Journal of Agribusiness 23,1 (Spring 2005):75–91

Qualitative Research: A Grounded Theory Example and Evaluation Criteria

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The qualitative research paradigm, although occasionally applied, is not widely discussed in agribusiness and agricultural economics literature. The primary goals of this paper are (*a*) to present insights into qualitative research approaches and processes by outlining grounded theory as an example of a systematic and rigorous qualitative approach, and (*b*) to discuss criteria for scientific rigor applicable to qualitative research. In addition, assessing qualitative research is demonstrated by using a published example.

Key Words: management research, methodology, qualitative research methods, reliability, validity

Econometric modeling and other quantitative approaches have become the main focus of research and publications in agricultural economics. Debertin and Pagoulatos (1992) show an increase in publications using quantitative methods in the *American Journal of Agricultural Economics* (*AJAE*) from under 5% in 1950 to more than 92% in 1992. The marginal category of "non-quantitative methods" comprises theoretical as well as conceptual contributions, and descriptive analyses. Qualitative research as understood in other social sciences is virtually nonexistent in the *AJAE*. This tendency has given rise to the question of whether research methods are chosen as a function of the problem addressed, or whether the problem is chosen as a function of the techniques available (Debertin and Pagoulatos, 1992).

Johnson (1986) pointed out how different kinds of research (disciplinary, subject-matter, and problem-solving research) require different approaches and methods. Just (2001) indicated the necessity of other than traditional models and econometric characterizations in the context of the analysis of unanticipated events and timely policy recommendations. In problem-solving and subject-matter research, selected methods from under the qualitative umbrella are applied to emerging problems and to develop timely recommendations for decision support (Bitsch, 2000a). Although

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Vera Bitsch is assistant professor, Department of Agricultural Economics, Michigan State University. The author expresses deep gratitude to Elaine Yakura and Getachew Abate Kassa for multiple readings of the manuscript, and insightful comments and suggestions. The author also wishes to thank Scott Swinton, Christopher Peterson, and Les Manderscheid who have provided valuable suggestions and encouragement, and two anonymous reviewers for helpful critique and questions.

in many ways marginalized, discussion about qualitative inquiry in agricultural economics, and more specifically within agribusiness research, has recently commenced—particularly regarding case study research (e.g., Bitsch, 2000b; Sterns, Schweikhardt, and Peterson, 1998; Westgren and Zering, 1998).

Qualitative research approaches lend themselves to different purposes and questions, either in conjunction with or to prepare and add to quantitative research, or as stand-alone methods. Areas of application of qualitative approaches include: (*a*) the description and interpretation of new or not well-researched issues; (*b*) theory generation, theory development, theory qualification, and theory correction; (*c*) evaluation, policy advice, and action research; and (*d*) research directed at future issues. Examples of the use of qualitative methods in multi-method projects are focus group discussions to frame a research question appropriately for a specific context, in-depth interviews of key informants before developing a questionnaire and to help interpret the results of an econometric model, or inclusion of open-ended questions in a structured questionnaire to collect unanticipated data.

The objectives of this article are (*a*) to provide agribusiness researchers and agricultural economists with insights into qualitative research approaches and processes by presenting grounded theory as an example of a systematic and rigorous qualitative approach, and (*b*) to suggest criteria for evaluating qualitative research. The practice of qualitative research is illustrated with the example of the grounded theory approach, which is widely used in the social sciences. Focusing on grounded theory, the first part of the article enables the reader to consider including qualitative methods in a research project, provides a framework for analyzing qualitative data, and helps in identifying areas and questions where qualitative approaches may add to the methodological toolkit and offer a useful perspective. Examples of applications of grounded theory in agriculture and organizational theory conclude this section.

The second part of the article provides a discussion of criteria for evaluating qualitative research designs and processes in the execution of qualitative research. Criteria are illustrated by applying them to a study published in an agribusiness journal. In addition to planning and implementing the research process, these criteria can be used to guide the reporting of qualitative research. To that end, reviewers of qualitative research can use the criteria to evaluate a report for publication, and potential users of the results can assess a study's trustworthiness. The paper concludes with the discussion of adoption barriers of qualitative research and makes the case for an increased role of qualitative research in agribusiness and agricultural economics research.

