Can Field-Based Studies Bridge The Accounting Information Systems Research Gap?

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Abstract

Over the last 15 years, numerous authors have suggested that opportunities for relevant real-world research are being missed, while a large portion of accounting research lacks relevance. Although most prominent in the management accounting literature, such comments are now increasingly addressed to accounting information systems (AIS). This paper reviews the literature calling for more relevant accounting research, identifies contributions field-based research makes to AIS, considers barriers to real-world research, and calls for a shift toward real-world AIS research.

Introduction

During the last fifteen years, a number of papers and books have suggested that opportunities for relevant real-world research endeavors are being missed, while a large portion of academic accounting research lacks relevance. Similar thoughts were voiced in an AIS-context during a panel of journal editors at the 1995 AIS Research Symposium, when the point was made repeatedly that AIS research has lost its way.

AIS researchers need to pay more attention to what practice requires of our graduates and what would be of benefit to both practice and industry, rather than spending time and energy on research activities that lack relevance to the real-world of accounting and accounting information systems. However, among the views expressed at the Research Symposium was that a major shift in the current nature of AIS research is unlikely in the short-term, especially given the low numbers of AIS doctoral students.

This paper reviews the literature calling for accounting research that is more relevant to the real-world of accounting, identifies contributions that field research can and has made to the AIS discipline, considers the perceived barriers to real-world research, and calls for a shift toward *real-world* AIS research.

Criticisms of accounting research

Criticisms of accounting research can be classified in two ways - ignorance and irrelevance. *Ignorance* in the sense that this research is conducted by academicians unaware of what is actually happening in the real world. *Irrelevance* in the sense that it is being undertaken by academicians intent upon producing output that appears scientific and rigorous, rather than directly

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applicable to the real world.

Ignorance

Johnson and Kaplan (1987) asserted that academic accountants tend to use economic models that oversimplify the real world. As a result, their models, which seem appropriate in their apparently useful findings, are of limited use when applied to the multi-product multi-process real-world.

The academics developed their ideas by logic and deductive reasoning. They did not attempt to study the problems actually faced by managers of organizations producing hundreds of thousands of products in complex production processes (p. 176).

They saw a research stage in which university researchers were not only undertaking research from a position of ignorance, they were also missing any significant input from practitioners that could have helped correct the misconceptions of their ignorance:

Researchers ... were busy developing highly sophisticated models for management accounting in simplified, stylized production settings. The research was neither motivated by actual organizational phenomena nor tested nor even testable on the data from contemporary organizations. Meanwhile, practicing management accountants were not writing about either the problems or the innovations in their organizations (p. 177).

This apparent ignorance of the real-world is also evident in the content of many accounting courses (IMA 1994). As suggested by the Big Eight (1989), accounting faculty frequently overlook significant sources of information when devising their syllabi, relying solely on textbooks and official pronouncements.

Bricker and Previts (1990) suggest that this gap between research and reality is "characterized by a popular perception of a lack of common interest between members of the academic and practice communities (p.1)." Mulford et al. (1992) concur. The existence of such a gap is supported by the decreasing number of practitioner members of the American Accounting Association. In 1969, the number of practitioner members was 8,642. Currently, the number of practitioner members is only around one-sixth of that level, at 1,466 (AAA, 1995).

Irrelevance

While perhaps the clearest and certainly the most cited views on relevance were proposed by Johnson and Kaplan (1987), they were not the first to raise this issue. Earlier work includes Coats et al. (1983) who concluded from a study of management accounting practices in 14 companies that a substantial gap persisted between theory and practice. In 1984, Mattessich recognized a pressing need to bridge the constantly growing gap between academicians and practitioners. Wyatt (1989) suggested that the limited impact of accounting research on practice is due to this gap.

Scapens (1991) considered the relevance of management accounting research to practice. He concluded that the gap between theory and practice is reflected in a gap between theoretical research and practical research, and that practical research needs a theoretical framework capable of practical application. He believed that an appropriate framework would likely come from a study of existing practice - that is, field-based research.

