

VALUE CHAINS IN THE AGRICULTURAL INDUSTRIES

by

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Preface

The U.S. agricultural industry is in the midst of major structural change — changes in product characteristics, in worldwide production and consumption, in technology, in size of operation, in geographic location. And the pace of change seems to be increasing. Production is changing from an industry dominated by family-based, small-scale, relatively independent firms to one of larger firms that are more tightly aligned across the production and distribution chain.

And the input supply and product processing sectors are becoming more consolidated, more concentrated, more integrated.

Agriculture in the 21st Century likely to be characterized by: 1) adoption of manufacturing processes in production as well as processing, 2) a systems or food supply chain approach to production and distribution, 3) negotiated coordination replacing market coordination of the system, 4) a more important role for information, knowledge and other soft assets (in contrast to hard assets of machinery, equipment, facilities) in reducing cost and increasing responsiveness, and 5) increasing consolidation at all levels raising issues of market power and control.

These profound changes in the agricultural industry present new challenges and new opportunities that require new opportunities that require new ideas and concepts to analyze and implement. They require new learning and thinking. Some of those new ideas and concepts are presented here, not as empirically verified truths, but as “thoughts” to stimulate different and better thinking. They have been developed based on observations, analysis and discussions with numerous managers and colleagues in agribusinesses in North America and Europe. This series focuses on Value Chains in the Food Production and Distribution Industries; companion series are also available on Farming in the 21st Century (Staff Paper 99-9), and Financing and Supplying Inputs to the 21st Century Producer (Staff Paper 99-11).

Our purpose in sharing these “thoughts” is to invite discussion, dialogue, disagreement — in general to encourage others to develop better “thoughts”.

Keywords: Value chains, value decay, product differentiation, information, structural change

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Analyzing Structural Change*

The dramatic structural changes that are part of today's agriculture have been well documented. But what will the future hold; how can we make concrete predictions concerning the questions that are now only the focal point of speculation in most discussions concerning the future implications of the structural changes in agriculture? Concepts from various fields of behavioral science may provide useful components of a conceptual framework to study changes in structure and coordination systems. These fields include: (1) transaction cost and principal-agent theory, (2) strategic management, (3) negotiation/power and performance incentives, and (4) organizational learning. The challenge is to integrate the appropriate concepts into a comprehensive analytical framework, and to use an appropriate methodology to assess and predict the future.

The historical approach to discovering truth — to do research — in the agricultural economics profession has been to follow the fundamental principles of the scientific method. Thus, agricultural economists generally have identified a problem or issue, developed testable hypotheses, collected data to verify or refute these hypotheses with econometric or other statistical techniques, and then have drawn conclusions based on the statistical characteristics of these tests.

An alternative approach that is implicit in much of the strategic planning literature and now being embraced by some economists has been referred to as that of “final cause”. This approach to discovering truth in essence argues that future mission or vision drives current actions, which then generate current and future outcomes. In essence, the fundamental perspective of this approach to discovering truth about current and future events is that most outcomes result from purposeful decision making on the part of agents (consumers, producers, agribusiness managers, government policy makers, etc.) who have an objective or vision of the future and will attempt to accomplish that vision. In environments where great structural changes are occurring which are outside the boundaries of the historical data, and when the reasons for these structural changes may be in part the strategic decisions of agents who have a future vision or mission that they are attempting to accomplish, a purpose — focused final cause approach to discovering truth may have much promise.

Consistent with the purpose-focused, final cause methodology of analysis, obtaining evidence to refute various propositions or hypotheses may differ from that used in traditional economic analysis. As has been noted earlier, most economic analyses use historical data to test cause and effect relationships that have been specified as testable hypotheses. Purpose focused final cause analysis requires documentation of current decisions along with future directions that agents have specified as part of their mission or vision; it involves specification of intent. But intent may not show up in actions or actual performance, so final cause analysis also requires event or scenario assessment to determine the consequences of alternative actions as well as the potential interaction or mitigation of agent actions and competitor response or environmental

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constraints. Although such analyses may be judged to be suspect by many economists, they are increasingly acknowledged and utilized by not only business firms but even government agencies such as the financial regulators who commonly use various forms of probabilistic stress-testing techniques to assess the vulnerability of financial institutions and insurance companies as well as public insurance agencies such as the federal insurance programs for banks and savings associations to defaults and financial stress resulting from management decisions and changes in the business and economic climate. In reality, these analyses are based on purpose — focused final cause simulation models that project future events based on current actions. No doubt these analyses draw on historical information and relationships in part for specification, but they are not limited to history if new relationships and determinants of the future that are not part of history have become part of the decision nexus and economic environment.

A further challenge in obtaining evidence and measuring the future results of current structural realignments in the agricultural industries is that much of the data needed to understand this phenomena is not part of the accounting or measurement systems used for most economic or financial analyses. Much of this structural realignment we see in the agricultural industries today is not the result of realigning the resources within a firm, but results from realigning the relationships between and among firms. The focus of this realignment is not within firm or within stage performance, but on the transactions that occur between the economic stages in the food production and distribution system. The performance within a firm or stage is not unimportant, but within stage or firm optimization is easier to analyze and understand using the traditional concepts of economics than between firm transactions which can be best analyzed with transaction analysis concepts as discussed earlier.

Our data sets for doing the former analysis are well developed and include such measurements as those found in standard financial statements and secondary data sources; they include primarily physical product and financial flows as illustrated in column one of Table 1. But the structural realignments that focus on transactions between stages or firms require and understanding of relationships and information flows as well as physical product and financial flows. The focus here is on the human or interpersonal dimensions of transactions. As reflected in the second column of Table 1, useful measures of efficiency or effectiveness of relationship and information flows include such phenomena as trust, accuracy of messages, flexibility, commitment, speed of response, strength of signals, equitability of sharing cost/revenue/risk, adaptability and cost. Developing cardinal or ordinal measurements systems to quantify these important determinants of interfirm or interstage linkages and transactions will be crucial to understand and predict or project the structural realignments currently taking place in the agricultural and food distribution industries.

Table 1. Measurement of Economic Performance

1. Quality	1. Trust
2. Yield/input-output/physical efficiency	2. Accuracy of messages (information)
3. Economic value	3. Flexibility
4. Market or transfer prices	4. Commitment
5. Time to market	5. Speed of response
6. Errors/mistakes	6. Strength of signals
7. Cost	7. Equitability (fairness)/distributional issues
8. Profits	- cost
9. Return on assets	- revenue
10. Cash flows	- risk
11. Capital turnover	8. Adaptability
	9. Cost