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I. Introduction

This section of our site is a byproduct of a past workshop held by MDRC, "Management Research in VA. "In presenting the resources from this workshop we hope to

- introduce some of the basic issues in conducting management research, drawing heavily from two MDRC-sponsored meetings
- and to provide an ongoing information exchange on management research in VA.

If you have questions, comments, or ideas or would like to contribute your experiences and knowledge, please contact us at **mdrc.boston@med.va.gov.**

NOTE: All the materials from this section are available in a downloadable pdf format below.

Download (340 KB, PDF)

VA offers an exciting opportunity for management research

One of the things that drove me in my decision to work for VA was the opportunity to do management and organizational research. I was really attracted to the possibilities of this unique and wonderful nation-wide laboratory. My experience, especially with the organizational changes that have taken place in VA over the last several years, has not been a disappointment. It is the chance of a lifetime to study and to learn.

Further we can use those findings right away in the real world to benefit veterans and their families. Management research offers timely, relevant, information that can improve organizational structures, delivery systems, and the management of health care-and ultimately cut costs and improve quality.

Thus, I believe that we have not only a great opportunity but also an obligation to proceed with this effort.

Martin Charns, DBA
Director, MDRC

Building Management Research Capacity in VA

Relatively little management and organization research has been done in VA in contrast with major efforts for clinical health services research. Recognizing the disparity in attention in VA between in clinical health services research and management research, the Director of VA's Health Services Research and Development Service (HSR&D), John G. Demakis, M.D., convened a Management Research Advisory Group in April 2000 to advise him on strategies for strengthening management research. The Advisory Group outlined a research agenda and recommended that HSR&D increase its capacity for conducting high quality management research in VA.

To support HSR&D's commitment to expanding its management research capacity, the HSR&D Management Decision and Research Center (MDRC) has begun a series of activities to strengthen management research in VA. To date, we have convened and facilitated two meetings, Management Research in VA Workshop and Continuing the

Discussion of Management Research in VA to bring together researchers interested in or working on management research.

- "Management Research in VA," held on November 19-20, 2001, was designed to stimulate interest in conducting management research in VA; to increase and develop skills in conducting management research; and to offer opportunities for researchers to explore potential collaborations with other researchers with similar interests. It was targeted to two groups: 1) VA health services researchers who are interested in management research, but do not have extensive experience in conducting it, and 2) management researchers at universities affiliated with HSR&D programs, especially those who do not currently work in VA.
- "Continuing the Discussion of Management Research in VA," held on February 15, 2002, was an open-invitation session held after the HSR&D annual meeting. Its purposes were to share instruments and tools that have been used successfully in measuring organizational and management constructs, especially in VA; to examine methodological challenges in conducting management research by reviewing and critiquing a successful proposal; and to provide networking opportunities for health services researchers interested in conducting management research.

The MDRC effort to support and expand the conduct of management research in VA are ongoing.

II. A Framework for Management Research

The rise of evidence-based clinical practice was prompted in part by the existence of unexplained wide variations in practice patterns, by the slow application of new therapies of known effectiveness, and by the persistent use of technologies that were known to be ineffective. The problems of overuse, underuse and misuse are found also in managerial practice in health care organizations in the way that decisions about organizing, structuring, delivering, or financing health services are made. [1] Perhaps not yet as well understood, these decisions also influence, directly or indirectly, clinical effectiveness.

> Managers in large healthcare organizations are deciding on more and riskier strategic interventions based on evidence that is not systematically gathered or assessed.
>
> Kovner, et al [1]

Abundant evidence reveals a research practice gap in health care policy and management. This section describes the basic principles of what is now called evidence-based management and the research needed to support it. In addition we look at an integral part of that work: working collaboratively with the client—managers and other leaders—to design relevant studies and then to translate and present the results in an effective manner.

This section draws heavily on the work of Walshe, Randall, Alexsson, Kovner, Elton, and Billings. [1, 2, 3]

Evidence-based Management

- The nature of managerial decision-making
- Managerial culture

The past 20 years have seen intensive development of new models for organization and management in industry and health care. Many observers believe, however, that popular trends and fads have guided this development more than research on organizations and management practices. Often managers rely on consultants for assistance in making and implementing important strategic decisions, but they do not rigorously challenge the information upon which such recommendations are based.