Qualitative Research Strategies: The Grounded Theory Approach

The number of research strategies summarized under the qualitative umbrella has increased significantly in the past two decades, and is still increasing. Each additional field that works more intensely with these methods gives them a new twist, adds ideas, and develops its own techniques (Denzin and Lincoln, 2000).

Some of the different types of qualitative research strategies include hermeneutic and phenomenological research, naturalistic inquiry, ethnomethodology, ethnography, qualitative case study, participatory action research, and grounded theory. In lieu of a comprehensive overview of qualitative research strategies—an endeavor even the latest edition of *The Handbook of Qualitative Research* (Denzin and Lincoln, 2000) does not strive to undertake—this article will focus on grounded theory as an example of qualitative research strategies, which can add a valuable perspective to agribusiness and agricultural economics research.

Grounded theory, first published in 1967 by Glaser and Strauss, is the master metaphor of qualitative research. According to Lee and Fielding (1996), many qualitative researchers choose it to justify their research approach, particularly in more quantitative fields. Grounded theory is a methodology of developing inductive theories that are grounded in systematically gathered and analyzed data. Data collection, analysis, interpretation, and theory development proceed interdependent and iterative.

Readers may have encountered the concept of ground truth (or ground truthing) through multi-disciplinary projects. Ground truth, a concept derived from remote sensing, refers to the gathering of on-site reference data (Short, 2004). In a broader sense, ground truth refers to reference points for the validity of models, software, or new technologies—e.g., rainwater measurement to validate a rain distribution simulation model (Trafalis et al., 2002), using a book index to validate retrieval tools (Harper et al., 2004), or observed behavior to validate polygraph data (Patrick and Iacono, 1991). Both grounded theory and ground truthing rely on systematic data collection. However, the purpose of grounded theory research is to inductively develop a new theory of a research area based on systematically collected data; the purpose of ground truthing is calibration, testing, or validation of a model or a theory with additional data. Ground truthing is more likely to occur in a deductive research approach, whereas grounded theory is an example of an inductive research approach.

The Grounded Theory Research Process

The process of building grounded theory consists of different phases, which include deciding on a research problem, framing the research question, data collection, data coding and analysis, and theory development (figure 1). A grounded theory project typically does not begin with a theory from which hypotheses are deducted, but with a field of study or a research question, and what is relevant to this question is allowed to emerge during the research process.

Like other research projects, the process starts with identifying the research problem and the framing of a research question that demarcates the phenomenon to be studied. The research situation varies depending on many factors, such as literature that provides background information. The literature review is, however, not a key part of a grounded theory approach. Personal and professional experiences of the researcher or research team, the study sites and materials accessible, and the level of sophistication brought to the analytical process are considered more

