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# **The Proceedings of Economic and Policy Implications of Structural Realignments in Food and Ag Markets**

**A Case Study Approach  
(Proceedings Include Revisions)**

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## **Case Study Research Methods for Firm and Market Research**

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## **Case Study Research Methods for Firm and Market Research**

Case study research should be a tool in the agricultural economist's toolbox. The metaphor of the tool is apt as case studies should be used purposefully for the tasks for which they are designed. Just as one shouldn't use chisels for turning screws or scraping paint, one should not use case studies for research tasks where statistical analysis or simulation models are better suited. We will exploit this metaphor more fully in describing the kinds of problems where case study research is appropriate.

In training graduate students and reviewing manuscripts, agricultural economists have long argued for care in the application of particular algorithms for statistical analysis and mathematical programming applications depending upon the research question, structure of the data, and theoretical basis for the analysis. We must likewise take care in the design and execution of case study research in empirical applications so that the analysis is robust and so that the audience will have confidence in the results and conclusions. Case study research can be "good science", even though it is different from the norms of research methodology in the profession of agricultural economics. Good science requires care in research design, data gathering and analysis, and interpretation. Moreover, because of the paucity of case studies in our literature, case research in agribusiness must bear a heavier burden of proof that

1. the technique is appropriate to the research question,
2. the technique is applied properly,

3. the analysis follows scientific conventions of the technique in other social science fields,
4. a "chain of evidence" exists in obtaining and archiving qualitative and quantitative data for the analysis especially when interviews and direct observation by the researcher are the primary sources of data, and
5. the case study is tied to appropriate theory.

We will present two themes in the discussion that follows. First, when is case study research useful in research on firms and markets? Second, what constitutes "good science" in designing and executing case study research? In answering these questions we will allude to other qualitative and quantitative research methods that may be used in place of, as part of, or in concert with case studies.

It is important to state at this point that we are not discussing teaching cases in this paper. Many in our profession have used case studies in teaching at the undergraduate and graduate levels and in executive education. In the classroom, the case is used to simultaneously (1) bound the discussion of a management or economic problem to a particular context and (2) provide enough detail of the context to lead to a more than superficial treatment of the topic. Teaching cases rely only tacitly on theory and analytical methodology. In more challenging cases the problem is often obfuscated or confounded purposefully. Students are expected to rummage through text, tabulated data, and figures in search of "what matters" to the resolution of the problem. By contrast, the research case is elucidative. Theory and analysis are explicit. The researcher makes clear the phenomenon which is being studied and how it relates to the context of the firm, firms, or industry in which it is studied. As with all theory-building and theory-testing, the research case must be explicit about generalizability, repeatability, limitations, and implications for further research.

### **Why case study research in our profession?**

There is widespread interest in studying the changes in vertical and horizontal market structures in many agri-food industries. During the past three years, there have been numerous professional meetings with themes on structural change, supply chain management, vertical coordination, and similar elements of the evolution of agri-food industries. The evolution extends from the biotech/genetics and finance industries, through crop and livestock production, through first handlers and merchandisers, through processing and distribution, to the retail industries. Traditional, isomorphic market structures and relationships are being replaced by experiments in new organizational forms.

How does one study an evolving market or industry? Econometric analysis of archived data better answers the question "what happened?" than either "what is happening" or "why is it happening?" In his classic book on case study research, Yin<sup>1</sup> argues that case research and survey methods are better suited than other techniques for analyzing contemporary events. Case research is superior to survey methods at answering the "whys" and "hows" because the case analysis can delve more deeply into motivations and actions than structured surveys. As we will discuss below, the likely tradeoff for more depth of analysis is less breadth (i.e. fewer firms or managers studied).

