

# Information Partnerships in the Food and Agribusiness Sector: An Alternative Coordination Strategy

by

Deborah H. Streeter  
Assistant Professor of Agricultural Economics  
Department of Agricultural Economics  
Cornell University  
Ithaca, New York

Michael A. Hudson  
Associate Professor, Bruce F. Failing, Sr. Chair of Personal Enterprise  
Department of Agricultural Economics  
Cornell University  
Ithaca, New York

*Information technology empowers companies to compete, ironically, by allowing them new ways to cooperate.*

*B. R. Konsynski and F. W. McFarlan, p. 114*

## Introduction

One of the most significant changes which has occurred in the food and agribusiness sector in recent years is the increased focus on consumer demands. Traditionally, the role of agribusiness has been defined simply in terms of the relationship of firms to the farm producer, either as input providers or as purchasers of farm output. Now the entire agribusiness sector can be viewed more accurately as a vertical production-marketing continuum, in which traditional lines of division are blurred and the ultimate consumer is the driving force.

The change in perspective within the agribusiness sector has been facilitated by advances in information technology in two ways. First, information technologies such as content-labeling have made it possible for consumers to match more closely their health and environmental concerns with buying habits. Second, marketing information technologies, such as scanners, have enabled retailers to track more accurately consumer behavior and the response to various innovations and developments in the food sector.

As a result, participants further down the vertical chain are pressed to respond more quickly and precisely to consumer related concerns about

production, processing, and distribution. In an attempt to manage the risks created at each level of the food chain, there have been moves toward various forms of consolidation, ranging from outright vertical integration to market coordination.<sup>1</sup>

It is the intent of this paper to argue that as the food sector continues to adapt to the change from a production to a consumer focus, information technology will play a strategic role in shaping the nature of the coordination that will occur. Information technologies are shown to present opportunities to coordinate among levels in the food chain without vertical integration—through "information partnerships." Barriers which may inhibit the formation of such partnerships also will be explored.

The arguments offered in this paper have various implications for those who study agribusiness management, particularly in the areas of strategic planning and competitiveness. The primary message is that as economists, we need to focus not only on the structure of the food chain, but on the behavior of the players. More specifically, what incentives or disincentives exist among various levels in the food sector for coordination efforts? In addition, we need to broaden our views of structural change to include those technological shocks to the system that may emanate not only from the production end, but also from the consumer end. The food economy increasingly resembles other sectors of the economy, with a major risk bearing role to be played by relatively small players in the value-added sector.

## **Background and Perspective**

Agribusiness is viewed traditionally as activities "beyond the farm gate" such as the production and distribution of inputs, provision of financial and other services to support producers, and the procurement and processing of output. Based on observations of an increased incidence of vertical and horizontal coordination within the sector, Sonka and Hudson (1989) suggest the following alternative characterization: the food and agribusiness sector is a sequence of "interrelated activities made up of: genetics and seed-stock firms, input suppliers, agricultural produc-

ers, merchandisers or first handlers, processors, retailers, [and] consumers" (p. 306), supported by firms providing various services, financing, and research and development. There are two important differences between the "traditional view" of the agribusiness sector and this "emerging view" of the food and agribusiness sector: (1) agricultural production is considered part of agribusiness and (2) the importance of consumers is emphasized by their inclusion among the list of activities and by the use of the word food.

In considering agribusiness competitiveness, Hudson (1990) suggests that changes within the sector have fundamentally altered the perspective with which firms view the vertical structure. Traditionally, firms have operated either in the production or processing subsector. These two subsectors have been divided by the process of either slaughtering livestock or milling grain. This demarcation has led agribusiness firms to focus on providing services to producers, attempting to surround them with services which are either inputs into the production process or facilitating functions which support the movement of products to consumers (i.e., processing and/or marketing).

However, the move away from a production driven system to a consumer driven system alters this perspective; the consumer becomes the focal point and competitive advantage is achieved by surrounding the consumer and attempting to satisfy both the individual and society. To establish competitive positions in this world, new vertical relationships must emerge, blurring the traditional lines between competitors, buyers, and suppliers. The clear demarcations between levels of the vertical production-marketing continuum disappear, and a value-added processing level emerges to satisfy the new demands of consumers for such things as convenience, variety, quality, and food safety.

These changes have significant implications for food and agribusiness firms within the sector. Firms historically viewed as input suppliers serving the production subsector now have the goal of becoming major players in the food chain, and their role changes as unforeseen levels of consolidation emerge within the production-marketing

channel for food and fiber products. Coordination, through mechanisms such as contractual arrangements, vertical ownership arrangements, and sharing of information technology, increasingly characterize the sector for firms at various levels.