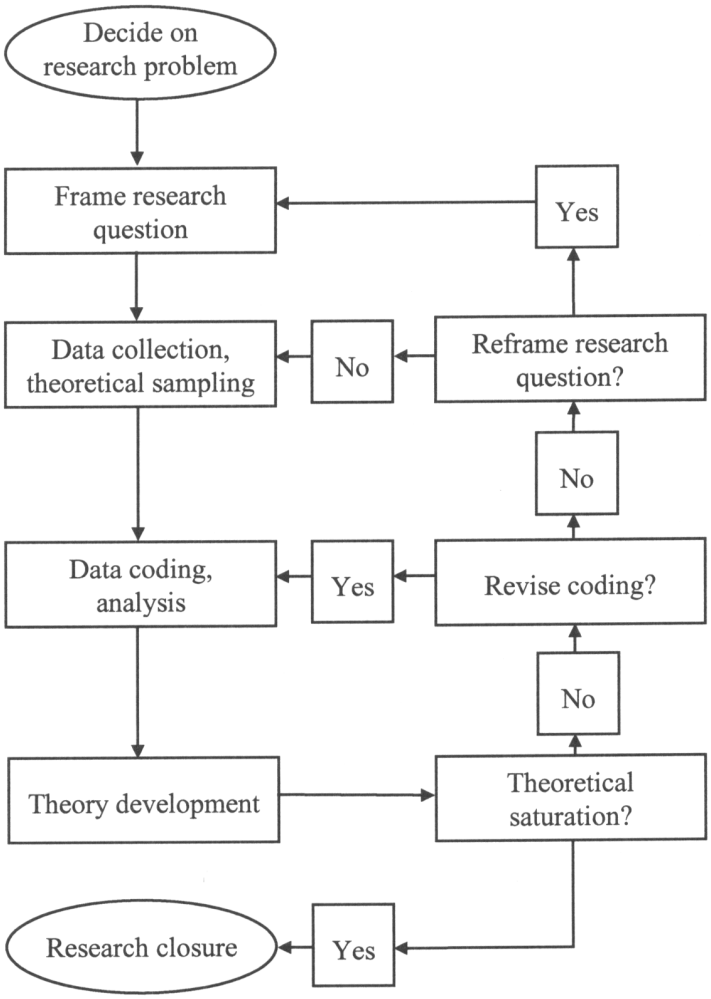

Figure 1. Grounded theory flow chart

important than being familiar with previous research—the rationale being that preconceptions can get in the way of critical thinking and discovery.

A key concept for this approach is "theoretical sensitivity" (Glaser, 1978), which reflects the ability to think about data in theoretical terms and integrate complex knowledge in the research situation. Strauss and Corbin (1990) define theoretical sensitivity as "the attribute of having insight, the ability to give meaning to data, the capacity to understand, and capability to separate the pertinent from that which isn't" (p. 42). Theoretical sensitivity is to be developed further during the research process through continuous interaction with the data and the emerging theory in conceptual terms.

Sampling procedures differ from those of quantitative studies and are based on the concept of "theoretical sampling" (Strauss and Corbin, 1990, pp. 176–193). Sampling decisions are to be grounded in the emerging concepts that become relevant to the developing theory. This means sampling decisions evolve during the research process, and sampling cannot be planned before embarking on the study. Similar to other qualitative research strategies, the grounded theory approach applies one or more techniques to collect empirical data. These techniques range from different interview types (e.g., in-depth interview, focus group interview, survey) and observational techniques, including participant observation and similar field work, through archival analysis.

The analytic procedures in data coding and analysis are based on the method of constant comparison. After noting an event, it is compared to other events with respect to commonalities and differences. Constant comparison serves to uncover and explain patterns and variations. During the research process, hypotheses about the relationships between categories are developed and tested. Hypotheses are revised and qualified until they pertain to all data material, in preparation of the development and grounding of the emerging theory. One of the quality control procedures is the search for negative cases and qualifying material (Glaser and Strauss, 1967).

Collection and analysis of data are closely related and carried out in constant alternation. Theory generation is not based on the raw data; it is based on concepts and categories being developed out of the raw data. The data coding and analysis phase of grounded theory studies builds on three analytic techniques: open coding, axial coding, and selective coding (Strauss, 1987; Strauss and Corbin, 1990). Open coding refers to the technique of identifying and developing categories and subcategories in terms of their properties and dimensions. Open coding is most pertinent during early stages of the research project and data collection. Sampling concentrates on the systematic variation of conditions during this phase. Axial coding focuses on the relationships between categories and subcategories, including conditions, cause-and-effect relationships, and interactions. During the axial coding phase, sampling strives for increasing variance by including cases that seem to contradict the evolving theory. Selective coding involves integrating categories and subcategories with a central concept and providing sufficient detail and density for the evolving theory. Sampling during the selective coding phase becomes very directed and deliberate to fill in additional detail, test for further variation, and clarify final questions near the completion of the research project.

To summarize the data collection and analysis phases, the selection of the sample depends on the emerging theory, the concepts extracted, and their characteristics. Systematic variation of conditions is the leading objective. Sampling and data collection continue until theoretical saturation. Theoretical saturation means that with the collection and analyses of additional data, no new concepts are developed and additional data do not require changes in conditions, characteristics, or consequences of the existing categories (Strauss and Corbin, 1990).