A similar gap has been perceived in AIS research. Very few field studies have been reported in AIS over the past decade - less than ten articles in that period in *Journal of Information Systems* and *Accounting Systems Journal* combined. The entire issue has now become so acute that it was raised at length by members of an editors panel at the 1995 AIS Research Symposium, who made a general call for more field-based research. This lack of activity has not occurred because of either a lack of data or a lack of opportunity. O'Leary (1988), for example, wrote:

There is little in the literature going beyond this basic model indicating how to estimate such costs ... [of development] ... or implementation hours. Yet, those ... [management consulting] ... firms probably have substantial data that would facilitate such a study [p.30].

In addition, corporations implementing accounting information systems and/or accounting firms involved in the on-going development of accounting information systems offer the opportunity for researchers to study a number of issues beyond the scope of the work papers. Accounting researchers can function as participant observers or just observers in the development of accounting information systems [p.34].

Field research opportunities do exist in AIS, but few researchers are taking advantage of those opportunities.

What can field-based research contribute to the AIS discipline?

Before considering how AIS field-based research may be conducted, it would be appropriate to define the domain of interest - Accounting Information Systems. Cushing and Romney (1994, p.14) suggest that an AIS "supports day-to-day operations by collecting and storing data about an organization's transactions." McCarthy (1995) suggests that "the defining feature of an AIS is that it deals with transaction processing for accountability purposes - i.e., it is concerned with tracking economic resources as they flow into, out of, and around an enterprise." Hollander et al. (1996, p.9) provide possibly the most all-encompasing and generally appropriate definition: "the infrastructure that supports the production and delivery of accounting's information product."

What research questions are interesting to both AIS researchers and AIS practitioners? Some broad examples can be surmised: how well an AIS tracks economic resources; how well an AIS promotes accountability; what is the nature and delivery of an AIS's accounting information product. All these endeavors should involve (but not necessarily be limited to) field research.

In its purest form, field-based research, "involves the study of behavior in 'natural settings' (Fielding 1993, page 157)" and entails, according to Hammersley and Atkinson (1983, p2) participating "overtly or covertly, in people's daily lives for an extended period of time, watching what happens, listening to what is said, asking questions, in fact collecting whatever data are available to throw light on the issues with which he or she is concerned." They also suggest that it can be contrasted with 'artificial' methods (e.g. laboratory experiments) that are incapable of capturing the meaning of everyday human activities.

Field-based research methodologies include field experiments, action research and case studies. These methods are typified by the observation of contemporary phenomena in a natural setting. These methods often employ multiple sources of evidence (Yin 1981). In contrast to both laboratory experiments and most surveys, field research methods do not require investigation of phenomena from a distance but rather, the researcher is right in the middle of the authentic setting of the system and its organization. The entire complexity of the real-world situation is open for potential discovery.

Bonoma (1985) characterized research methodologies based on their degree of both currency and data integrity. Some methods are highest in data integrity (e.g. laboratory experiments) while others provide the highest currency (e.g. field studies). In accounting, research on information systems has mostly utilized the methods with the least currency: survey research and laboratory experiments. A brief summary of non-field research in AIS is presented next, followed by a description of the value of AIS field research, examples of AIS field research, and suggestions for creating field research opportunities.

Non-field Research in AIS

Laboratory experiments are studies in

which variables other than the one (or few) under immediate scrutiny are controlled. The research is usually conducted in a physically isolated location, separate from usual real-life conditions (Kerlinger, 1986). Laboratory experiments are popular in academia as they can be done with a controlled amount of resources and students can often be used as subjects (e.g. Amer 1991; Chu 1991; Sangster and Wilson 1991; Borthick et al. 1990; Murphy 1990; Sen and Yardley 1989; Harmon et al. 1988). Practitioners are also used as subjects when possible.

Survey research investigates populations by questioning a subset of the population for the purpose of discovering relative existence, distribution, and relationships of many variables (Kerlinger, 1986). Surveys are a prevalent means of gathering information, particularly from practice settings, without physically intruding on the practitioner's work (e.g., Seddon and Yip 1992; Seddon et al. 1992, Gray 1991; Lovata 1990, Ferguson et al 1990, Beatty et al. 1990, Doney 1990; Masoner 1990; Doney 1989; Doty et al. 1989; Raghunathan and Raghunathan 1989; Raghunathan and Raghunathan 1988; Fields et al. 1986). Surveys of students also provide useful information (e.g. Christensen and Eining 1991).

