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Industry Strategic Planning: Keeping Supply Chains Competitive

Conrad P. Lyford, H. Christopher Peterson and James A. Sterns

Agricultural industries are increasingly challenged to develop strategies that enable them, as a group of firms and industry organizations, to respond to an increasingly global marketplace. One approach used by several industries is the application of strategic planning and management tools, commonly used in a single business setting, to coordinate analysis and action at an industry level. This is accomplished through a relation-based strategic group of firms from multiple levels in the vertical supply chain. Here it is suggested that this type of strategic effort, called industry strategic planning, provides unique benefits for industries engaged in such an effort, including limiting incentives for increased concentration and vertical integration. As such, industry strategic planning can be a useful method for revitalizing and sustaining agricultural industries.

The dynamic forces changing the structure of today's agri-food system appear to favor large multinational conglomerates and/or highly concentrated domestic firms that are integrated either horizontally, vertically, or both. Recent congressional hearings and increasing producer concerns about market concentration and the growing power of integrators highlight deeply felt anxieties about the future of the system. Furthermore, the consolidation and concentration threatens the viability of rural communities and support institutions, and the traditional market alternatives of cooperatives, marketing orders, and commodity associations seem to have limited success countering the key trends. In fact, traditional cooperatives themselves are becoming increasingly concentrated.

This paper shows that strategic planning principles and associated analyses that are widely used in the academic field and actual business practice of firm management can be adapted in order to conduct *industry strategic planning and coordination* (ISPC) for agricultural commodity industries.¹ Sev-

¹ In this setting, *industry* refers to firms and industry-support organizations involved in producing and marketing an agricultural commodity *from a particular region*. As such, the terms regional industry and industry are interchangeable.

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eral industries that have been involved in some form of ISPC include the Michigan apple, U.S. tart cherry, Ohio pork, Ohio dairy, and Texas vegetable industries. Most recently, Hall and Lyford published research that illustrated ISPC efforts and an ISPC framework in the Texas vegetable industry.

ISPC is presented as an alternative to historic responses to exogenous shocks to agricultural industries. In a process repeated countless times over history, an industry is hit with a shock (e.g., dramatic change in international trade policy) which begins to negatively affect the economic and financial performance of individual firms within the industry. Industry leaders begin to ask one another, "What can be done?" As these leaders interact informally at extension meetings, trade shows, state fairs, and producer meetings, ideas for industry action begin to crystalize and informal agreements about working together for common goals begin to emerge.² Then flesh is put to the bone and something is created. Historically, these entities for working together have included cooperatives, commodity associations, and marketing orders. With these entities, individual firms within an industry have been able to work on shared objectives and coordinate their strategic responses to the exogenous shock. This paper argues that these responses have not fully realized the benefits of coordinating strategic responses, and offers ISPC as a method for proactively improving this performance.

A number of important research questions or issues emerge when considering ISPC as an alternative for sustaining the competitiveness of supply

² This is essentially the concept of grassroots collective action that was discussed by Harry Ayer (1997).

chains. These include 1) how does ISPC compare to firm strategic planning and to traditional group-action alternatives such as cooperatives, marketing orders, and commodity associations? 2) how might market-structure characteristics affect the need for ISPC? 3) what are the benefits from ISPC? and 4) could industry strategic planning lead to collusion? After presenting two examples of industry strategic planning to provide empirical motivation for the concept, this paper sequentially addresses each of these questions in separate sections.

Industry Strategic Planning in the Michigan Apple Industry

Recent history in the Michigan apple industry provides an illustration of ISPC. The Michigan apple industry has played an important and longstanding role in Michigan, providing a substantial stream of income for rural communities. It includes apple processors, apple producers, fresh marketers, and industry organizations serving those groups. In the mid-1990s the apple industry faced a number of important threats and opportunities typical of many agricultural industries. For example, there were increasing supplies and competition from the state of Washington and from large imports of apple juice concentrate. Other key threats included restrictions on the use of pesticides and other increases in environmental legislation (Woods 1995).

Opportunities for industry efforts were recognized in several areas, including improving quality management for the fresh market, increasing exports, and utilizing technical innovations throughout the industry. Overall, there was recognition that a certain level of joint effort was necessary to fully capture opportunities for the industry.