Examples of the Empirical Application of Grounded Theory

For the past two decades, grounded theory approaches have been increasingly applied in sociology, social anthropology, rural sociology, psychology, educational research, marketing and consumer research, management and organizational research, and other social sciences. It is even expanding into research areas such as information systems for the purpose of developing context-based, process-oriented descriptions and explanations of phenomena (Myers, 1997). While applications are nearly nonexistent in agribusiness research and agricultural economics (one of the few exceptions will be discussed below), grounded theory has recently received increased attention in agricultural education and extension research. Kelsey, Weeks, and Terry (2002) applied a grounded theory approach to develop a conceptual understanding of agricultural leaders' perspectives and outlooks on issues surrounding the Oklahoma agricultural industry. Trexler and Meischen (2002) applied grounded theory and cognitive anthropology to gain an understanding of the agricultural and science education national curricular benchmarks related to the agri-food system.

Another example of a grounded theory study which includes an agricultural application is the Minnesota Innovation Research Program (MIRP) (Schroeder et al., 1986). Three administrative innovations and four product innovations were researched, among them hybrid wheat. Several research methods were applied: historical case studies based on interview material and archival information were supplemented by baseline data for each innovation. The development process of the innovations was observed, including surveys of all key persons, research diaries about the participation at management committee meetings for each innovation, and interviews with all participating researchers. Results showed six core events to be characteristic of all analyzed innovation processes: (*a*) initial shock; (*b*) proliferation to a critical mass of innovations; (*c*) setbacks and unexpected developments, used as learning opportunities; (*d*) linking the established order and innovative change; (*e*) organizational restructuring, i.e., changes in responsibilities, teamwork, or control systems; and (*f*) top management involvement throughout the process.

A model based on these characteristics describes successful and less successful innovation processes realistically. Differing from the well-known sequential stage models of innovation, actual innovation processes were more complex because divergence, parallel, and convergence processes occurred at the same time. While some of these processes were interdependent, others were disjunctive and independent. The model based on grounded theory research led to an improved understanding

of innovations and conceptualizing of adequate supporting measures for innovation processes.

The innovation model developed by Schroeder et al. (1986) parallels an independently developed model by Gersick (1988, 1989, 1991). Applying the grounded theory approach to the analysis of work team development, Gersick rejected traditional group development models, which assume a universal series of stages through which each work group progresses [e.g., Tuckman's (1965) forming, storming, norming, and performing]. While these models had been challenged throughout the 60s, 70s, and 80s by both theoretical and empirical work, management texts perpetuated them. In her groundbreaking work, Gersick models group processes as alternating between inertia and revolutionary changes in their behaviors and themes, depending on time and deadlines. Gersick (1994) further extended this model into a general model of organizational change and temporal pacing.

Hackman (1992) remarked how Gersick's work, which today is well accepted as the "Gersick model" of group development, was initially shunned for not reflecting mainstream organizational research methods. He further points out that achieving her breakthrough was only possible by staying close to the phenomena studied and choosing the methodology based on the research question—not vice versa. These examples show how grounded theory can change prevailing theoretical models and add to the conceptualization of research questions in different fields.

Criteria for Evaluation of Qualitative Research

With the qualitative research paradigm and qualitative research strategies gaining ground in agricultural economics, and more specifically agribusiness management research, the time has come to join the continuing debate on criteria for evaluation of qualitative research [see Eisner and Peshkin (1990) for the "continuing debate" in education]. If decision makers in the agri-food sector and policy makers in local, state, and federal governments are to rely on the results of qualitative inquiry, researchers need to establish evaluation criteria for these research strategies.

Criteria for the evaluation of qualitative research cannot be easily imported from quantitative research. Criteria for scientific rigor must be reformulated to address qualitative research adequately. In addition, different criteria such as research ethics, responsibility, and consequences of research must be considered (Lincoln, 1995).

The diversity of qualitative research is reflected in the variety of approaches to criteria for evaluation. For the purpose of this paper, the discussion will be limited to general criteria for the evaluation of qualitative research, excluding the more specific criteria that have been developed for and apply only to grounded theory. The criteria outlined below are revisions of the positivistic criteria of rigor. This paper does not embark on post-modern or relational conceptualizations (e.g., Lincoln, 1995; Denzin, 1997), and will not include ethical criteria that are benign to any kind of research. However, the discussion transcends the concepts of generalization and repeatability referred to by Westgren and Zering (1998) or Sterns, Schweikhardt, and Peterson (1998), which are based on Yin (1994) (see also Yin, 2003).

