

Authors	Alta van der Merwe, Paula Kotze Johannes Cronje
Paper Name	Selecting a Qualitative Research Approach for Information Systems Research
Year	(Unpublished - to appear in July 2005)
Type	Conference Proceedings
Conference	South African Computer Lecturer Assciation (SACLA 2005)
Place	Kasane, Botswana

# Selecting a Qualitative Research Approach for Information Systems Research

Alta van der Merwe, Paula Kotzé  
School of Computing  
University of South Africa  
Email: [vdmeraj](mailto:vdmeraj@unisa.ac.za), [kotzep@unisa.ac.za](mailto:kotzep@unisa.ac.za)

Johannes Cronje  
Teaching and Training Studies  
University of Pretoria  
Email: [jcronje@up.ac.za](mailto:jcronje@up.ac.za)

July 2005

## Abstract

*This paper provides the reader with a set of guidelines when selecting the appropriate research approach for doing qualitative research within the information systems application domain.*

**Keywords:** Research approaches, research selection tool, information systems research.

## 1. INTRODUCTION

Students entering the research arena for the first time often find themselves surrounded by numerous concepts, books and articles on research. The questions that arise include: Where do we start? What do we do? What are all these concepts?

The purpose of this paper is to consider six of the qualitative research approaches mostly used in information systems studies, the characteristics thereof, and to provide the reader with an evaluation tool to determine what the applicable research approach is of his or her studies.

## 2. QUALITATIVE RESEARCH

All data gathered within a research study reach the researcher either as words or as numbers. The type of data usually dictates the methodology (Leedy, 1993). All studies are either qualitative or quantitative. Meyers (2004) describes qualitative research as 'the use of qualitative data, such as interviews, documents, and participant observation data, to understand and explain social phenomena'. If the data in your study is concerned more with words than with numbers, you are working within the qualitative research paradigm. Research in information systems is mostly qualitative in nature.

The first and most important thing to do in planning your research is to consult written resources on the available approaches. This may be a confusing task for a number of reasons:

- In contrast with other sciences such as social sciences, information systems research at institutions did not historically emphasize the use of formal research approaches in thesis writing. Therefore, the available resources on doing research within information systems are, in all fairness, less than in other disciplines.
- In different disciplines (and even within the same discipline), authors use different naming conventions for the same approaches. For example, in social sciences *development research* has similarities to *action research* used in the information systems discipline.
- Researchers in information systems mostly have a programming background and are therefore comfortable with the use of existing tools to solve problems. There are no 'quick fixes' in selecting research approaches and the researcher must 'search' for the appropriate approach.

Where these factors may hinder the researcher, it is not enough reason to ignore selection of a formal approach for research/studies. With the availability and access of resources growing in the last few years, it has become more and more important for a researcher in the information systems domain to substantiate the way any study was conducted. In conducting a research project, the researcher is flooded with content-related information. To make sense of this profusion of information, the availability of guidelines and tools turns out to be essential. Any help that will make the task at hand easier should be considered.

The goal of this paper is to propose a tool that may help the researcher with the selection of his/her research approach. We suggest six commonly used research approaches that could be applicable for information systems related research. We do not claim that this list is complete — a research project may require an approach that falls outside this list of research approaches or be a combination of the suggested approaches.

Section 2.1 of this paper gives an overview the selected six research approaches. We derived a set of characteristics for each approach as presented in Section 2.2, and suggest a matrix tool in Section 2.3 that researchers may use to assist them in selecting the appropriate research approach.

## 2.1 Research approaches

Within qualitative research a number of approaches are available. The approaches mostly used in information systems are (Avison, Lau, Myers & Nielsen, 1999; Meyers, 2004):

- interpretive research,
- critical social theory,
- action research,
- case study research,
- ethnographic research, and
- grounded theory.

We provide a short description and an example of each of these approaches.

### Interpretive research

Information systems research can be classified as interpretive if it is assumed that our knowledge of reality is gained only through social constructions such as a language, consciousness, shared meanings, documents, tools, and other artifacts (Klein & Myers, 1999). It is used in cases where the study is mainly a theoretical study with some contradictions and interpretation linked to the research.