The Michigan apple industry recognized these threats and opportunities along with the underlying need to better meet customer needs.³ The industry responded in the early 1990s by forming The Michigan Apple Industry Strategic Planning Task Force that included representatives from all major industry segments, university researchers and extension, and industry producer and commodity or-

ganizations. This Task Force used strategic-planning tools to develop strategies to improve Michigan apple industry performance. The strategic-planning and management tools used included internal and external analysis, the setting of long-term objectives, and the development and implementation of strategies.

These strategies worked toward improving vertical coordination in the industry, providing industry public goods, and enhancing communication and providing information on areas of mutual interest, i.e., selected areas where a combination of firms and industry organizations were expected to improve performance. For example, one area in which the industry focused considerable effort was the improvement of quality management for the fresh market. Firms and industry organizations worked together voluntarily. Strategies to address this area included a maturity-information program, pre-harvest workshops, and information on quality incentives. These efforts were supported by the apple marketers, the generic promotion organization, and university extension. In addition, apple marketers and producers independently made changes to improve quality through investments and changes in management practices.

The Texas Vegetable Industry

Historically, Texas has ranked third behind Florida and California in terms of total U.S. vegetable and melon production. However, according to the 1998 *Vegetable Summary*, Texas dropped to a distant fourth. Data also show a steady decline in overall vegetable acreage in Texas over the past 50 years. Some, but not all, of the decline can be attributed to increased yields per acre resulting from improved genetics and cultural practices. However, the yield increase for most crops (such as tomatoes and spinach) over time has not been of the magnitude to offset the overall decline in acreage.

In the past, the early markets enjoyed by Texas producers and the resulting prices associated with these markets enabled the industry to survive (and sometimes thrive). However, these early market advantages have been slowly eroded to the point that many Texas producers are now suffering financial stress. Symptoms of this stress can be difficult to detect, but the most recent evidence of its existence comes in the form of the declining acre-

³ A relation-based strategic alliance is built upon the mutual interests and shared objectives of the members of the alliance, as opposed to an equity-based alliance in which members share equity ownership of some common assets (Wysocki and Peterson 1998).

age mentioned earlier, reduced profitability at all levels of the vegetable value chain (grower and shipper alike), and even the elimination (bankruptcy) of some industry firms. In addition, growers and shippers contend that price levels have been at or below break-even at the variable cost level, with little revenue remaining for replacing and maintaining fixed assets (Hall and Lyford 2001).

In the late 1990s industry leaders in the Texas vegetable industry recognized these challenges to the industry and formed a strategic planning task force that included representatives from organizations similar to those in the Michigan apple industry discussed earlier. This task force used strategic planning tools to develop strategies to improve the performance of the Texas vegetable industry. Key strategies were developed and are in the process of being implemented in a number of areas, including developing an industry-wide onion exchange and expanding industry-wide promotion.

The Industry Strategic Planning and Coordination Concept

ISPC is a method that uses the techniques of firm-level strategic management to systematically set industry-level goals and strategies designed to enhance the competitiveness of an agri-food supply chain. As intended here, ISPC is a method sponsored and implemented by a relation-based group of the producers, assemblers, and processors of an industry.⁴ The group is formed specifically to engage in common analysis and decision making across a broad agenda of issues that may include any strategic concern or opportunity deemed relevant to industry performance.

Firms commonly use strategic planning and management tools to prepare themselves for long-term competitive success (Pearce and Robinson 1997; Thompson and Strickland 1995). A strategic management effort typically includes developing a situational analysis, long- and short-term objectives, strategies for success, and implementation action plans. Industry strategic planning is based on the notion that an industry can adapt firm-level tools to set the stage for future competitive success

in the entire agri-food supply chain.⁵ The equivalent of the firm-level decision maker is the group of leaders representing processors, assemblers, producers, and others within the relevant industry (Figure 1). It is this group which drives ISPC.

ISPC is appreciably different from firm-level strategic planning and management. A commodity industry is made up of a complex set of firms at various vertical stages in the marketing chain. These firms have differing core business strategies and various levels of vertical and horizontal linkages. Commodity industries also include industry support organizations, e.g., promotional commissions, industry associations, or grower/producer groups. Furthermore, because of these numerous participants, no clear-cut leader (comparable to a firm's CEO or executive committee) exists with the responsibility and authority to lead the development and implementation of performance-improving strategies for an industry. The main differences between ISPC and firm-level strategic management arise from this inherently fragmentary nature of a commodity industry.

The justification for engaging in industry strategic planning has much in common, as argued in the subsequent sections, with traditional group-action institutions in agriculture, e.g., cooperatives, marketing orders, and generic promotion committees. Where they exist, industry strategic planning even uses these traditional institutions. However, it is distinct from these institutions because the more traditional organizations have more narrowly defined objectives that typically encompass a smaller part of the entire value chain and do not focus on a broad industry agenda.