Many literature reviews concerning artificial intelligence in accounting have been published. These may be considered a special type of survey, i.e. one in which the existing literature is surveyed (rather than people) for the purpose of description, for the development or application of a new model to the previous literature (Hunton and Price 1994), or for the purpose of identifying new directions (Borthick 1987).

Value of AIS field research

Field research provides the discipline with value in several ways. First, it assists in bridging the gap between accounting research and the real-world of accounting. Second, it provides a means of addressing real-world problems of accounting practitioners and organizations. One might say that field research serves to combat both ignorance and irrelevance.

Ignorance

While laboratory experiments and surveys are valid means of investigation, their currency is limited. In many areas of information systems research, the study of real-world organizations in their natural settings is needed (Kaplan and Duchon 1988; Benbasat et al. 1987). Accounting researchers forego valuable information when innovations of practitioners are overlooked as objects of investigation (Benbasat et al. 1987). Such innovations can be best understood by studying them in their native environments. Thus, via field research, AIS researchers become more knowledgeable about AIS and accounting organizations.

Irrelevance

Through field research, AIS researchers study the real problems of accounting organizations in their real setting. This affords the researcher the opportunity to solve real business problems. This is what the customers of accounting research really want (Elliott 1991).

Field research in AIS

Discussing the role of field research, Kaplan (1993) suggests that the traditional methods of social science research (e.g. empirical analysis of large data sets, analytic models of understood phenomena), are perhaps useful and effective for examining the currently existing world. However, these methods are less useful for inquiring into major organizational structural changes and the role of accounting systems in organizations. Field research can advance the state of AIS knowledge to encompass more of the real world of accounting information systems.

Some AIS field research has been undertaken, albeit very little. Field-based strategies that have been used in AIS include field experiments and case studies. Other field research methods, such as action research, can also be used to study accounting information systems research questions (Trewin 1988).

Field experiments

Field experiments are research studies undertaken in a real-world situation in which the researcher is able to manipulate variables under conditions that are as carefully controlled as the setting permits. The strength of field experiments over laboratory experiments is realism. This realistic setting promotes external validity of the results, because realistic situations yield more generalizable results. This method is useful for answering practical questions and testing theories (Kerlinger, 1986). For example, Plumlee and Snowball (1987) performed a field experiment in an internal audit context.

Action Research

Action research is "a small-scale intervention in the functioning of the real world and a close examination of the effects of such intervention (Halsey 1972)." Closely linked to management consultancy, examples would include a research team investigating the process of change in an organization's AIS, and a sole researcher acting as consultant on changes to the accounting system in use in a small public accounting firm.

According to Cohen and Manion (1994), action research has two major phases: (1) diagnosis - problem analysis and hypothesis development and (2) therapy - hypothesis testing through consciously directed change

Action research would be appropriate wherever "specific knowledge is required for a specific situation; or when a new approach is to be grafted onto an existing system (Cohen and Manion, 1994, p.194)." Examples of situations that are familiar to accounting educators and where action research would be appropriate include the introduction of new course texts, or the adoption of computer-assisted learning. In an AIS context, examples would include the introduction of a new payroll system, or the introduction of a new user interface for the on-line inventory record system.

Case studies

Several case studies of accounting contexts have been undertaken (e.g., Baldwin-Morgan, 1994; Masoner 1992; Rahman 1992; Wu 1992; Greer and Rockness 1987; Fasci 1986). Case studies investigate contemporary events or processes in real-world situations. No effort is made to separate the phenomenon under study from its real-world context, often because to do so would be difficult or counter-productive to the research purpose (Yin 1994). Several types of case studies can be useful to AIS researchers: exploratory, descriptive and explanatory - for example, case studies can be used to explore new information processes, to describe an existing accounting information system, or to explain the results of implementing internal controls.