Faced with the task of researching the changing market structures and organizational forms in the agri-food sector, the first question we must ask of the design of case research into these phenomena is "are we building theory or are we testing theory?" In the sub-fields of business management, such as organizational behavior and business strategy, theory-building has been running at breakneck pace to catch up with constantly evolving management practices for five decades. Management theory is highly pluralistic and much of the published literature in the field is dedicated to developing behavioral constructs and codifying them into theories of management behavior. Because many of these constructs and theories relate to firm-level and intra-firm behavior, case studies have been used widely in theory development as they permit investigation of individuals' and work groups' (e.g. top management teams') responses to decision stimuli.

Eisenhardt<sup>2</sup> describes the steps in theory-building using case studies. She includes several characteristics of the research problem that may exist in building theory from case studies. Are there *a priori* behavioral constructs from theory or observation that guide the selection of the case(s) or the data collection? Is the design based on a single case or multiple cases? Are hypotheses that are formed from an exploratory case study consonant with, or in conflict with, other studies, including those that use other than case methods? We have included her process of theory-building in table 1. Her description of theory-building with case studies highlights the opportunity to use one or a few cases to address anomalies or voids in current theory as it pertains to contemporary events.

In agricultural economics, there has traditionally been less emphasis on theory-building. Neoclassical theory has been the mainstay of research in the profession and the preponderance of published research has dealt with theory-testing. However, if we use a somewhat expansive definition of theory-building that includes the refinement of theoretical constructs for firm and market research, then we must acknowledge some threads of theory-building research. In his introduction to the 1997 AAEA Learning Workshop on New Theories of the Firm, King<sup>3</sup> cites the search for additional theories beyond neoclassical economics as a requirement for better understanding the new organizational forms emerging in agri-food markets. The Learning Workshop presented transaction cost economics, principal-agent theory, the resource-based view of the firm, property rights theory, and incomplete contracts theory as

alternative behavioral models for empirical research. However, in many ways these alternatives are incommensurable. That is, they are competing theories rather than convergent. They can be viewed as distinct models that address voids in the over-arching neoclassical theory. Case studies of behavior in agri-food firms and markets can contribute to the refinement of these theories for further empirical work, especially longitudinal and cross-sectional quantitative analysis. Eventually, this empirical work can build coherence among what are now incommensurable theoretical perspectives.

One might argue that basing case studies on alternative theories of the firm and making the distinction between those case that are theory-testing and those that are theory-building is a bit jesuitical. Perhaps. Eisenhardt<sup>2</sup> is taken to task by Dyer and Wilkens<sup>4</sup> for her reliance on multiple, iterative cases driven by *a priori* hypotheses for refining theory. They prefer using case studies for inductive research in theory building. They argue that the "deep" case method in which the researcher collects a superfluity of observations unconstrained by predefined behavioral constructs leads more naturally to theory development, particularly novel theory. Using a more deductive approach, following Eisenhardt, necessarily constrains the analysis to small refinements in existing theory and precludes frame-breaking or wholistic theoretical development. From our perspective, the papers in the conversation between Eisenhardt<sup>2,5</sup> and Dyer and Wilkens<sup>4</sup> seek to organize facts and develop guiding principles and hypotheses regarding pre-selected phenomena of interest; only their preference for prior structure differs.

From the point of view of agricultural economists interested in the study of institutional and behavioral changes in agri-food industries, is the debate between Eisenhardt and Dyer and Wilkens a matter of disinterest? We think not. The "deep" case study, wherein the researcher exploits access to many managers in the hierarchy, clients, and suppliers and where direct observation over time within the firm can be tied to longitudinal accounting and performance data, should be of particular interest to our profession. Researchers in agribusiness management and marketing are in a privileged position relative to nearly all of our counterparts in the business school. We have had a tradition of working with firms in the sector in that fuzzy area between extension and research, especially with farms and cooperatives. We have access to decision-makers that is the envy of B-school researchers. Our counterparts in Management and Marketing rely on controlled experiments with college sophomores from which they build theory. It is a bit like studying guppies in a fishtank and extrapolating to the schooling behavior of tuna. We shouldn't be reticent to exploit this unique access in building theory from an exploratory, inductive basis.