The distinction between ISPC and more traditional forms of group action in agriculture requires some further elaboration. Cooperatives, marketing orders, commodity-promotion committees, and commodity associations focused on research and development have a long and successful history in agriculture that has been described and discussed in many works (e.g., Peterson and Anderson 1996; French 1982; Jesse 1987; Kaiser and Liu 1998; Wills and Cox 1988). However, these group-action strategies all share several characteristics that limit

⁴ The term *customer* in this context is meant to refer broadly to both trade customers (e.g., retailers, processors) and final customers (e.g., consumers).

⁵ The adaptation of firm strategic management tools to the industry context is more fully documented in Ricks and Woods (1996) and in Lyford et al. (1998).

their applicability to the food system currently emerging. First, they are commonly focused on the producer level in the marketing chain. They assist producers in coming together (i.e., forming horizontal alliances) in order to improve their strategic position in the vertical chain (e.g., forming a cooperative to process commodities into a value-added form or promoting generic demand expansion with final consumers). Because these institutions are focused on producer benefits, they may miss op-

portunities to improve supply-chain management that must, by definition, include others in the vertical chain. Second, none of these institutions alone appears to offer an especially effective alternative to smaller industry firms who wish to withstand the forces of consolidation or strong private integrators. For example, few cooperatives have survived in the highly integrated poultry industry. Instead, strong private integrators—e.g., Tyson—have taken the lead. Third, many of these traditional