At the same time, however, there has been a significant shift in the way that health care professionals use evidence from scientific research in clinical practice, and the concept of evidenced-based health care has become part of the language of clinicians, managers, policymakers and researchers. But the leaders and managers of health care organizations, while often strongly encouraging clinicians to adopt evidenced-based practices, have been slow to apply the ideas to their own management.

> ... top management generally lacks adequate internal support to rigorously evaluate strategic interventions or consultant recommendations and to learn from industry-wide best practices. The creation of evidence-based management cooperatives might be a means to change this trend.
>
> Kovner, et al[3]

The section deals with the following issues:

- The nature of managerial decision making
- Managerial culture

- **The nature of managerial decision making**

Managers make fewer but larger decisions than clinicians—and the timeframe for those decisions is usually longer. Major managerial decisions may take weeks, months or even years to be made and implemented, and it can be difficult to discern or describe the decision-making process or to pin down when a decision is actually made. Managerial decisions are also more heterogeneous than clinical decisions, in the sense that they do not usually involve the application of the same body of knowledge to a series of similar but different circumstances, so guidelines of decision support aids are seldom used in managerial decision making. Therefore intuition often plays a part in decisions that would defy any rule-based, procedural analysis.

In addition, decision-making for managers, even within a hierarchical structure and chain of command, is often a team or group activity, whether formal committees or informal groups. Securing the support of others is often a key part of the process. Managerial decisions are also often significantly constrained by organizational or wider system requirements, such as resource availability, pressure in the marketplace, policies and procedures and stakeholders' views and interests.

These factors may act as limitations or may even directly conflict with research findings. Because of the constrained, contested and political nature of many managerial decisions, it may be difficult for managers to apply research evidence even when it is available.

- **Managerial culture**

There are a number of significant reasons that managers may not consider research when making policy decisions. In the past, nonprofit organizations have lacked accountability for the costs of growing or discontinuing lines of service, and therefore have had little incentive to investigate best practices. Rather, health systems have focused on operating margins and past budgets. Research is often viewed as producing little or no return on investment. More money tends to be spent on consultants' strategic recommendations, which may not be backed up by research.

In reality, most healthcare organizations are not large enough to carry out management research. But, in larger systems, management has not used the advantage of system size to gather evidence on best practices. The evidence that does exist is often not shared even within the same system. Again, in fairness to managers, it must be noted that there is little evidence available related to best management practices.

There are some practical problems that suggest that conditions typical of health care organizations may be counterproductive to fostering support for management research. These factors include working conditions that involve a heavy workload and tight deadlines. Without a system in place to cope with heavy workloads, the pressure to meet deadlines restricts the time managers have to consider their decision-making process or to examine research. Attitudes that focus on making speedy decisions can interfere with managers' acceptance of research. In addition, a belief system reinforced by years of experience that management is an intuitive process will restrict support for management research.

Research evidence is more likely to be used in organizations that have a culture that values and encourages innovation, experimentation, data collection and analysis and the

development of critical appraisal skills among managers. Organizations must cultivate what has been called a culture of learning through research.[1]

Research to Support Evidence-based Management

This section begins by looking at definitions of management research and then considers issues around conducting it:

- Defining management research
- Framing the question
- Study timelines

One of the central difficulties in evidenced-based management is that the systematic evidence to inform management decisions is still sparse. Clearly more systematic evidence will be needed to support widely-practiced evidenced-based management. There are several general types of information that can support evidenced-based decision making: continuous quality improvement, knowledge management and research. We focus here on research.

- **Defining management research**

The term management research is a broad one and is often used in two different, but overlapping, ways:

- *Research for managers.* Used in this way, management research is research tailored to specific management needs and usually conducted at the request of managers. While it ideally informs theory and contributes to the development of knowledge, the priority is to answer specific questions defined in conjunction with managers, generally within timeframes that meet their needs. The distinguishing feature of management research under this definition is the target audience not a particular subject area.
- *Research about management and organizations.* In this context, management research is defined by the subject of study: it is research, for example, about how organizations are structured and function; the practices of decision-making; the

factors that affect organizational operations. It focuses on issues at levels higher than the clinician-patient interaction - for example, on clinic operations, service delivery models, hospitals or integrated delivery systems. The emphasis is on building knowledge.