Creating field research opportunities

So far as field-based research is concerned, an opportunistic approach should be adopted. The theoretically desirable must give way to the practically feasible. As a result, field-based research is not likely to be conducted to a strict format and timetable. Attempts to structure such work so as to validate or test hypotheses developed in advance from the existing literature are likely to be problematic at best, impossible much of the time. Yet, when the research is written-up, it may need to present the impression that the work undertaken was based on prior work. (Buchanan et al. 1988)

Nevertheless, one of the features of field-based research is that it enables theories to be developed. By its very nature, it should be flexible and unconstrained in the face of opportunity - could it be wrong to interview Bill Gates about the future of IT just because you had not prepared in advance? Would it be wrong to include the findings from that interview merely because you had not previously read the appropriate literature? No, but it would be appropriate to review the appropriate literature before writing-up the findings. Rigor in reporting field-based research is a flexible control. It must be, because the research must be.

One of the keys to successful field-based research is gaining access. Buchanan et al. (1988) offer five pieces of advice on how to do so: (1) allow for a lengthy period of negotiation, (2) use friends and relatives wherever possible, (3) use non-threatening language when explaining the nature and purpose of the study, (4) deal positively with the respondents' reservations with respect to time and confidentiality, and (5) offer a report of your findings

They also recommend developing good relationships with subjects so as to reduce to a minimum any sense of threat (Cassell [1988] describes this as the need to 'fit-in'.), insisting on being alone with subjects during interviews, allowing cosmetic censorship of transcripts and summaries of conversations, and terminating the research in such a way as to maximize the possibility of returning later.

This advice should be useful to AIS researchers ready to answer the call for more relevant research on accounting information systems.

What are the impediments to field research?

Although, field research is not particularly common in the AIS literature, the previous section illustrates the value that field-based research can bring to the AIS domain. The lack of field-based research could be due to a combination of a number of perceived impediments to work of this type. However, many of these perceived impediments lack substance when closely examined.

The nature of the accounting profession

Field research invades the environment of the professionals who participate and may place demands on their resources. Billable hours and timely accounting reports may be adversely effected when practitioners participate in field research. Therefore, convincing practitioners to participate is not an inconsequential preliminary task. However, while this is a barrier, it is not necessarily a difficult one to overcome, as evidenced by the existence of field studies in a number of accounting organizations and contexts.

The proprietary nature of systems and methods

Field research may be impeded due to the proprietary nature of many accounting related systems or task methods. Big Six firms, for example, are not generally willing to expose their information technology or methods of work (e.g. audit programs) to public view. Firms who believe they have attained a comparative advantage will be loathe to compromise it. However, promises of anonymity, plus the typical delays in publishing suggest that this need not be a major impediment. AIS research has been undertaken and published under these circumstances (e.g. Wu 1992; Baldwin-Morgan 1994).

The expense of field research

One practical factor limiting field research is expense, measured both in costs and research time. Researchers undertaking field-based research may have to miss teaching and other duties in order to spend time doing the research. However, sabbaticals, faculty internships/secondments, external research funding - all contribute towards making the impacts of field-based research upon the other duties of the researcher more manageable. Funding can also provide resources to pay for these duties to be performed by someone else. Possible funding sources include the Research Foundation of the Chartered Institute of Management Accountants, the Institute of Internal Auditors Research Foundation, the IMA Institute for Applied Research, the National Council on Automated Information Retrieval, and the various foundations of Big Six accounting firms.

The perception of field research

Field research has been viewed as "less elegant, less scientific (Kaplan 1985, p.3)." Clearly, some researchers, even well-respected ones, erroneously view field research as non-quantitative and less rational, which is not an appropriate assumption (Yin 1981). Some ac-

counting researchers may view field research as less scientific, even though the track record of field research in other fields (biological sciences, for example) is highly respected and both accounting researchers and practitioners have called for more field research (Kaplan 1993; Elliott 1991). Field research, in fact, may utilize both quantitative and qualitative evidence, and multiple data collection methods (Yin 1981). "While it may be less elegant and more time-consuming than other research strategies, field-based research is certainly not less scientific. Each research strategy fulfills a need in the overall scientific scheme [Trewin 1988, p.105]."