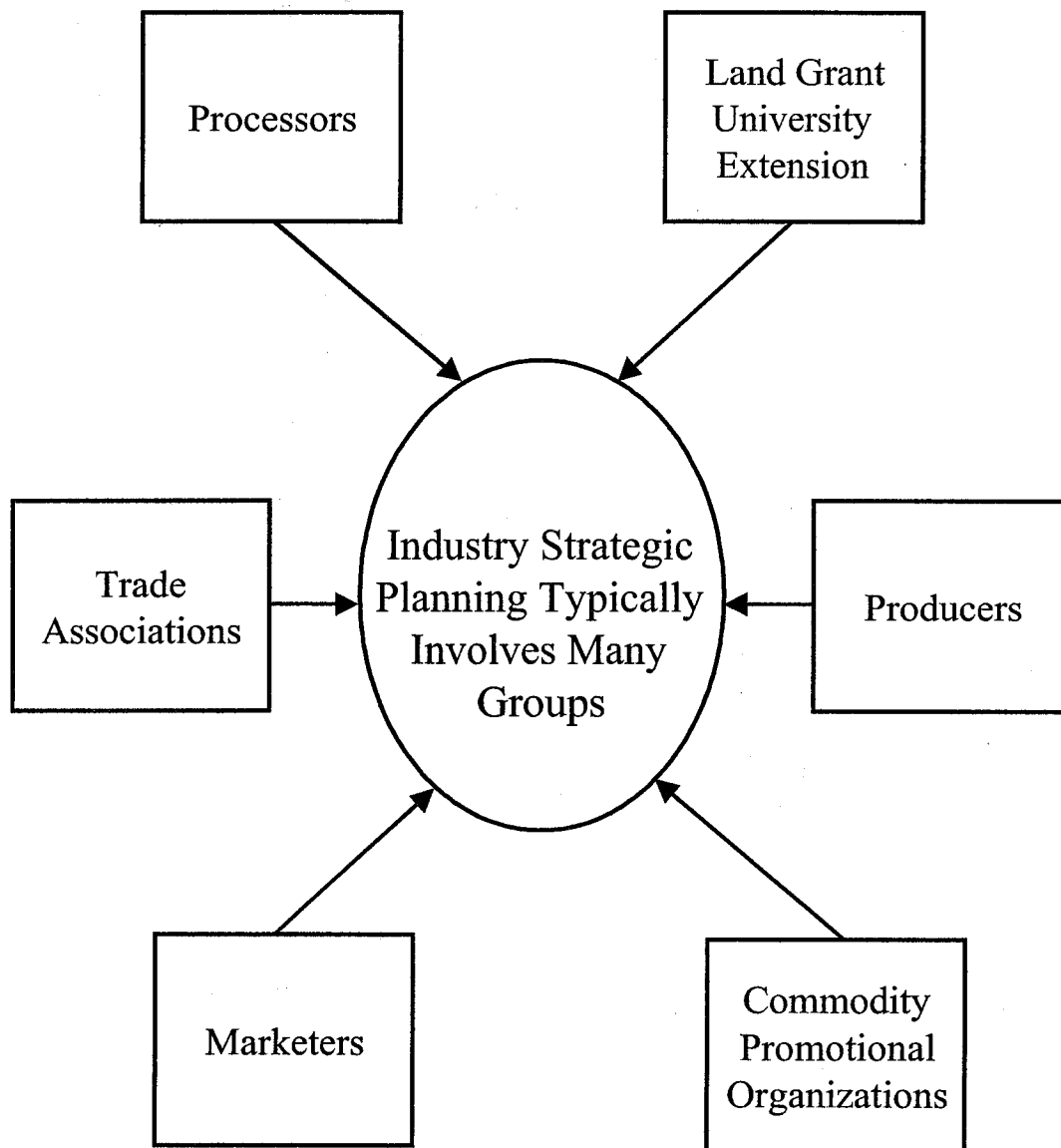


Figure 1. Typical Groups that Participate in an Industry Strategic Planning “Alliance.”

institutions have a limited scope. Promotion committees focus on limited elements of a full product-marketing strategy since they typically do not actually market products. Commodity associations tend to focus on production-oriented research or political issues facing an industry rather than a full range of strategic issues. Their agendas thus tend to be focused on narrow programs that are fixed across time and may or may not represent the most pressing strategic needs of an industry.

Industry strategic planning has the potential to overcome each of these limitations of existing institutions because it brings together many of the main actors/entities of the supply chain.⁶ It attempts to coordinate the actions of fragmented firms without forcing consolidation or complete integration, and an ISPC effort typically focuses only on selected areas of mutual interest. Firms typically are able to choose what efforts they want to participate in; i.e., an ISPC effort is largely voluntary. This stands in contrast to strategies that have substantial mandatory components, such as developing a new federal marketing order that sets quality standards. Finally, it places the whole range of potential strategic issues on the ISPC agenda and creates a forum for that agenda to be focused and re-focused as the competitive environment evolves through time.

Market Structure Characteristics Consistent with ISPC

To understand the market conditions that make ISPC a relevant alternative it is necessary to review the common characteristics of agricultural industries. These features include a fragmented marketing chain, commodity production, large numbers of producers and marketers, uncertainty about quantity and quality, inelastic demand, and asset specificity and fixity. While individual industries have these characteristics to varying degrees, these are typical features that are consistent across many agricultural industries and have been broadly documented in the agricultural economics literature (Marion 1986). The performance of agricul-

tural industries is affected in many important and negative ways by these structural conditions as summarized in Table 1. These same conditions have formed the historic basis for justifying the other forms of group action mentioned above. However, it should be noted that even for industries that do not have these features, some form of collaborative industry efforts is often useful. For example, the computer industry commonly discusses industry technology standards. The key issue is that when the structural conditions described in Table 1 are present, the needs are particularly pressing.

When there are economic benefits from enhanced coordination, it can be predicted that organizational innovations will occur to capture the benefits (Williamson 1985, 124–25). Clearly, one organizational innovation creating the high level of concern noted at the beginning of this article is consolidation, as agricultural industries become more closely integrated with fewer firms. Other group-action alternatives can also address certain of these performance problems, e.g., marketing orders for over- or under- supply conditions, processing cooperatives to manage quality concerns, commodity-promotion programs to improve generic demand.

The essential issue here, that is being worked out in various industries, is the extent of hierarchic control necessary to capture the economic benefits. Hierarchic control structures, established through contracting or integration, have substantial costs and risks. These typically include increased asset allocation, relationship risk, and supply/volume control issues. Overall, a market often provides transparency and competitive—neither of which are guaranteed through contracting or integration—prices for inputs. As such, hierarchic governance systems may be impractical or overly costly.

Because of its potential for a broader strategic agenda and more comprehensive membership from across the marketing chain, ISPC can provide another institutional option for overcoming the negative performance effects listed in Table 1. The following section will more specifically comment on the range of strategies open to ISPC for doing this. It is hypothesized that ISPC will be most relevant to an industry situation in which most, if not all, of the structural conditions cited in Table 1 occur simultaneously in a sector, thereby necessitating a broad strategic agenda, and solutions to marketing

⁶ As can be seen in Figure 1, groups typically involved do not include retailers. Retailers are often served by many industries and as such are not tied to or closely linked with a particular industry.