Likewise, we can often replicate case studies in cross-section. The more deductive, multi-case approach described by Eisenhardt<sup>2</sup> is consistent with ag economists' access to firms in the sector. We even have institutions in place to facilitate this on a large scale: the regional research and coordinating committees and the Food and Agricultural Marketing Consortium. Our colleagues in the B-school have no counterpart to these groups of researchers with common training and interests and, more importantly, the resources to come together on a regular basis. To the extent that we do not exploit these institutions to do high-quality replicative case studies in the face of the phenomenal structural changes we witness, we are remiss.

Research cases offer a unique tool to build theory by examining phenomena not suited to traditional statistical approaches. Rare events and novel developments are obvious examples. At least as important is the detailed examination of the causes of variation in behavior as opposed to the traditional study of central tendencies. The theoretical basis for decision-making within firms may best be built by discarding the assumption of i.i.d. stochastic errors.

### Doing "good science" in theory-testing case studies

We have had several opportunities in recent years to hear colleagues make the case that it is difficult to publish this kind of research in our profession. The hegemony of positive economics and quantitative methods in agricultural economics makes case research a "tough sell", notwithstanding the case study sections of the *Review of Agricultural Economics* and the agribusiness journals. Peterson<sup>6</sup> credits this phenomenon to epistemological differences between the genres of research.

As Peterson notes, there are many social sciences where case study research is common, if not the norm. Mason<sup>7</sup> and Creswell<sup>8</sup> place case study research among the panoply of qualitative research techniques, including ethnographic studies, histories, biographies, grounded theory, and phenomenological studies. These methods are common in sociology, political science, education, and anthropology. To some degree, it is difficult to distinguish among these techniques in practice. Case studies, particularly the "deep", inductive types, look similar to ethnographic and phenomenological studies in that they are long-term detailed observations of behavior inside a bounded group of individuals. Dyer and Wilkins call this technique "going native".

Yin<sup>1</sup> does not insist on applying a qualitative label to case study research. He argues for using quantitative analysis to augment more qualitative observations in doing good case research. Certainly case studies where the unit of analysis is an industry or market would require market prices, shipment volumes, etc. From a pragmatic point of view, quantitative analysis embedded in the case study will

enhance its value to the audience of economists, particularly when theory-testing is the objective. We will return to this point later.

The point of departure for this discussion is making the distinction between the *phenomenon* and the *context* of the study. The *phenomenon* is the concept or theoretical construct being studied. In econometric studies of demand systems, we are concerned with the phenomena of price and income elasticities. One seeks to quantitatively measure these phenomena. In examining changing organizational forms in evolving agri-food markets, one may study, for example, the phenomenon of incentive alignments between contracting parties or alliance partners. The *context* is a temporal, spatial, or structural boundary around the phenomenon. In the demand study example, one bounds the analysis by the commodity (or commodity aggregation), the time period of the analysis, or perhaps by the consumer population (e.g. high income, low income, urban or rural, etc.). The context of the study of incentive alignment may be the negotiations between contracting parties, the period after a contract is written and in force, or what Sporleder<sup>9</sup> calls the "fuzzy prerogatives" of a strategic alliance. Just as a researcher must draw inferences and conclusions about the phenomena of demand elasticities within the context of the data and models used in the analysis, one must do the same when discussing a phenomenon such as incentive alignment.

The extent to which an analysis of the phenomenon can be generalized is a function of the restrictiveness of the context. An estimate of a demand elasticity can be generalized for policy analysis only to the extent that it is not an artifact of the restrictive context of the underlying data series. A case study of hold-up or other form of moral hazard in production contracts is generalizable if the study is not driven by highly idiosyncratic context, such as assets specific only to the transaction studied or if some incompleteness in the contract uniquely affects the phenomenon. Case studies are often faulted for their lack of generalizability. To say that this is a characteristic of the case method is a straw man. If the case design is sound and if the researcher is careful to be explicit about the phenomenon and the context of the study, then the generalizability of the results cannot be dismissed out of hand. Further, if the researcher takes a cue from "mainstream" economic research and has a strong theoretical basis for the behavioral constructs being investigated as the phenomenon, then there is more latitude for generalizing results across other contexts in which the theory has been tested.