The lack of status for field research

Tenure and promotion are increasingly dependent upon a perceived quality in research output, frequently measured by the outlet selected. While publication of field research in core financial accounting journals, such as the *Accounting Review* and the *Journal of Accounting Research*, would be problematic (due to their emphasis on quantitative material) there remain a large number of accounting and information systems related journals where publication could realistically be sought.

The lack of training in field research methods

A lack of appropriate training in field-based methods is evident in accounting. Most accounting doctoral programs emphasize quantitative research. Laboratory experiments and empirical studies using large amounts of financial data are the norm. Few accounting graduate programs require courses in field study methods. This clearly needs to be addressed if field-based research is to become more prevalent. However, a great many experienced AIS researchers do exist who could apply their expertise to undertake research of this type. There is no obvious reason why AIS researchers could not work jointly with experienced ethnographic researchers, for example. This would enable AIS researchers to concentrate upon those aspects where they held a comparative advantage.

The positivist training of accounting academics

The emphasis on a positivist research methodology that permeates throughout the accounting research environment serves to restrict the likelihood that any non-positivist methodology will be acceptable, either for publication or for use by an individual researcher. This attitude is inappropriate for 'real world' research -- anthropologist researchers do not adopt a positivist methodology, but use an ethnographic approach *because it is the appropriate manner in which to conduct the research*. If AIS researchers are to capture the 'real world' in their research, they must be willing to do so in the most appropriate way. Until they do, they shall no more bridge the gap between research and practice than they have done over the last twenty years.

Unfortunately, the advocates of the use of more case studies and fieldwork of whom accounting academics are most aware are largely from the positivist school of thought. It may be that in order to successfully bridge the research gap, AIS researchers should be looking towards the ethnographic literature as used by anthropologists, for example, in order to gain an understanding of the appropriate manner in which to use, and report the results of applying, these research methods.

The scarcity of recognized models

The small amount of AIS field-based research published to-date usually involves frameworks and models borrowed from other disciplines such as management, human resources, organizational behavior, and organizational psychology. As implied by Scapens (1991) this will only be addressed - i.e. an AIS-related framework will only ever be developed - through an increase in field-based research. Yet, will such a framework ever exist? Would it necessarily be detrimental if it were never developed? And, would it even be an appropriate goal to aim for? There will surely always be a need to consider the various approaches that have been or can be adopted in order to select an appropriate one to adopt, irrespective of whether an AIS 'norm' has

been established.

The different roles of researchers and developers

Distinguishing between *developmental* activities and *research* activities, Shpilberg and Graham (1986) imply that the academic researcher should concentrate upon research and leave development to the practitioner. Support for this is found in Bailey et al. (1987), [while]"the boundaries between research and development may at times be unclear; nevertheless, this notion should be central to all academic efforts [pp. 22-23]." However, strict adherence to this view would restrict the researcher to a largely observational role in any effort to convert research-based theory into practice. As part of the research gap has been ascribed to communication problems (Scapens, 1991, pp. 221-222), such adherence would help perpetuate the gap between research and practice.

The perception that any co-existence of research and development activity in one endeavor is inappropriate has contributed to the limited adoption of field research in AIS. Researchers who strive to maintain objectivity while conducting field experiments and case studies do maintain a boundary between research and development. However, that does not mean that research cannot address AIS development. For example, action research, which does cross the boundary between research and development, provides a unique opportunity that has been accepted in other domains of inquiry.

Conclusion

For a number of years, a growing number of practitioners, professional associations, and academicians have recognized the need for more real world research, and thus more relevant research. Field research is research in the real world. It involves the study of behavior in the real-world, enabling it to be explored, described, and explained; and is, by definition, relevant. Through the adoption of field-based research, researchers will be responding appropriately and positively to the call for 'more relevant' accounting research, potentially adding greatly to the body of AIS knowledge, particularly concerning real-world accounting information systems. Field-based research has been sorely neglected in accounting and in AIS. Yet, while tangible impediments to field-based research in AIS do exist, they are not as severe, nor as insurmountable as may commonly be believed.