Table 1. Typical Structural Conditions of Agricultural Industries and Effect on Performance.

Structural Condition	Description	Performance Effect
<i>Fragmented Marketing Chain</i>	Several stages of production-marketing-processing accomplished by different firms	Limited information flows and reduced effectiveness in vertical coordination
<i>Commodity Products</i>	Exchange often based on standard grades (e.g., No. 1 U.S. Wheat)	Public good characteristics of demand expansion
<i>Large Numbers of Producers & Marketers</i>	Each vertical level typically contains many firms	Difficulty in coordinated response to market and supply conditions
<i>Uncertainty about Quantity and Quality</i>	Weather, disease, perishability and related agronomic circumstances commonly cause large fluctuations	Challenge to consistently deliver quantity and quality needed
<i>Asset Fixity and Specificity</i>	Investments in agricultural production (e.g., perennial crops) and processing have few alternative uses	Difficulty in adjusting supply and periods of over- and under-supply (e.g., the cattle cycle)
<i>Inelastic Demand</i>	Demand that does not vary much with price	Highly variable prices

problems demand participation from multiple levels in the marketing chain, thereby necessitating a broad industry membership. These two conditions would appear to make ISPC a stronger alternative than other, more traditional forms of group action given their limitations as argued above. However, these conditions may result in vertical integration within the ownership of one firm or within a strong contract system. Hence, a third condition for the effectiveness of ISPC might thus be the infeasibility of vertical integration—e.g., a sector too fragmented and capital intensive for a single owner to integrate—or the desire of the fragmented entities in a sector to retain some level of independence. In the first case (infeasibility), ISPC would appear to be a dominant organizational alternative. In the second case (desire of entities), ISPC would have to prove itself superior to a vertical-integration alternative in operation. This could occur if hierarchical coordination, through contracts or integration, is simply impractical or unnecessary to fully capture available economic benefits. The likelihood of such superiority would be an empirical issue beyond the scope of this introductory paper.

Benefits of Industry Strategic Planning

A key issue in the feasibility of ISPC to provide an alternative to vertical integration (consolidation) or

traditional group action is whether or not such an effort provides economic benefits. The following subsections provide a menu of ISPC benefits and review their use in two industry cases. An overall summary for the two industries, indicating areas of benefits provided, is found in Table 2.

Achieve Strategic Change in Fragmented or Dispersed Industries

Agricultural industries often have not responded quickly or at all to important needed changes—even after such changes have been well identified. For example, the problems associated with fat in hogs (an important quality concern) was recognized at least twenty years ago (Hayenga et al. 1985). Consumers wanted a lean product, but incentives to producers continued to be based largely on live weight. This provided powerful incentives for alternative marketing channels and integration to develop. Recent effects are evident from increased levels of contracting and captive supply in the pork industry. Similar problems in other industries include longstanding quality issues related to cleanliness and grading in U.S. wheat (Webb, Haley, and Leetmaa 1995; Hill 1987) as well as fat and yield grade for beef (Schroeder et al. 1998). These examples suggest that even when an important opportunity or need clearly exists, many industries

Table 2. Effects of Industry Strategic Planning and Coordination in the Michigan Apple and Texas Vegetable Industries.

	Michigan Apple Industry	Texas Vegetable Industry
Achieve Strategic Change		
· Develop an Overall Awareness of Industry Issues	Yes	Yes
· Identify Strategies to Improve Performance	Yes	Yes
· Implement Strategies	Yes	Yes
Improve Supply-Chain Management		
· Transmit Customer Demand	Yes	Proposed
· Develop Critical Mass	Proposed	No
Develop Industry Public Goods		
· Prioritize Research Objectives	Yes	Yes
· Improve Industry Voice	Yes	Yes

do not seem to respond in any strategic, coordinated manner with obvious implications for the relevant industries.⁷

ISPC is a means for achieving change within an industry. Strategic management for firms is intended to bring about change that will enable long-term competitive success. Translated into industry terms, this change would be achieved by:

1. Developing an overall shared industry awareness of industry needs and opportunities;
2. Identifying industry strategies that can be expected to lead to long-term industry success;
3. Implementing the strategies.

In both the Michigan apple and Texas vegetable industries these steps were accomplished. This means that the industries are seeking to develop and implement pro-active strategies toward enhancing their competitive success and long-term viability—i.e., achieving strategic change.