Guba (1981) developed criteria of trustworthiness which parallel the criteria of internal validity, external validity, reliability, and objectivity. Pointing out that different concepts should be labeled differently to reflect the reconstruction of the criteria in a qualitative context, Guba and Lincoln (1989) refined and further detailed the application of the trustworthiness criteria (credibility, transferability, dependability, and confirmability) in the context of project evaluation. This paper adapts these criteria to the agricultural economics and agribusiness context and illustrates them by application to Schroeder et al. (1986).

Which criteria are relevant in evaluating a particular qualitative study depends on the research objectives and context. For their 1986 study, Schroeder et al. state their research objectives as follows: (*a*) theoretical objectives (to develop a process theory of organizational and technological innovations), and (*b*) prescriptive objectives (to support the management of innovations through illuminating the temporal sequence of activities during the development and implementation of new ideas). Therefore, all criteria outlined below will be considered. If a study does not satisfy all criteria or the publication does not explicitly address them, this does not mean it is useless. As long as a reviewer is confident that a plausible case for trustworthiness of the study is made, deeper audit can be left to potential users.

Credibility

Internal validity refers to the equivalence of research results with the objective reality. This so-called correspondence theory of truth has been rejected by knowledge theorists, independent of the research paradigm. Statements can only be compared to other statements [Czarniawska (1998), referring to Rorty]. Truth or proximity to truth are not provable (Popper, 1972). Therefore, in a qualitative research context, correspondence with reality is replaced by correspondence of the perspectives of the participants with the description of their perspectives by the researcher. Guba and Lincoln (1989) elaborated on six techniques to ensure credibility: (*a*) prolonged engagement, (*b*) persistent observation, (*c*) peer debriefing, (*d*) negative case analysis, (*e*) progressive subjectivity, and (*f*) member checks. These six credibility techniques, in addition to a seventh technique, triangulation, are discussed more fully below, and are illustrated with their application to the Schroeder et al. (1986) published example.

- *Prolonged Engagement.* Prolonged engagement asks the question whether the researcher or research team spent enough time on the research site. Have they overcome the effects of misinformation, built the trust necessary to uncover local constructions, and understood the context and its culture?

The Minnesota Innovation Research Program (MIRP) was a longitudinal research program that started in 1983 and was in its fourth year when Schroeder et al. (1986) published their emerging theory. Researchers visited the innovation sites every six months to administer questionnaires and interview all key actors. In addition,

meetings of each innovation management committee were observed. While the time spent at each research site was not quantified in the publication, the authors presented sufficient evidence for prolonged engagement.

- *Persistent Observation.* Persistent observation poses the question whether the researcher or the research team have done an in-depth study to gain detail. Have the most relevant characteristics of the situation for the problem under study been identified? Have enough details been gathered? Has sufficient depth been added to the scope, which was gained through prolonged engagement?

In addition to the scope of their study, Schroeder et al. have been able to add appropriate depth and detail by employing different research methods (historical case vignettes, observational data, interviews with different actors, research diaries). Although the data reported were highly aggregated and did not allow the evaluation of the amount of detail gathered, description of the study methods provided evidence of persistent observation.

- *Peer Debriefing.* Peer debriefing addresses whether the researcher or research team have engaged in an ongoing discussion with non-contractually involved peers during the research process. Have conclusions been shared during the research process? Has tacit and implicit information been verbalized and have findings been tested against others' perceptions?

Four researchers did evaluate each of the seven innovations independently and discussed their findings until joint conclusions were reached. Without specifically invoking the concept of peer debriefing, researchers were employing it within their research group and possibly beyond. MIRP involved over 30 faculty members and graduate students, who most likely did discuss project progression and findings on a regular basis.

- *Negative Case Analysis.* Negative case analysis looks at whether hypotheses have been refined to account for all known cases. Do a "reasonable" number of cases fit the appropriate categories? Have rival hypotheses been considered and rejected?

The Schroeder et al. study process was reported as building on the initial analysis of one case and the literature. Each researcher then analyzed each case independently, followed by discussions to reach joint conclusions. This process of several stages of revisions indicated that the hypotheses and propositions set forth in the paper have gone through a reviewing and refining process.