There are several questions that must be answered in the design phase of case study research, beyond the one addressed above that defines the research as theory-building or theory testing. These will be posed and answered briefly.

#### *What is the unit of analysis?*

Choosing the proper unit of analysis to study a single phenomenon or a set of phenomena is critical to explanatory power of the case research. In a study of whether production contracts reduce risk for agricultural producers, the obvious unit of analysis is the dyadic relationship between a producer and the other contracting party, such as an integrator. In many studies, the ready identification of a single unit of analysis is difficult. To investigate whether organizational learning leads to efficiency gains in joint ventures, one might begin with the joint venture as the unit of analysis and then turn to the individual JV partners to see how they create knowledge and then share it within their organizations and with the JV. It may be necessary to study work teams within the joint venture and its constituent partners to better understand the learning process. After all, learning is more easily observed at the level of tasks within a firm than at the whole-firm aggregate.

Yin calls case research with multiple units of analysis *embedded* case studies. The explanatory power of the case research will be improved if the behavior of the focal unit of analysis (e.g. the joint venture) is tied to the behavior of a more disaggregated level of analysis (e.g. the work teams). A parallel argument can be made for embedding the focal unit of analysis in a larger aggregate. If one is studying strategic decision-making in firms, the behavior of the focal units is undoubtedly moderated by market structure variables. The context of market structure may affect the phenomenon of strategic decision-making as much as the context of the demographics of the top management team.

#### *A single case or multiple cases?*

Can the phenomenon being studied be captured by within the context of a single case? There are many classic single case studies that have been used for theory-testing and theory-building. Liebow's<sup>10</sup> classic single case of poor, inner-city blacks from a single neighborhood was published as *Tally's Corner* in 1967. The depth of analysis of a single study group's responses to unemployment and despair was easily generalizable to other corners, other cities. Allison's<sup>11</sup> case study of the Cuban Missile Crisis was a deductive analysis driven by theories of conflict and confrontation behavior that captured the phenomena in a complete and generalizable manner. Yin calls Liebow's study a *revelatory* case and Allison's research a *critical* case, two types of justifiable single-case studies. The third type of single-case design is the *extreme* or *unique* case, where the phenomenon is acutely visible and inferences can be easily drawn that can be generalized to less extreme cases. At least at a tacit level of study, agricultural economists have used the interorganizational structure of the supply chain for the Smithfield Foods packing plant in Tar Heel, North Carolina as an extreme

case of producer-packer coordination/integration in the pork industry.

Yin admonishes researchers that multiple-case design is really replicative design. The phenomenon is being studied in slightly different contexts, much as a scientist repeats experiments with different controls. This is different from treating multiple cases as a sampling problem, which is a within-experiment design. The replication mentality shows the robustness of the phenomenon across contexts. The sampling mentality leads to (erroneous) analysis of the incidence of a phenomenon within a sample of cases that can be (erroneously) extrapolated to the population. Look to the way scientists in animal and crop sciences report phenomena studied experimentally for clues about how to present case studies, particularly in explaining the differences in treatments (contexts) from one replication to the next. An advantage of case studies of human behavior over studies of animals and crops is that the subjects can explain their reactions to contexts.

Another argument for using replicated cases is to illustrate the range of organizational forms and strategies used in an industry without attempting to calculate the incidence of the forms or strategies. The calculation of incidence is better done using sampling methods. However, one or two cases that describe the "archetypical" organizational form can be usefully compared with two or more "unique" cases to explore the generalizability of the phenomenon being studied among a range of contexts Westgren<sup>12</sup>. In a 1993 study, the George Morris Centre<sup>13</sup> of the University of Guelph used this approach to show commonalities of vertical business linkages across archetypes in poultry industries in four countries as well as atypical linkages that coexisted with the dominant (contractual integration) form.