Improve Supply Chain Management

One of the key features of performance for a production-marketing system is its effectiveness in vertical coordination (Mighell and Jones). Several important industry structural features have been identified earlier that could limit the vertical-coordination effectiveness of agricultural industries (i.e., fragmented marketing chains, commodity production, perishability, and uncertainty about production levels). In general, ISPC could be a source of alternative coordination through improving information transfer (e.g., end-user demands for quality traits) and strategic alignment of the actions and choices of individual firms across the supply chain (e.g., new product development).

ISPC would not, of course, preclude individual efforts by industry firms to capture opportunities for themselves. In some cases, ISPC could help an industry's firms recognize opportunities that they could take advantage of. This could encourage firms to develop private arrangements between themselves to help meet customer needs in critical areas

such as developing a critical mass of suppliers of a quality feature or variety. Alternatively, ISPC could simply raise awareness of key issues and help analyze those issues within a broader supply-chain context. This means that an ISPC effort need not preclude private forms of coordination, but can simply seek to facilitate or encourage effective action.

Transmit Customer Quality Demand

An important issue that needs effective responses by agricultural industries is the changing nature of customer demands, including quality requirements and specific demand features. However, the fragmented structure of agricultural production and marketing often leads to difficulties in effectively identifying and responding to consumer demand in the marketing system. This has been noted in several agricultural industries, including the grain industry (Hill 1990) and the cattle industry (Shroeder et al. 1998).⁸

Individual firms have access to a limited set of information based on their own market experiences and public market information that may be supplemented by specific market-research efforts. The separation in the vertical agricultural system between producers and consumers has frequently led to slow changes and ineffective responsiveness to changing consumer needs. This has provided a powerful incentive for vertical integration by ownership.

ISPC could help facilitate increasing effectiveness in the marketing system by identifying consumer needs and developing effective industry responses to meet these changing demands. For example, industry strategic planning could, as with the Michigan apple industry strategic planning, facilitate studies to identify specific aspects of changing demand, preferences and consumer requirements.⁹ In that ISPC a series of focus groups and surveys were used to determine specific consumer quality preferences, and this information was pro-

⁸ For example, trade is frequently based largely on grades and standards that can become increasingly less relevant as customer needs change and diversify.

⁹ Specifically, Michigan apple industry strategic planning focused its efforts to better understand and respond to consumers' quality needs, such as apples with a high level of crispness and good taste.

⁷ Some agricultural economists have noted that the institution for collective or group action often is missing even though there are possible gains from such action (Shaffer 1980; Schmid 1987).

vided to the industry. In addition, several efforts were developed and initiated within this industry towards improving quality management and better meeting consumer needs.

An industry strategic planning effort hence has the potential to facilitate improved information flow and adjustments to consumer demand. What differentiates this process within the context of ISPC is that the information is developed by and made simultaneously available to entities at multiple levels within the supply chain. Ideally, all relevant decision makers (i.e., those within the chain who are needed to respond to the consumer signals) are present in ISPC.

Develop a Critical Mass of a New Product

Certain beneficial changes in industry performance may require a critical mass of product volume or change adopters to achieve success.¹⁰ Critical-mass theory and the potential benefits of a critical mass were modeled extensively by Schelling (1978) and discussed by Dixit and Nalebuff (1991). Schelling indicates that many systems have a “tipping” or critical-mass point based in system dynamics. If a critical mass is achieved, the system can achieve dramatically improved outcomes. Achieving critical mass often involves production and processing changes at multiple levels in the supply chain. Efforts by one or several individual firms, especially in fragmented agricultural industries with many small firms at multiple supply-chain levels, will likely be insufficient in themselves to achieve the beneficial outcome of critical mass.

ISPC could both aid in identifying the needed changes or types of products appropriate for the market and facilitate the development of critical mass for effective changes. For example, a substantial quantity of a certain new apple or wheat variety may need to be supplied to customers in order for the industry to be viewed as a consistent and reliable supplier of the new product, and thus to gain initial and continued access to retailer shelf space or a food manufacturer’s ingredient lists. The

challenges of producing hard white wheat on a large enough scale to be used by millers is a specific example. A minimum critical mass of volume of a product or variety may also be necessary for consumers to learn about the new product. At the same time, processors need critical mass to innovate and implement changes at their level to facilitate the new market or product. ISPC within an industry for new variety development and introduction could work to address this issue. Vertical integration might achieve the same end, but with the downside of further market consolidation. Other group-action alternatives do not have as ready access to the key decision makers at multiple levels in the supply chain.