Implications for future research

The use of field-based research strategies in AIS will only serve to enrich the discipline, expand its horizons and improve its relevance. The result would be a reduction in the relevance gap between research and practice, an increased awareness among practitioners of the benefits of developing relationships with researchers, and an increased awareness among accounting researchers, teachers, and students of the real-world and of the contribution they can make to it.

By developing a shift in direction of AIS research towards the field, its greater relevance should encourage more researchers into the area, leading to an increase in the number of AIS doctoral students, and to a longer-term shift in the nature of AIS research away from the theoretical towards the practical and the relevant. The benefits of doing so for both academe and practice should be obvious.

References

1. Amer, T., "An Experimental Investigation of Multi-Cue Financial Information Display and Decision Making," *Journal of Information Systems,* Volume 5, No. 2, pp. 18-34, 1991.
2. American Accounting Association, Membership figures reported by Mary Cole, phone interview, September 5, 1995.
3. Bailey, A. D., Jr., K. Hackenbrack, P. De, and J. Dillard, "Artificial Intelligence, Cognitive Sciences, and Computational Modeling in Auditing Research: A Research Approach," *Journal of Information Systems,* Vol. 1, No. 2., pp. 20-40, 1987.
4. Baldwin-Morgan, A. A., "The Impact of

Expert Systems on Auditing Firms: Evidence from a Case Study," *International Journal of Applied Expert Systems,* Vol. 2, No. 3, pp. 159-174, 1994.

5. Beatty, W. A., A. A. Rasher and A. G. Volkan, "Environmental and Process Variables and Satisfaction with Off-the-Shelf Systems," *Accounting Systems Journal,* Vol. 1, No. 2, pp. 51-69, 1990
6. Benbasat, I., D. K. Goldstein and M. Mead, "The Case Research Strategy in Studies of Information Systems," *MIS Quarterly,* Vol. 11, No. 3, 369-386, 1987.
7. Big Eight, *Perspectives on education: Capabilities for Success in the Accounting Profession,* Arthur Andersen & Co., Arthur Young, Coopers & Lybrand, Deloitte Haskins & Sells, Ernst & Whinney, Peat Marwick Main & CO., Price Waterhouse, and Touche Ross, New York, 1989.
8. Bonoma, T. V., "Case Research in Marketing: Opportunities, Problems, and a Process," *Journal of Marketing Research,* Vol. 22, No. 2, pp. 199-208, 1985.
9. Borthick, A. F., "Artificial Intelligence in Auditing: Assumptions and Preliminary Development," *Advances in Accounting,* Vol. 5, pp. 179-204, 1987.
10. Borthick, A. F., R. L. Clark and A. S. Hollander, "Making Accounting Information Systems Work: An Empirical Investigation of the Creative Thinking Paradigm," *Journal of Information Systems,* Vol. 4, No. 3, pp. 48-62, 1990.
11. Bricker, R. J. and G. J. Previts, "The Sociology of Accountancy: A Study of Academic and Practice Community Schisms," *Accounting Horizons,* Vol. 4, No. 1, pp. 1-14, 1990.
12. Buchanan, D., D. Boddy and J. McCalman, Getting In, Getting On, Getting Out, and Getting Back, *in* A. Bryman (ed.) *Doing Research in Organizations,* Routledge, London, pp. 53-67, 1988.
13. Cassell, J., The Relationship of Observer to Observed When Studying Up, *in* R.G. Burgess (ed.) *Studies in Qualitative Methodology*, JAI Press, Greenwich, Connecticut, 1988.
14. Christensen, A. L. and M. M. Eining, "Factors Influencing Software Piracy: Implications for Accountants," *Journal of Information Systems,* Vol. 5, No. 1, pp. 67-80, 1991.
15. Chu, P., "A Study of the Influence of a Decision Support Aid on Decision Processes: Exploring the Black Box," *Journal of Information Systems,* Vol. 5, No. 2, pp. 1-17, 1991.
16. Coats, J.B., J.E. Smith and R.J. Stacey, "Results of a Preliminary Survey into the Structure of Divisionalised Companies, Divisionalised Performance Appraisal and the Associated Role of Management Accounting," *In* Cooper, D., R. Scapens and J. Arnold (eds.) *Management Accounting Research and Practice*, CIMA, London, pp. 265-282, 1983.
17. Cohen, L. and L. Manion, *Research methods in education,* Routledge, London, 1994.
18. Cushing, B. and M. B. Romney, *Accounting Information Systems,* Addison-Wesley, Reading, MA, 1994.
19. Doney, L. D., "A Study of Customer Involvement in Monitoring Computerized Statements," *Journal of Information Systems,* Vol. 4, No. 1, pp. 32-40, 1989.
20. Doney, L. D., "A Study of Information Overload in a Utility Billing System," *Accounting Systems Journal,* Vol. 1, No. 2, pp. 70-84, 1990.
21. Doty, E. A., A. Sen and S. C. Wang, "Effect of Internal Controls in Data Base Design," *Journal of Information Systems,* Vol. 3, No. 2, pp. 70-91, 1989.
22. Elliott, R. K., "The Third Wave Breaks on the Shore of Accounting," *Accounting Horizons,* Vol. 6, pp. 61-85, 1991.
23. Fasci, M. A., "EMAIS - Evaluation by Management of Automated Information Systems," *Journal of Information Systems,* Vol. 1, No. 1, pp. 83-101, 1986.
24. Ferguson, D. M., N. C. Hill and J. V. Hansen, "Electronic Data Interchange: Foundations and Survey Evidence on Current Use," *Journal of Information Systems,* Vol. 4, No. 2, pp. 81-91, 1990.