A good source for examples and discussions on interpretive research is the special issue in the *Journal of Information Technology* with Michael D Myers and Geoff Walsham as editors. In this issue, Lee Komito (1998) uses interpretive research in the implementation of an electronic document management system within a government department in the Irish Civil Service (Komito, 1998). The study focuses on meta-information contained in paper case files and how it is important and apparently necessary for the work of the organization. The dependence and confidence on paper files relates not only from the information rich properties of paper documents, but also to the protection of professional/occupational status. Some information only available in paper

documents, requiring the interpretation of a specific individual, is defined as essential to do the work properly. This 'reliance' places a restriction on the use of electronic case files (NOTES in this case) as a shared information system, and also reduces the amount of information that can be shared within the organization. The Komito article argues that only when the perceived threat, posed by the introduction of information system, was lessened in some or other way, would innovation in work practices and improved sharing of information within the organization become a reality.

### Critical social theory

'Critical social theory can be thought of broadly as covering the interactions between the explanatory, the normative and the ideological dimensions of social and political thought' (*Centre for Critical Social Theory*, 2002). The researcher is mainly involved with social activities.

In a study done by Ngwenyama and Lee (1998) they used critical social theory in focusing on the definition for Information Richness Theory (IRT). According to them IRT has enjoyed recognition by information systems researchers for some time but that unfavorable empirical evidence in the second half of the 1990's, precipitated a shift away from IRT towards a search for a new theory, requiring a new definition of communication richness to succeed the IRT definition. According to Ngwenyama and Lee information systems research on communication richness has since its inception been limited to the perspective of positivism and, and only later became interpretive. In their article they introduce a new perspective to the study of communication richness in computer-mediated communication, namely critical social theory. They outline a critical social theory-based definition of communication richness and compare it with positivist and interpretive definitions of communication richness. They also introduce a critical social-based social action framework for empirical study of organizational communication within the context of the use of media in any situation.

### Action research

'Action research combines theory and practice (and researchers and practitioners) through change and reflection in an immediate problematic situation within a mutually acceptable ethical framework' (Avison *et al.*, 1999:94). The focus is on what practitioners do where theory is applied with the goal to enhance the theory.

An example is where a requirements elicitation procedure was developed to derive the process model structure of higher educational institutions

(Van der Merwe, Pretorius & Cloete, 2004). The procedure (theory) was defined as a five-phase procedure with deliverables at the end of each phase. In deriving the process model structure the procedure was used at three different institutions where the focus was on what the activities is within a workflow to accomplish specific goals. After each application, the researchers added to the existing theory according to what 'was learned' in the cycle at the institution.

### **Case study**

'As a research strategy, the case study is used in many situations to contribute to our knowledge of individual, group, organizational, social, political, and related phenomena' (Yin, 2003:1). In *case study* research the investigator has little control and often focuses on the life cycle.

A very good example of a case study research was done by Markus (1983) in his investigation of theories of resistance to management information systems. According to Markus, three basic theories of the reasons of resistance lie behind many prescriptions and rules for management information systems implementation: (1) their own internal factors, (2) poor system design, and (3) the interaction of specific system design features with facets of the organizational context within which the system is used. The theories differ in their basic assumptions about systems, organizations, and resistance, predictions that can be derived from them, and their implications for the implementation process. In his study, the differences between the theories are described. Data from a case study is used to illustrate the theories, evaluate the theories based on the identified differences, and to demonstrate the superiority, for implementers, of the interaction theory (Markus, 1983).

### **Ethnographic research**

'Ethnographic research comes from the discipline of social and cultural anthropology where an ethnographer is required to spend a significant amount of time in the field' (Myers, 1999).

Kvasny (2002) was involved in an ethnographic study for her PhD studies, when she studied community technology centers aimed at promoting greater access to information technology, that are emerging across the USA. Because of the situated nature of the problem, she used ethnographic methods to develop conceptual structures to study the relationships between increased citizen participation in technology-rich environments and improved life chances. She accomplished this by examining a community technology initiative in a historically underserved neighborhood in an urban municipality over an eight-month period. The

program began on June 26, 2000, and one year later, there were seven community technology centers located primarily in low income, predominantly African American communities. She found that because information technology engenders a monolithic culture that reproduces and privileges American middle-class competencies and ideologies, it was relatively more foreign to the native culture of the target communities. Consequently, those with the greatest training needs received the least exposure to the technology.