For example, the strategy to develop a “premium grade” for Michigan fresh apples is highly dependent on developing a critical mass of growers and shippers in Michigan who can supply apples that meet the standards of this grade (where such a grade could be defined by a set of quality characteristics important to key customer bases). However, Michigan traditionally has not been viewed as a consistent supplier of “premium” apples. Knowing this, retailers may be reluctant to source “premium grade” apples from Michigan, fearing that the Michigan industry would not have adequate supplies on an annual basis. New incentives for growers and shippers to make the capital investments necessary to produce and market “premium” apples could be created with the new grade, and the critical mass created could assure retailers that the industry is now in the position to provide a consistent supply. However, this strategy has not been selected for implementation.

Develop Industry Public and Club Goods

Within agricultural industries there are many different forms of industry public and club goods (i.e., goods with high exclusion costs, goods with marginal costs of adding new users near or equal to zero, goods with joint impact). Firms producing a particular product in a region face similar production and marketing issues because the region typically has a specific set of production capabilities based upon common weather conditions and pests as well as localized external conditions such as taxes, property rights, and availability of trained personnel. For example, the production research

¹⁰ Certain changes can be established if a critical mass within an industry creates the change. For example, if a sufficient number of firms use a particular quality description of their product, this quality description may become the standard for the industry. The change is establishing the new quality standard.

developed at many Land-Grant Universities has often worked toward improving the production capabilities—varieties, strains, etc.—available to firms that produce and market from a particular region. Thus a state's Land-Grant University typically has an important role in providing the public goods of that state's agricultural industries. An industry strategic planning effort can act in a concerted effort to promote the development of an industry's public or club goods. For example, the Texas vegetable industry has sought to develop an industry-wide onion exchange. Similarly, the Michigan apple industry supported an effort to obtain U.S. government funding for research on fireblight, a disease with serious consequences to the production of apples in Michigan. This funding effort was eventually successful and may result in improved Michigan apple production if the fireblight problem is more effectively controlled.

Industry Voice

An important type of public or club good that can be provided to the industry by ISPC is that the process may become a focal point for industry communication and group action. The outcome of ISPC often represents to some extent the collective will of the industry on certain issues. The improved unity and ability to communicate can occur within the industry itself as well as with organizations outside the industry. For example, the Michigan apple strategic planning effort was able to communicate *as an industry* with the U.S. Department of Agriculture to develop a favorable protocol to meet the phytosanitary regulations for a major importing country. Similarly, the Texas vegetable industry developed **Project Plant**—"Produce Leadership and Assessment of Needs for Texas"—part of which focused on communicating industry needs to the Texas legislature. This unity and communication is typically difficult in many industries despite the presence of many group-action organizations. Indeed, the many different industry organizations, such as producer-led organizations and marketer-led organizations, may rarely meet and discuss critical issues with each other. This often precludes effective action on many issues. Hence, effectiveness from other group-action alternatives (e.g. generic promotion or large cooperatives) could be enhanced by ISPC.

Prioritized Research

Related to improved industry voice, ISPC can also develop an improved understanding of priority areas for research that have the potential to improve "local" industry's production capabilities (i.e., target the process by which public goods are provided). ISPC could also aid in mobilizing resources to address a particular area that needs more research attention (i.e., target the development of a particular public good). Both the Texas vegetable and Michigan apple industries developed lists of prioritized areas needed to improve performance in their industries. Facilitative research such as at Land-Grant Universities also could then emphasize these priority areas.¹¹ Furthermore, ISPC identification of areas of needed research can stimulate private-sector research and effort. Porter notes that joint research projects in emerging technical areas have a stimulating effect on the success of an industry (1990, 636).

Performance, Collusion, and Industry Strategic Planning

A key issue for economists in evaluating any economic activity is the effect of the activity on the entire system from producers to consumers. In the preceding section, important economic motivations and rationale were developed for ISPC that indicate potential industry benefit through improved performance. Consumers may also benefit from ISPC as an industry becomes more effective in meeting their needs. However, an important consideration is whether or not an industry strategic planning effort can reasonably be expected to have a positive impact on consumers. This analysis is especially important because, historically, "coordination" efforts by firms are often viewed suspiciously by economists. One consideration in this analysis is whether or not ISPC would provide more benefits to consumers compared to an alternative of more vertical integration and consolidation.

