website to select the exchanging chance and trade online.

2 Analysis on the Two above Models

It shows from the above discussion that there are two main models of agricultural e-commerce, one of which is the e-market intermediation model (EMIM), and another is the integrative content center model (ICCM). EMIM is usually applied in the early period of agricultural e-commerce, since the field of agriculture is short of skilled people who are good at information technology. Alternatively, the agricultural sector asks for network company to speed up the early construction of agricultural e-commerce. With the development of agriculture e-commerce, ICCM will be widely applied later, because it is helpful for agricultural industry, considering the fact that many kinds of agricultural products are disseminated, and it is very difficult for both farmers and agribusiness to get the agricultural products trade together. Therefore, it is an effective way to make alliance between agriculture and enterprise. As a result, EMIM and ICCM will be the main application model of agricultural E-commerce in the short term.

In EMIM, e-hub is on the intermediate status, which means that members entering trade center are equal to deal with each other, and the product price is decided by virtual market. When a buyer or a seller is added to the e-hub, they can benefit from each other by increasing bargain matching chances, and enhancing trade fluency. Because what buyers and sellers consider about is a pure trade scene purchasing action, which is rarely related to long-term cooperation between both sides, EMIM is suitable for disseminating market. The advantages of applying this
model are not only to extend the market scope for some not famous middle/small enterprise and circulate rapidly the agricultural products, but also to cut down the storage costs of such fresh and season products as flower, water products, vegetable and fruits, etc.

It can be seen from above discussion that EMIM can provide both sides of buyers and sellers with real-time and dynamic bargain and actual auction, which clarifies the market transparency and get lower price. But the question is that why enterprises still need to set up their e-commerce center. There are two factors responsible for the reason. Firstly, operating EMIM will take some extent risks. Such non-price factors as quality, timing of deliveries and customization are becoming increasingly important for agricultural transactions\(^{[13]}\). Moreover, the agricultural products are difficult to be assorted in uniform criteria, and the products are perishable. Such characters lying in the agricultural sector require credit standing from buyers and sellers. But in EMIM, the trade relationship between buyers and sellers is usually short-term and one-off trading, while the arbitrary relationship brings forward distrust. So cognition and credit confidence are not easy to be established among dealers. Secondly, the development of EMIM is unstable and the winner is lesser. The key to the success of EMIM is a high level of liquidity. The need to generate liquidity explains why there has been such a push to develop e-marketing sites quickly as firms play a highly competitive game where there will, at most, only be a few winners. Only enough number of buyers and sellers are requested to take part in bargain, the markets may attract more people, accordingly, the trade center will profit from transaction. Consequently, the investors of trade center must have enough capital, famousness, trustiness, and felicitous management manner to develop the center, thus they can profit from the conflict between risk and interest, or else, it will be easy to result in Internet bubble.

ICCM can avoid partially the contradiction. Some large-scale enterprises in agriculture chain, such as agricultural input firm and agribusiness, are also looking for steady trade relationship on the internet to obtain more trading and to pay out lower cost, and they would like to set up their own e-commerce center on the Internet. However, an enterprise is limited in the capital and products in the agricultural sector, hence it is willing to construct E-commerce center by means of alliance to fulfill systematic exchange in batches. In ICCM, trade partners are in cooperative relationship. They know each other partially, and can overcome the distrust hindrance brought by virtual network. The purpose of E-commerce trade implemented by ICCM is to enlarge the range of trade, improve transaction efficiency, save exchange costs, transfer information more quickly and clearly in real-time, and establish fluent business relationship. Because buyer and seller in ICCM have long-term cooperative relationship, and the center shareholders can gain profit distinctly from transaction, development of e-hub is steady and effectual.

Because many upstream and downstream agricultural enterprises have entered e-commerce center to process the business affair on the same platform in ICCM, ICCM is in fact a transition from local e-commerce to integrative e-commerce. The integrative e-commerce, we called as supply chain management on the e-hubs, can fulfill online ordering, online payment, and online service among the enterprises of supply chain, and is regarded as an advantaged stage of e-commerce development. It will behave new vision, which is different from the online browse and off-line trading at present.

3 Future Development of Agricultural E-Commerce: Integrative E-Commerce

Integrative e-commerce will expand the function and range of e-commerce from the adjacent enterprise to the whole supply chain. As a typical structure, agricultural supply chain includes agricultural inputting, farm producing, processing/manufacturing, wholesale, retail, and logistics, etc. In the traditional farm supply system, products moved from the manufacturer to a series of wholesale distributors before reaching the retailer and ultimately the producer. Each link of the chain does most of its business with its neighbors on either side and has little contact with the
rest. However, the activities are interconnected together in one concurrent business process by the electronic network (see the Fig.3). We can ascertain the effective flow of three flows (information flow, capital flow, logistics) throughout the agricultural supply chain on the same e-commerce platform.

Fig.3 Agricultural Supply Chain on the E-hubs

Fig.4 denotes the network structure on the agricultural supply chain. In this figure, WWRE, GNX, Transora express respectively agribuys, tradingproduce, foodtrader. When the enterprises of agricultural supply chain assemble in the e-hubs, the business activity is fluent in the network. This is a sample of integrative e-commerce.

Developments of IT and Internet have great effect on the agriculture. Likewise, parallel changes in the structure of agriculture have also contributed to the popularity of the current generation of information technologies. Chief among the changes is in the need for closer coordination of the supply chain – both upstream and downstream from the producer – and stretching from seed, fertilizer, and machinery suppliers, to food processors and retailers. Developments in information technologies and competition have forced new relationships between and among layers of agribusiness to form a complex web of interaction. The B2B e-commerce is used throughout the process to keep close contact among the contracting company, producers, purchaser, and consumer at the stage of integrative e-commerce.

4 Conclusions

E-commerce may be a disruptive technological innovation with profound implications for the agricultural sector. Louis V. Gerstner Jr., the Chairman and CEO of IBM, certainly believes that it will transform business, change the industries in which they operate, to fuel innovation, to open up alternate distribution channels, and to create entirely new cost structures, and components of the agricultural sector will benefit the most from adopting an e-commerce platform.

Though the agricultural e-commerce is still in its infancy, the future success of B2B e-commerce in agribusiness is undeniable. At present, it is necessary
to make a lot of work on the e-commerce’s standard, safety, and law, etc. Factors specific to agriculture will create additional challenges, which must be overcome before success may be attained.

Of course, the development of agricultural e-commerce cannot succeed at once. It needs to improve gradually on the base of existing resources. It is not single to the successful model of agricultural e-commerce, which is distinct according to the different agricultural products and evaluative strategy of agribusiness in the different stage.

References


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