25. Fielding, N., "Ethnography," *in* N. Gilbert (ed.) *Researching social life*, Sage, London, pp. 154-171, 1993.
26. Fields, K. T., H. Sami and G. E. Summers, "Quantification of the Auditor's Evaluation of Internal Control in Data Base Systems," *Journal of Information Systems,* Vol. 1, No. 1, pp. 24-47, 1986.
27. Gray, G. L., "Accounting Information System Selection in Small Organizations: Incongruences Between Accounting Professionals," *Journal of Information Systems,* Vol. 5, No. 1, pp. 17-35, 1991.
28. Greer, W. R., Jr. and H. Rockness, "Management Decision Support Systems for a Medical Group Practice," *Journal of Information Systems,* Vol. 1, No. 2, pp. 65-82, 1987.
29. Halsey, A.H, *Educational priority: volume 1: E.P.A. problems and policies*, HMSO, London, 1972.
30. Hammersley, M. and P. Atkinson, *Ethnography: Principles and Practice,* London: Routledge, London, 1983.
31. Harmon, W. K., K. M. Poston and P. E. Dascher, "Provision and Inadequacy of Small Business Computer Controls: A Model and Empirical Test," *Journal of Information Systems,* Vol. 3, No. 1, pp. 30-49, 1988.
32. Hollander, A.S., E.L. Denna, and J.O. Cherrington, *Accounting, Information Technology, and Business Solutions,* Irwin, Chicago, 1996.
33. Hunton, J. E. and K. H. Price, "A Framework for Investigating Involvement Strategies in Accounting Information Systems Development," *Behavioral Research in Accounting,* Vol. 6, Supplement, pp. 128-157, 1994.
34. Institute of Management Accountants (IMA), *What Corporate America wants in Entry Level Accountants,* IMA, Montvale, NJ, 1994.
35. Johnson, H.T. and R.S. Kaplan, *Relevance Lost,* Harvard Business School Press, Boston, MA 1987.
36. Kaplan, B. and D. Duchon, "Combining Qualitative and Quantitative Methods in Information Systems Research: A Case Study," *MIS Quarterly* Vol. 12, No. 4, pp. 571-586, 1988.
37. Kaplan, R., "Accounting Lag: the Obsolescence of Cost Accounting Systems," *in* K. Clark, R. Hayes, and C. Lorenz, *The Uneasy Alliance: Managing the Productivity-Technology Dilemma*, Harvard Business School Press, Boston, pp. 195-226, 1984.
38. Kaplan, R.S., "Research Opportunities in Management Accounting," *Journal of Management Accounting Research,* Vol. 5, pp. 1-14, 1993.
39. Kerlinger, F. N., *Foundations of Behavioral Research,* Holt, Rinehart and Winston, New York, third edition, 1987.
40. Lovata, L. M., "Audit Technology and the Use of Computer Assisted Audit Techniques," *Journal of Information Systems,* Vol. 4, No. 2, pp. 60-68, 1990.
41. Masoner, M., "The Non-Specialist's System Selection Strategies," *Accounting Systems Journal,* Vol. 2, pp. 107-136, 1992.
42. Mattessich, R., *Modern Accounting Research: History, Survey, and Guide,* Canadian Certified General Accountants Research Foundation, Vancouver, 1984.
43. McCarthy, W.E., "AIS: a field, an artifact, or an illusion?," *ANet Accounting Information Systems List*, 10 March, 1995.
44. Mulford, C. W., D. B. Smith, D. E. Stout, M. S. Stone, and T. R. Weirich, "Bridging the gap between accounting education and practice: The SEC academic fellow program," *Accounting Horizons,* December, pp. 86-92, 1992.
45. Murphy, D. S, "Expert System Use and the Development of Expertise in Auditing: A Preliminary Investigation," *Journal of Information Systems,* Vol. 4, No. 3, pp. 18-37, 1990.
46. O'Leary, D., "Software Engineering and Research Issues in Accounting Information Systems," *Journal of Information Systems,* Vol. 2, No. 2., pp. 24-38, 1988.
47. Plumlee, R. D. and D. Snowball, "Auditing Your Own Systems: Some Findings and Implications," *Journal of Information Systems,* Vol. 1, No. 2, pp. 41-