Agriculture in general has had a number of "group" coordination efforts with potential risks to consumers. For example, producers with a federal

¹¹ In the Michigan apple industry such a list was developed to communicate industry research needs to researchers and has been used to justify research in the targeted areas.

marketing order that allows quality restrictions have some incentive to restrict quantity through overly restrictive minimum quality standards (Bockstael 1987). Similarly, a cooperative in a region can seek to control prices in a region. However, despite these concerns the general benefits of group-action alternatives have been seen to be positive.

A reasonable approach to evaluating the potential for collusion in an industry would be to use an industrial-organization approach, such as that followed by Connor as well as by Scherer and Ross. In this type of approach, there are structural features that are generally considered to make possible cartel (i.e., quantity- or price-fixing) behavior. The following analysis is based on the typical industry structure described earlier in this article.

Large Numbers of Firms with a High Degree of Rivalry

One of the key difficulties that any industry would have in actually establishing some sort of cartel is the large number of firms and the amount of rivalry in an industry. Typically, firms in most agricultural industries are highly competitive with one another. Although ISPC provides a structure for these individual firms to work together, the relation-based effort only focuses on selected areas and individual firms continue to compete with one another. Competitive rivalry generally remains, and in fact the experiences in the Michigan apple and Texas vegetable industries support this thesis.

Limiting Effects of Competition from Other Industries

Competition from other industries that supply a similar set of products would usually provide strong limitations on the impact of any cartel activities initiated by an industry. Most commodity industries have both domestic and international competition. Competitor industries supplying the same or very similar products would likely increase their own sales and hence substantially mitigate price or profit effects of a move to increase prices through restricting quantity. The decrease in quantity by the industry that tried to accomplish such behavior would allow the competitor industries to increase market volume.

Limiting Effects of Competition from Other Products

Other agricultural products (or synthetics) almost always can to some extent be substituted for the products supplied by a commodity industry. This substitution effect provides a limitation on any industry's potential supply-limiting effort. For example, strawberries compete with blueberries, raspberries, and other fruit products, while wheat competes with corn, rice, and other grains. Efforts by an industry to increase prices through monopolistic practices would be mitigated by substitute products.

Instability of Collusive Efforts

A fourth important factor is that even if an industry could make some temporary monopoly gains for themselves, these would likely be unstable. Individual firms in an industry would have an incentive to refuse to cooperate with the "monopoly" behavior by supplying more to the market (Green and Porter 1984). Also, some theory suggests that monopoly price setting is unstable in the face of either rapidly increasing demand (Rotemberg and Saloner 1986) or a slump in demand (Tirole 1990, 252). In those situations firms tend to not cooperate in a discipline of quantity restriction.

Implications

The common structural characteristics of agricultural industries make the possibility of collusion fairly low according to what would be expected from industrial-organization theory. Essentially, a commodity industry is unlikely to be able to effectively collude to restrict quantity. Industries with very few firms with a high degree of vertical integration are much more prone to collusion, as highlighted by the recent ADM price-fixing conspiracy (Connor 1997).

Overview and Concluding Statements

In summary, ISPC and its focus on the entire supply chain can provide important economic benefits for agricultural industries. These economic benefits arise from common features or structures of agriculture industries, including fragmented marketing

chains, commodity production, asset fixity, and weather impacts. Where these structural conditions exist, ISPC is more likely to have substantial benefit. Economic benefits can be achieved through undertaking industry efforts that include increased information on changing customer preferences, acknowledgment of and responsiveness to these changing customer needs, and provision of industry club or public goods. To the extent that such goods can be more effectively supported or provided through ISPC than through integration, ISPC will likely be successful over time. By achieving these benefits, industry strategic planning can help small agricultural firms compete and thus limit the trend in many industries toward domination by a few firms that are either horizontally or vertically integrated, or both.

Experiences with ISPC have been limited to a relatively small number of industries for a limited period of time. This article is intended to provide an indication of the potential of ISPC. Future research can usefully be pursued to establish ISPC as an effective roadmap for providing economic benefits for the economic viability and success of agricultural industries.

These economic benefits point to the potential for industry strategic planning to be used as an effective tool both by policy makers and within the land-grant system. It is a tool that differs from other group-action approaches in agriculture since it can extend across the vertical production-marketing-processing system in an industry and by its use of strategic planning tools. Yet the approach would enhance and not compete with the effectiveness of existing group efforts towards industry competitive success. Industry strategic planning is not, however, a "miracle cure" for the issues and challenges facing agriculture. Rather, it is one potentially important tool that should be considered in the marketplace of ideas to enhance performance within agriculture while assisting the ability of smaller entities to remain viable.

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