Another ethnographic example is the design, development and presentation of eighteen months of coursework for a Master's degree course in Computer-Assisted education at the Sudan University of Science and Technology in Khartoum from 2002 to 2004 (Cronje, Unpublished). This course was offered in collaboration with the University of Pretoria and was successfully completed with a pass rate of 100%.

### **Grounded theory**

Strauss and Corbin (Strauss & Corbin, 1994:273) explain grounded theory approach as 'one that is inductively derived from the study of the phenomenon it represents. That is, the phenomenon is discovered, developed, and provisionally verified through systematic data collection, analysis, and theory that stand in reciprocal relationship with each other. One does not begin with a theory, and then prove it. Rather, one begins with an area of study and what is relevant to that area is allowed to emerge'. (Martin & Turner, 1986:141) describe it as an 'inductive, theory discovery methodology that allows the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or data'.

A good example of a grounded research study was done by Orlikowski (1993) with an empirical study into two organizations' experiences with the adoption and use of CASE tools over time. The findings of the study was used to develop a theoretical framework for conceptualizing the organizational issues around the adoption and use of CASE tools, issues that have been largely missing (according to Olikowski) from contemporary discussions of CASE.

## **2.2 Characteristics of research approaches**

The next question is, if you know what the approaches are, how do you know what approach should be used for your research? For this we suggest the use of a matching matrix of the research questions asked for the research *and* the characteristics of the different research approaches.

**Table 1: Characteristics for research approaches**

Research approach
<b>Interpretive research</b> <ul style="list-style-type: none"> <li>– Theoretical study</li> <li>– Contradictions</li> <li>– Interpretation</li> </ul>
<b>Critical social theory</b> <ul style="list-style-type: none"> <li>– Social role</li> <li>– Social reality</li> </ul>
<b>Action research</b> <ul style="list-style-type: none"> <li>– Focus on what practitioners do</li> <li>– Explicit criteria</li> <li>– Practitioners and researchers with mutual goals</li> <li>– Apply theory with goal to enhance</li> </ul>
<b>Case study</b> <ul style="list-style-type: none"> <li>– Investigator has little control</li> <li>– Phenomenon with real-life context</li> <li>– Study life cycles</li> </ul>
<b>Ethnographic research</b> <ul style="list-style-type: none"> <li>– Active participation</li> <li>– Observational data</li> <li>– Social contact with participants</li> <li>– Extended depth study</li> <li>– Limited to one field study</li> </ul>
<b>Grounded theory</b> <ul style="list-style-type: none"> <li>– Starts with a phenomena</li> <li>– Data sampling should provide for a pluralist perspective on studied phenomenon (Esteves, Ramos &amp; Carvalho, 2002)</li> <li>– Theoretical account of the general features (Martin &amp; Turner, 1986)</li> <li>– The generation of theories of process, sequence, and change pertaining to organizations, positions, and social interaction (Glaser &amp; Strauss, 1967)</li> </ul>

The main characteristics (not an extensive list) for the different research approaches are given in Table 1.

### 2.3 The suggested selection tool

Next the researcher list the questions defined for the research against the characteristics provided from the research approaches in Table 1, using a cross reference table (Table 2). For each research question indicate a relationship between the question and the characteristic using any indicator e.g. an 'X'.

For example, consider the three research questions  
 (1) What is the educational process model (EPM)?  
 (2) How does one manage the flow within an EPM?  
 (3) How can the EPM be reused?

For each of these questions, a column will be inserted in the table.

The researcher compares the nature of the research questions against the different characteristics of the research approaches, indicating a 'X' if the research question relates to the applicable characteristic. This result in a cross reference table with the characteristics listed on the left and the questions listed at the top (Table 4).

For example, for the research questions listed in Table 4 it is clear that most of the indicators for this study relate to the characteristics of *action research* and *case study* research. There is some interpretation needed but it is not mainly a theoretical study with contradictions, so that the study can not be *interpretive research*. The criteria list shows that the research is strongly an action research problem with some application in the case study domain. No indications were given for *critical social theory* which excludes the critical social theory as suitable research approach. Note that this depends on the focus of the questions, if the focus of the research team were on social issues it could be classified as a critical social theory. Similarly *grounded theory* and *ethnography* were excluded as the main research approach for these questions.