52, 1987.

48. Raghunathan, B. and T. S. Raghunathan, "Impact of Top Management Support on IS Planning," *Journal of Information Systems,* Vol. 2, No. 2, pp. 15-23, 1988.
49. Raghunathan, B. and T. S. Raghunathan, "MIS Steering Committees: Their Effect on Information Systems Planning," *Journal of Information Systems,* Vol. 3, No. 2, pp. 104-116, 1989.
50. Rahman, M. [1992]. Computer Assisted Accounting Information Systems: Some Implementation Problems. *Accounting Systems Journal* 2(Fall) 75-89, 1992.
51. Sangster, A. and R. A. Wilson, "Knowledge-Based Learning within The Accounting Curriculum," *British Accounting Review,* Vol. 23, pp. 243-261, 1991.
52. Scapens, R.W., *Management Accounting: a review of recent developments,* MacMillan Education: Basingstoke, 1991.
53. Seddon, P. and S. Yip, "An Empirical Evaluation of User Information Satisfaction (UIS) Measures for Use with General Ledger Accounting Software," *Journal of Information Systems,* Vol. 6, No. 1, pp. 75-92, 1992.
54. Seddon, P., M. Wong and S. Yip, "Computer-Based General Ledger Systems: An Exploratory Study," *Journal of Information Systems,* Vol. 6, No. 1, pp. 93-110, 1992.
55. Sen, T. and J. A. Yardley, "Are Charge-back Systems Effective? An Information Processing Study," *Journal of Information Systems,* Vol. 3, No. 2, pp. 92-103, 1989.
56. Shpilberg, D. and L. Graham, "Developing ExperTAX: An Expert System for Coporate Tax Accrual and Planning," *Auditing: A Journal of Practice and Theory,* Vol. 6, No. 1, pp. 75-94, 1986.
57. Trewin, J., "The Need and Opportunity for Field-Based Research in Accounting Information Systems," *Journal of Information Systems,* Vol. 3, No. 1, pp. 104-118, 1988.
58. Wu, R. C., "The Information Systems Auditor Review of the Systems Development Process and its Impact on Software Maintenance," *Journal of Information Systems,* Vol. 6, No. 1, pp. 1-13, 1992.
59. Wyatt, A., "Commentary: Interface between Teaching/Research and Teaching/Practice," *Accounting Horizons,* Vol. 3, No. 1, pp. 125-128, 1989.
60. Yin, R. K., "The Case Study Crisis: Some Answers," *Administrative Science Quarterly,* Vol. 26, 58-65, 1981.
61. Yin, R.K., *Case Study Research,* Sage, Thousand Oaks, CA, 1994.