The most significant impact of this consumer-driven system is that it becomes beneficial for firms at various levels to coordinate their activities in order to meet the demands of the consumer to include quality, variety, food safety, and other attributes. Information technology appears to be emerging as a means of achieving coordination because it greatly increases the ability to monitor and control production processes (Schrader, 1986). In this paper we argue that such "information partnerships" may characterize coordination within the food and agribusiness system in the 1990s. Furthermore, vertical ownership is not necessarily a prerequisite to the sharing of information which improves the efficiency or responsiveness of the production-marketing system.

### Previous Work

Before turning to the issue of how information partnerships might evolve in the food and agribusiness sector and considering implications of such partnerships for agribusiness economists, previous research related to vertical coordination should be examined briefly. The seminal work by Mighell and Jones provides an informative and thorough conceptual framework, including suggested research approaches. Progress in using such approaches, however, has been characterized by "glacial slowness" (Godwin and Jones, 1971).

Despite repeated calls for research to examine interactions along the production-marketing continuum in order to identify the motivations for and benefits of coordination, few efforts have addressed the issue. Shaffer (1968, 1980) called for research to systematically examine the existing organization of the food and fiber sector in order to explore alternate configurations. Purcell provided a summary of the criticisms leveled toward marketing systems research (or the lack thereof) and suggested possible barriers to change, concluding that the inherent goal conflict between

players at different levels was a key obstacle to coordination. Existing work focuses on system performance based on activities at a single stage in the process, rather than exploring interrelationships within the system.

Schrader cites limited data as a problem in vertical coordination research, noting that existing data are inadequate to assess the vertical structure of commodity systems or to test many structural hypotheses. He further suggests that although there has been little progress in adapting the data system to incorporate the concepts set forth by Mighell and Jones, the decline in the number of farm supply and marketing firms may simplify the task in the future.

The degree of vertical integration, both forward and backward, from various levels of the system is considered by Kilmer (1986). Presenting percentages of integration and comparing across the past several years, Kilmer concludes that vertical integration in the system will increase over the next decade. He suggests the trend towards higher degrees of integration will be accelerated by increases in the following factors: concentration, capital intensity, flow economies, number of inputs and outputs per firm, economies of scope, firm size, and future demand.

In addition to these works, a number of studies have been made of the vertical relationships in specific commodity groups, such as tomatoes (Collins, et al. 1959), poultry (Koch, et al. 1961), eggs (Brand, et al., 1988), hogs (St. Louis, 1979); dairy (Cook, et al, 1978), turfgrass (Lessley and Strand, 1979), cotton (Temin, 1988), and broilers, fed cattle and processing vegetables (Reimund, et al., 1981). Primarily descriptive in nature, these works tend to focus on explaining the system, rather than on the motivations for integration or coordination or their management implications.

In summary, as the food and agribusiness system is driven more and more by the demands of consumers, it seems inevitable that additional change in the vertical channel will occur. However, information technology may be the key to coordination of the food and agribusiness system within the next decade—with shared information

facilitating coordination across levels of the production-marketing chain to better serve the final consumer.

### **Information Partnerships vs. Vertical Integration**

Typically, vertical integration has been a response to market risks, either on the input or output side. However, full vertical integration may not always be sensible, especially where there are no compelling synergies or economies of scale created by the links. In the nonfood sector, it has been suggested by Konsynski and McFarlan (1990) that coordination need not be based on ownership. They cite the case of the insurance industry, where the strategy of vertically integrating with the financial services industry (to become a financial supermarket) was unsuccessful because the newly formed linkages were not necessarily based on operational advantages. For an example of successful coordination based on information technology rather than vertical integration, they cite the partnership of American Airlines with Citibank to form a highly creditworthy shared customer database.

In agribusiness our focus on production rather than on the consumer has perhaps prevented us from better exploiting such information partnerships. Successful vertical integration, such as that seen in the poultry industry, may have tempted us to see vertical integration as the inevitable coordination mechanism, even in sectors where operational benefits do not clearly exist. Konsynski and McFarlan describe four types of information partnerships: joint-marketing partnerships, intraindustry partnerships, customer-supplier partnerships, and IT (information technology) vendor-driven partnerships. The potential for such information-based relationships to develop in the food and agribusiness sector is discussed below, and important barriers to their development are identified in order to illuminate the circumstances in which information partnerships might be expected to arise.

#### *Joint marketing partnerships*

Konsynski and McFarlan point out the potential for rivals to coordinate information when

it is sensible. The example they give is the coordinated efforts of Sears and IBM in providing their packages of home data services (i.e., the Prodigy system).

At the producer end of the vertical channel, an example of potential information-based alliances between rivals in the food and agribusiness sector might be based on existing cooperative structures. Competitors might jointly develop electronic links to better match existing supplies to demand at the next level of the food chain. This would be especially desirable in cases where goods are highly perishable and the flexibility and speed of information systems would offer an advantage. In addition, in line with the focus on the end user, such a system might allow for a better match with "niche markets".