*What is the interaction between unit of analysis and the choice between single and replicative case research design?*

A simple matrix of research design is presented by Yin<sup>1</sup>. In figure 1 below the interactions are illustrated.

Figure 1.

Designs for Case Study Research

| Source: Yin (1994, page 39)    | single-case design | multiple-case design |
|--------------------------------|--------------------|----------------------|
| single unit of analysis        | Type 1             | Type 3               |
| embedded case (multiple units) | Type 2             | Type 4               |

The significant pt about figure one is that the cost of the research increases as you move away from the Type 1 quadrant. Type 4 -- replicated embedded cases -- is prohibitively expensive in terms of researcher time, though one avoids questions of generalizability! Henry Mintzberg of McGill University used this design in longitudinal studies of several organizations including Steinberg's (a grocery retail chain) and the National Film Board of Canada<sup>14</sup>. This design exhausted several generations of MBA students, but did much to test the rational model of strategic planning and to formulate alternative models.oin

Choosing among Types 1,2, and 3 is a design question, moderated by constraints on time and budget. Can the phenomenon be effectively investigated in a single-case, single-unit-of-analysis design? To the extent that the researcher is relying on prior theory and has some well-established behavioral constructs that can be tested by observation, a Type 1 case study will be an effective empirical research design. The usual caveats about how conclusions should be generalized remain.

An embedded, single case is more expensive than an analysis of a single unit of analysis, but the richness of the interactions between the focal unit of analysis and other adjacent (lateral or hierarchical) units may be necessary to do a complete job of relating the phenomenon to the complex context in which it is observed. A replicated case study of a single unit of analysis may be better suited to a research team which follows identical research protocols in a parallel investigation. There may be time economies here, particularly in comparison to the embedded study. The design question turns on how much stronger the empirical test of the phenomenon will be with replications in different contexts.

*How do we know when a case study is good research?*

Case study methodology has been attacked for many reasons, substantive and otherwise. It is important for researchers that wish to do this type of research into the structural changes in the agri-food sector to jointly "set the bar" high enough that studies adhere to methodological rigor. Because many case studies cannot exploit long time series of data to test hypotheses using widely accepted statistical tests, the design and execution of the studies must be held to some standard of process rigor. Some important elements of

this process rigor are presented below.

1. Identify if the intent of the case is to do exploratory research. If the case study is primarily inductive, then make that the explicit research objective. State why it is exploratory. Is theory not sufficiently well developed to test hypotheses explicitly? Will the exploratory analysis seek to define behavioral constructs for subsequent empirical testing? Show the contribution that the exploratory case study makes to refinement of theory, development of constructs, and testable hypotheses.

If the case study looks solely like observation of an interesting firm or other unit of analysis, then it is poorly designed.

2. Include explicit discussion of relevant theories and published literature on the phenomenon being studied, just as in any empirical analysis that uses quantitative methods to test theory. Show a model with the behavioral constructs, relationships among variables, and causation. List hypotheses that are being tested. State the empirical or logical tests applied in the case.

3. Be careful with data. Yin<sup>1</sup> suggests maintaining a database of interviews, documents, financials, and other primary and secondary sources separate from researcher observation. Interviews should be taped and transcribed to avoid charges that the researcher's recollection and encoding-filters bias the data. Describe how data are collected, stored, and analyzed so as to maintain a "chain of evidence". Dedicated viewers of courtroom dramas (real and fictional) will understand this necessity as part of "making the case".

4. Use analytical aids for qualitative data such as documents (annual reports, press clippings, proxy statements) and transcribed interviews. Several software packages are available for doing textual analysis, including NUD\*IST<sup>15</sup> and VBPro<sup>16</sup>. Porac, Wade, and Pollack<sup>17</sup> scanned 1992 proxy statements from 266 companies from the S&P 500 and used VBPro to analyze compensation practices for CEOs. The data from the textual records were then available for automated coding and use in Poisson regressions.