- *Progressive Subjectivity.* Progressive subjectivity focuses on monitoring bias. Have the researcher's or the research team's conceptions changed during the process or did they mainly find what was already expected? Are the findings joint constructions of the researcher(s) and the participants?

The Schroeder et al. research results challenged most of the literature summarized in the article and led to a revision of the stage model of innovation. Therefore, it can be concluded that the researchers not only found what was expected, but developed an innovative model of the innovation process. Whether specific precautions were in place to prevent bias was not explicitly addressed.

- *Member Checks.* Member checks address research participants' input in the interpretations and reports. Have data and interpretations been re-checked with the participants? Did those who provided the data agree with findings and interpretations? Have they been heard and did they contribute to the final findings and conclusions?

Formal input of members of the management committees of the innovations studied or other key actors has not been reported by Schroeder et al. Including study participants as additional reviewers of the research results and reporting their perspectives would have provided additional evidence of credibility.

- *Triangulation.* An additional way to strengthen a study design is through triangulation, a term taken from land surveying where any point on the planet's surface can be located with two other known landmarks. Guba (1981) included triangulation for assessing credibility and confirmability. Four types of triangulation have been discussed in the methodological literature (Patton, 1990, pp. 186–189; Denzin, 1978, pp. 291–307; Yin, 2003, pp. 97–99): (*a*) data triangulation, (*b*) investigator triangulation, (*c*) theory triangulation, and (*d*) methodological triangulation. Data triangulation refers to using a variety of data sources instead of relying on a single source. Investigator triangulation means employing more than one researcher, constituting a research team to balance predispositions. Theory triangulation aims at bringing multiple perspectives to bear on the data set to yield different explanations which can be pursued and tested. Methodological triangulation combines different methods to study a problem, a case, or a program. Studies that use only one method are subject to biases linked with that particular method. For example, a combination of interview, observation, and archival research can reduce possible distortions or misrepresentations.

Schroeder et al. presented evidence of all four types of triangulation: (*a*) data triangulation—a variety of sources were employed during data collection (archival data and interviews for the historical data, questionnaires and interviews with key actors for each innovation, research diaries of management meetings, and interviews with researchers); (*b*) investigator triangulation—several researchers have reviewed the same data, and all seven cases were analyzed by each researcher; (*c*) theory triangulation—developmental phases in process models of different subject areas (groups, decision processes, organizational planning, organizational change, and innovation) have been analyzed and taken into consideration; and (*d*) methodological

triangulation—a variety of methods have been brought to bear on the research question, including historical case study, baseline data collection regarding environmental and organizational settings of each innovation, and observation of each innovation's development over time using questionnaires, interviews, research diaries, and interviews with researchers.

Transferability

Transferability parallels external validity and generalizability. It refers to the degree to which research results can be applied to a context apart from where they were gained or with different subjects. Situational variations might produce atypical effects. One way to deal with this possibility is to apply probability sampling to reduce context-dependence. While the history of science shows that generalizations eventually decay, i.e., they are replaced by different theories and models [see, e.g., Kuhn (1970) on mature sciences such as physics], contextual specificity is a concern in the social sciences, including agribusiness and agricultural economics. As Adcock and Collier (2001) showed for political science, depending on the context of observations (e.g., different countries), empirical domains need to be refocused and indicators need to be adjusted to measure similar concepts.

Transferability refers to determining the extent to which findings can be applied in other contexts or with other respondents, the similarity between sending and receiving context. In contrast to quantitative research techniques, the burden of proof shifts from the researcher to the person who wants to apply the research results.

The researcher facilitates the transferability judgment by a potential user through "thick description" and purposeful sampling. Thick description, a term coined by Geertz (1973), is not only dense and rich in detail, but an interpretive description. The description includes the intentions of the actors and what gives actions meaning from their point of view. What constitutes proper thick description is not completely resolved, because what is relevant or irrelevant changes, depending on the research question and the context of an inquiry. Potential users will be provided with a database as comprehensive as possible.