However, such joint marketing partnerships will be feasible only where cooperatives fulfill not only pricing functions, but also marketing functions. Meulenbergh (1989) discusses the evolution of horticultural auctions in the Netherlands, where some coops now are guided by the broader goal of marketing management, in which the conception, pricing, promotion, and distribution of goods and services are primary considerations.

#### *Intraindustry partnerships*

Partnerships between small or midsize competitors who can benefit from pooling resources are seen as both the most obvious and potentially the most difficult relationships by Konsynski and McFarlan. An example they give is the insurance value-added network services developed by the industry trade association to provide a roster of insurance companies to independent agents. Developing such an extensive system would be infeasible for smaller companies.

Perhaps a trade association for a given crop might consider creating a similar electronic database of small and middle-sized producers to be marketed to potential buyers. Buyers would benefit from a broader set of source options, which might be especially helpful if, in the consumer-driven environment, they were seeking raw materials with some particular attribute.

These intraindustry partnerships can be fostered only where the economies of scale in development and/or delivery of the electronic information system outweigh the strategic benefits of a proprietary system. Given the history of the food and agribusiness sector and its implicit reliance on sharing information, it would appear that opportunities for such partnerships are tremendous.

#### *Customer-Supplier Partnerships*

Konsynski and McFarlan suggest that some partnerships are a natural extension of networks developed by suppliers to service customers. They cite the example of a food retail chain which has achieved full scale coordination with a diaper supplier through electronic exchange of information on inventories and shipping schedules. The system reduces paperwork by assuring that when diapers leave the retailer's warehouse, a notice is automatically sent to the manufacturer, who has a performance contract to make sure the pipeline is full.

Additional opportunities exist for information partnerships to coordinate information between suppliers and retailers on food products. The feedback from consumer to retailer to supplier, once again, would be enhanced greatly by available information technology. In a similar vein, information-based coordination of supplies between livestock feeders and packers might be feasible. An example would be an arrangement between a cattle feedlot and a packer where data from the operator on performance of various pens of cattle are used by the packer to customize slaughter selections. Once again, with a focus on the end user, such an information link might eventually be used to select animals with particular characteristics, such as a certain fat/lean ratio or a specific ration.

For customer-supplier information partnerships to be successful, the exchange of information must not radically alter the market power structure. If additional information redistributes power, it will be resisted by one of the partners.

#### *Information Technology (IT) Vendor Driven Partnerships*

In this final category described by Konsynski and McFarlan, an information vendor provides the platform, or forum, for players to service or reach customers. The authors cite the case of a European company which took over a failing company but retained the vendor's information system to soften the impact on customers. Customers, working with the same familiar interface to which they had been accustomed, viewed the service as uninterrupted.

Examples of vendor-driven partnerships in agribusiness, while perhaps more difficult to predict, are the most apt to reflect the trend toward a consumer environment, because the information vendor's stated goal is to seek out and enhance information linkages between various levels of the food chain. An existing example would be companies such as Data Transmission Network and Agridata Network, who seek to provide a platform for informational exchange between buyers and sellers of commodities.

Opportunities for vendor-driven partnerships will be enhanced where the vendor is motivated to engage the interest and energy of the other partners. This may be especially the case when the vendor is relatively new on the market, and would be willing to work with the partners in determining the most profitable information linkages.

#### **Implications for Research**

The move to a consumer-based focus in agriculture, coupled with the potential for information partnerships to be formed in lieu of vertical integration, presents various challenges to marketing economists who are interested in agribusiness. A role emerges for marketing economists to increase not only their understanding of the information flows within the food system but also of the technological possibilities which might be used to support such information flows. Such efforts should be aimed at learning where the most exploitable information partnerships might be formed and where barriers would preclude such partnerships.

In characterizing various situations, it would be necessary to understand the tradeoffs associated with the sharing of information. In addition, the market power of the players and the existing structure of the industry would affect the feasibility of information partnerships.

However, perhaps the most important implication of the arguments that we have presented here is that the issue of coordination in the food sector is a dynamic one, and that marketing economists need to be sure that their framework of analysis can adapt to information-based coordination and the new focus on the end user. We will have to pay more attention to the motivation and behavior of the players in the food chain, including the consumer. In addition, continued advances in information technology will necessitate ongoing appraisals of partnership opportunities.

#### Endnote

<sup>1</sup>The concept of coordination as used in this paper can be thought of as a continuum. At one extreme the market is relied upon for all coordination, with price signals serving as the primary coordinating mechanism. At the other extreme is vertical integration, an arrangement in which ownership of multiple levels of the system replace the market mechanism. Contractual arrangements and other non-market coordination mechanisms which do not involve ownership lie between the two ends of the continuum.

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