5. Triangulate data. Use multiple sources of data for as many of the variables/constructs as is feasible. The degree to which archival data, direct observation, interviews, and document analysis converge makes the conclusions about the phenomenon more convincing. Triangulation is tantamount to validation when using qualitative data.

6. Tell a good story. Be sure that the manuscript is complete and logically constructed. Don't let the amusing anecdotes that arose in direct observation sidetrack the argument. Be certain the reader knows when the researcher's observations are discussed and when more credible sources of data are discussed. Relate the results of the case study to other published work as conclusions are drawn.

7. Be forthright about limitations and questions for further research. Offer suggestions for further tests; empirical or logical. Offer forecasts that will serve as tests of the theory being promulgated.

## Final thoughts

We have argued that case study research is good science when it is well designed and well executed. It is especially useful in investigations of current issues like the structural changes in agri-food markets where structural and behavioral norms are in flux. The burden on the researcher who uses this method is to maintain rigor in the process of executing the study.

This attention to process will mitigate some of the complaints that case studies are "soft" research.

It is hard to overstate the value of theory in grounding the case study. Proper use of theory will better focus the data collection and give "stronger voice" to qualitative data. It will make the case study look more like the typical journal articles with which it will compete for publication. The refinement and expansion of theory, in economics, in management, and in other fields, will be the ultimate product of case research. That theory, in turn, will be the foundation of our education and outreach programs, and the source of their value to students, graduates, and employers. It can be argued that many of the greatest contributions to economic theory are logical rather than empirical.

We must learn what we can from researchers in other disciplines where this method is more common. At the very least, we can learn process from them including the use of analytical techniques and of software which is not yet on network servers in agricultural economics departments. Our access to the exciting laboratory of firms and markets in the midst of profound change should be a valuable resource for attracting collaboration with scientists in other fields.

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**Table 1. Process of Building Theory from Case Study research**

| STEP                               | ACTIVITY  | REASON   |
|------------------------------------|---|--|
| Getting Started                    | Definition of research question                     | Focus efforts  |
|                                    | Possible <i>a priori</i> constructs                 | Better grounding of construct measures   |
| Selecting Cases                    | Neither theory nor hypotheses, Specified population | Retain theoretical flexibility   |
|                                    | Theoretical, not random sampling                    | Focus on theoretically useful cases B those that theory By filling conceptual categories |
| Crafting Instruments And Protocols | Multiple data collection methods,                   | Triangulates evidence  |
|                                    | Qualitative and quantitative data                   | Synergistic view of evidence   |
|                                    | Multiple investigators                              | Divergent perspectives   |

|                      |   |  |
|----------------------|---|--|
| Entering the Field   | Overlap data collection and analysis, including field notes | Speeds analysis and reveals useful adjustments for collection                          |
|                      | Flexible and opportunistic data collection methods          | Take advantage of emergent themes and unique features                                  |
| Analyzing Data       | Within-case analysis  | Gain familiarity with data and preliminary theory generation                           |
|                      | Cross-case pattern search using divergent techniques        | Forces researchers to look beyond and view evidence through multiple lenses            |
| Shaping Hypotheses   | Iterative tabulation of evidence for each construct         |  |
|                      | Replication, not sampling logic across cases                | Sharpens construct definition, validity, and measurability                             |
|                      | Search for evidence of "why" behind relationships           | Confirms, extends, and sharpens theory<br>Builds internal validity                     |
| Enfolding Literature | Comparison with conflicting literature                      | Builds internal validity, raises theoretical level, and sharpens construct definitions |
|                      | Comparison with similar literature                          | Improves generalizability, raises theoretical level, sharpens construct validity       |
| Reaching Closure     | Theoretical saturation when possible                        | Ends process when marginal improvement is small  |

Source: Eisenhardt, 1989, pp. 533.