In the interest of reducing contextual specificity, a majority of quantitative studies randomize participant selection; for most qualitative studies, participants are selected purposefully. The guiding idea is to select participants or cases that are information rich, i.e., contribute the most to answering the research question. During the research process, selection of additional participants or study sites will be guided by the emerging insights about what is relevant to the research question. The sampling procedure ensures that typical as well as atypical cases are included (Patton, 1990, pp. 169–183), referred to as theoretical sampling in grounded theory.

Schroeder et al. (1986) reported a model of the innovation process derived from the analysis of seven different innovations, including four product or technical innovations and three administrative or organizational innovations. The product innovations were hybrid wheat, cochlear implants ("artificial ear" providing deaf

people with an ability to discriminate sound), therapeutic apheresis (removal of pathogenic blood components), and naval systems (a defense contractor developing a weapon system for the U.S. Navy, also including process and management innovations). The administrative innovations were a site-based management system of public schools (decentralized decision making shifting responsibilities from the superintendent to school principals and sharing these responsibilities with representatives of the schools' constituencies), strategic human resource management (transfer of responsibility of the human resource department to line managers in a large corporation, fostering the spirit of cooperation between line and staff personnel), and creating a new organization (start-up of a computer software company).

Through the purposeful sampling procedure, a great deal of contextual variation has been integrated in the research design and case selection. The description of these cases was limited by the page limits of a journal publication. "Thick description," which Gersick (1988) managed to imply by citing multiple passages of the transcripts of different group discussions, has not been used by Schroeder et al. (1986). Information has been presented on an aggregate level. Yet, for each case, evidence of the different core events outlined to describe the innovation process has been presented in the paper, thus providing a basis for a transferability judgment.

Dependability

Paralleling the concept of reliability, dependability refers to the stability of findings over time. Dependability answers the question whether research results would be the same, were the study replicated with the same or similar participants in a similar context.

In a quantitative context, changes of methods and techniques would jeopardize reliability. Researchers must take precautions against instability caused by instrumental drift, shifts in hypotheses, constructs, and methods. On the contrary, changes in hypotheses, concepts, and even the focus of a research project are a sign of a maturing and successful research process in a qualitative context. As qualitative studies often feature an emergent design, these changes are expected, but researchers need to keep track of them. Detailed and comprehensive documentation of the research process and every methodological decision ensure the dependability of research findings.

Bogdan and Biklen (1998) discussed dependability and pointed out how academic training affects the questions a researcher brings to an inquiry. Consequently, theoretical perspectives specific to their fields will structure their study, they will collect different types of data, and reach different conclusions. Therefore, different researchers studying the same setting will focus on different data which results in different findings. As long as their results are not incompatible, their studies may all be dependable.

Overall, the MIRP included over 30 faculty members and graduate students and a series of longitudinal studies of 14 innovations. It has resulted in several publications, including a summary book publication in 1989 (van de Ven, Angle, and

Poole), which was reprinted with additions in 2000. Because of the magnitude of this project, changes in hypotheses, concepts, and focus can be observed when analyzing the overall program. Schroeder et al. (1986) did not explicitly address the issue of maturation of instruments and hypotheses during the research process, and have offered limited information with respect to process documentation. However, the number of researchers involved, in combination with the longitudinal approach and the variety of cases studied, indicated a strong effort to ensure dependability of results.

In addition, Schroeder et al. have alluded to the development of hypotheses through their reporting process of beginning with the literature analysis and evidence of one case, and then progressing to multiple, diverse cases. The authors also carefully documented the research methods employed. In labeling the last part of their report "An Emerging Innovation Process Model," they provided additional evidence that they followed a qualitative research paradigm and were aware of and open to possible changes as the project progressed.

Confirmability

Parallel to objectivity, confirmability deals with the issue of bias and prejudices of the researcher. Data, interpretations, and findings are supposed to be anchored in individuals and contexts apart from the researcher. When conducting quantitative research, objectivity is rooted in methods. Following the process correctly ensures that findings are independent of values, motives, or political persuasions. However, analysis of actual research processes has shown that methodological rules leave room for subjective decisions and bias (e.g., Gephart, 1988).