### 3. CONCLUSION

Research in information systems is often done without a student reflecting on what approach is required to complete the research project. A thesis is often written without clear research approaches, not because the student doesn't know the theory on research approaches, but rather because they don't know how to select an appropriate approach. The small tool presented above could assist students in determining the kind of research that will be required for a specific research question.

### Bibliography

Avison, D., Lau, F., Myers, M. & Nielsen, P. A. (1999), Action Research, *Communication of the ACM*, 42(1): 94-97.

Centre for Critical Social Theory (2002), *Centre for Critical Social Theory*, Available at: <http://www.sussex.ac.uk/Units/CST/>, [Accessed October 2004]

Esteves, J., Ramos, I. & Carvalho, J. (2002), Use of Grounded Theory in Information Systems Area: An Exploratory Analysis, in *1st European Conference on Research Methodology for Business and Management Studies*, Reading, UK, pp. 129-136.

Glaser, B. & Strauss, A. (1967), *The Discovery of Grounded Theory: Strategies for Qualitative Research*, Aldine Publishing Company, New York, USA.

**Table 2: Research approach, characteristics and the research questions**

Research approach	Characteristics	Research Question 1	...	Research Question m
Approach 1	Characteristic 1 ..			
Approach 2	Characteristic 1 ..			
.	Characteristic 1 ..			
Approach m	Characteristic 1 ..			

**Table 3: Research approach characteristics and the research questions**

Approach	Characteristics	Question 1	Question 2	Question 3
Interpretive research	Mainly theoretical study			
	Contradictions			
	Interpretation	X	X	
Critical social theory	Social role			
	Social reality			
Action research	Focus on what practitioners do	X	X	X
	Explicit criteria	X	X	X
	Practitioners and researchers with mutual goals	X	X	X
	Apply theory with goal to enhance	X	X	X
Case study	Investigator has little control	X	X	
	Contemporary phenomenon with real-life context	X	X	
	Study life cycles	X	X	
Ethnographic research	Active participation			
	Observational data	X		
	Social contact with participants			
	Extended depth study	X		
	Limited to one field study		X	X
Grounded theory	Starts with a phenomena			
	Data sampling with perspective			X
	Theoretical account of the general features			
	Generation of theories of process, sequence, and change pertaining to organizations, positions, and social interaction	X	X	

Klein, H. K. & Myers, M. D. (1999), A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems, *MIS Quarterly, Special Issue on Intensive Research*, 23(1): 67-93.

Komito, L. (1998), Paper 'Work' and Electronic Files: Defending Professional Practice, *Journal of Information Technology*, 13(4): 235-246.

Kvasny, L. (2002), *Problematizing the Digital Divide: Cultural and Social Reproduction in a Community Technology Initiative*, PhD, Georgia State University.

Leedy, P. (1993), *Practical Research, Planning and Design*, Merrill, Columbus, Ohio.

Markus, M. L. (1983), Power, Politics and Mis Implementation, *Communication of the ACM*, 26: 430-444.

Martin, P. & Turner, B. (1986), Grounded Theory and Organizational Research, *The Journal of Applied Behavioral Science*, 22(2): 141-157.

Meyers, M. D. (2004), *Qualitative Research*, Available at: <http://www.qual.auckland.ac.nz/>. [Accessed October 2004].

Myers, M. (1999), Investigating Information Systems with Ethnographic Research, *Communication of the AIS*, 2(4es): 1-20.

Orlikowski, W. J. (1993), Case Tools as Organizational Change: Investigating Incremental and Radical Changes in Systems Development, *Management Information Systems Quarterly*, 17(3).

Strauss, A. & Corbin, J. (1994), Grounded Theory Methodology: An Overview, in N. Denzin & Y. Lincoln, (eds.), *Handbook of Qualitative Research*, Thousand Oaks, Sage Publications, California, USA.

Van der Merwe, A., Pretorius, L. & Cloete, E. (2004), A Requirements Elicitation Process Modelling Technique for Incorporation of E-Learning as a Core Learning Strategy, *Journal of Integrated Design and Process Science*, 8(3): 1-16.