While objectivity emphasizes value freedom, confirmability relies on the explication of values [for a discussion of the role of values in scientific research, see also Myrdal (1969)]. Practicing reflexivity and discussing the researcher's underlying epistemological assumptions and personal involvement with the research is another important feature.

The integrity of qualitative research is based upon the data themselves and the research process. Quality assurance of the research process depends on its elaborate documentation. The audit trail should allow data to be tracked to their sources. The logic used to integrate interpretations into a coherent research narrative should also be visible.

While value explication was not a component of the Schroeder et al. 1986 study, the number of researchers involved, including graduate students, and the longitudinal approach most likely have fostered the discussion of underlying assumptions and alternative explanations. Data, research procedures, and results have been documented in different publications and can be made available for audit. The six major propositions have been summarized, offering incidences of each proposition for each case. In addition, explanations, examples, and details were provided for each proposition, opening up the research to critical evaluation.

Conclusions

"Throughout the history of science, philosophers and scientists have sought to describe a single systematic procedure that can be used to generate scientific knowledge, but they have never been completely successful. The practice of science is too multifaceted and its practitioners are too diverse to be captured in a single overarching description" (Committee on Science, Engineering, and Public Policy, 1995, p. 3).

Thus, defining science in a narrow way, and thereby excluding different approaches, unnecessarily bounds the scope of scientific exploration. As Lindblom (1987) stated, "For coping with social problems, thinking in many forms is required" (p. 519). The search for uniform criteria of what constitutes superior research has not been successful. Some criteria may be applicable at certain stages of research, but less so at others. Different research traditions require different criteria, even within the qualitative research paradigm (Lincoln, 1995).

If exchange and cross-fertilization between quantitative and qualitative research are accepted as valid objectives, a common language is needed to foster understanding between both. To that end, this article has sought to increase the accessibility of qualitative research for agricultural economists and agribusiness researchers. Analyzing qualitative data that have been gathered as part of a quantitative project under a systematic paradigm, as provided by the grounded theory approach, will contribute to the applicability of research results and their acceptance by stakeholders.

Bonnen (2001) argues, "When the world economy and agriculture begin to change as fundamentally as at present, our current professional capacity grows obsolescent. That is, the concepts, databases, and analytical modes by which we comprehend the world begin to lose relevance. New problems arise that require more data and analysis—and integration with other databases and analytical modes" (p. 32).

Similarly, Sterns, Schweikardt, and Peterson (1998) write, "As agricultural economists extend their research agenda into the realm of agribusiness management, they are finding that traditional research strategies that focus primarily on survey and analysis of archival data are, at times, limited in their applicability and scope.... Documenting the motivations and strategies underlying decisions that are, in practice, far more complex than a decision rule like 'maximize profits' or 'minimize costs' requires alternative research approaches" (p. 311f.).

An important question raised by a reviewer is why so little attention has been paid to qualitative research approaches, such as grounded theory, by agricultural economists. There are several potential barriers to adopting a qualitative approach in the agricultural economics profession. One is that qualitative research approaches and methods are not included in a typical agricultural economics curriculum, nor are they part of standard agribusiness management classes, beyond the case study approach. Students who need to acquire knowledge in this area attend courses offered by other departments, and at times subsequently change their field of study to better accommodate such research interests. Professional researchers rarely have the time to review literature outside of their main field to broaden their methodological toolkit.

Another reason may be the publication process itself. In order to gain tenure, agricultural economists need to publish in "mainstream" journals which rarely devote attention to qualitative studies [see Heneman, Tansky, and Camp (2000) for a similar argument with respect to human resource management research in small and medium-sized enterprises]. The latter situation is reinforced in agricultural economics by the fact that many reviewers would not have applicable evaluation criteria for qualitative research readily available.

Qualitative research approaches, including grounded theory, are suited to tackle a wide range of problems. Qualitative methods can be used to better understand the details of phenomena which are difficult to address with quantitative methods. Their application is not limited to discovery, but includes qualification and correction of existing theories. A broader use and publication of qualitative approaches can serve to supplement the dominant quantitative approaches in agricultural economics and agribusiness research. Designing, implementing, and reporting qualitative research must be based on competent application of these approaches, reflecting the state of the discussion in other social sciences, and must adhere to quality criteria.

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