In some studies, both definitions apply: the study is requested by a manager but is expected to add to theory as well as address shorter-term management questions. The evaluation of service lines in VA conducted at the MDRC is an example of a study that fell at the intersection of the two meanings of management research.

- **Framing the question**

One of the challenges of management research is the complexity of the issues to be studied. When investigators are conducting research for managers, the first challenge is to turn the manager's question or issue into a good research question. Conversely, when researchers are developing their own research about management and organizations, they should frame the questions to be relevant to managers, over the long- if not the short-term.

> A partnership is need between managers and researchers...who work collaboratively to...assess performance of ongoing activities, develop predictors of performance and specify the conditions under which various approaches to health services delivery are most effective.
>
> Shortell & Kaluzny [4]

Researchers and managers, in collaboration, must begin by avoiding broad, vague or highly abstract research questions and instead ask questions that focus on specific management issues. Although theoretical arguments are often useful in developing greater understanding of managerial problems, it is more likely that the results will be used if the research answers practical questions that managers need to understand. Furthermore, the questions selected must be important to the organization. These questions might be operational (for short-term decision-making) or strategic, related to the viability of the organization in the future.

It is unrealistic to expect managerial decision making to be redesigned around research priorities or processes. There should be a match between when the results will be available and when management must make a decision.

When framing research question(s), investigators should not underestimate the cultural and educational chasm between managers and researchers. While managers will have an understanding of the issues to be studied, most will not be familiar with research literature on the topic or with research methodology and statistics. Therefore managers may not be as concerned as the researcher about using systematic methods or advanced analytic techniques.

Managers and researchers often approach studies from very different perspectives - the manager is looking to make changes; the researcher often approaches the study to prove or disprove hypotheses to build knowledge and/or theory - and may not necessarily be looking for clear and obvious answers. A partnership between the researcher and the manager will help bridge the natural differences in approach.

There may be a steering committee with multiple clients involved. The extent to which different goals are acknowledged and worked through will assist in ensuring that all objectives can be achieved. Note that on-going involvement of clients can result in a shifting of gears mid-study. It can be a challenge to be responsive to the client while setting boundaries related to research methods.

- **Study timelines**

Another difference between the approach of the researcher and the manager is often the timeframe they have in mind for producing study results. Managers have a need for quick results in order to apply to current or imminent operational issues. Researchers are often not used to deadlines created by operations or implementation timetables.

For the results to be useful, the question may have to be refined in order to provide results within the timeframe required by the manager. To be certain that the clients will

get the answers they are looking for, in an appropriate timeframe, the clients should be an integral part of framing the research question.

Managers will value the timeliness of the study results. This need for timely information may result in a trade-off between creating the most rigorous design and getting portions of the study completed quickly.

Reporting results typically cannot wait for the traditional peer-reviewed journal article to be published. Results should be provided on an on-going basis when possible, and in planned interim reports. These reports should be tailored to meet the specified needs of the managers.

Presenting Research to Managers

Management researchers have a responsibility to make the results of their investigations useful to managers and other policy makers. Many managers are not conversant with research methods or language and others don't have the time or inclination to study them. Therefore it is incumbent on the investigator to translate findings into usable conclusions and to use proven dissemination methods.

The plan for disseminating research results should be part of the formal proposal that is submitted to the scientific review committee. There are explicit review criteria related to both the value of the research and the dissemination plan. For example, the intended impact and the method for disseminating the results is part of the HSR&D Scientific Review and Evaluation Board (SREB) review. The plan should take into account who the audience is—who is going to care about these results.

Working with clients to prepare a report that meets their needs will facilitate the use of the research results. Research results must be succinctly summarized and transmitted to managers in easy-to-use reports and formats. To be useful and accessible to the managers, the executive summary or highlights are the most important section of the report. Executive summaries are not research abstracts. Rather, summaries or highlights describe briefly what the study is about, with the barest minimum description of

methodology, if any, and report key findings translated into conclusions or implications. The remainder of the report can include the detail and the methodology, which can be placed in the appendix. A draft report should be reviewed with the client, looking at all of the potential target audiences and tailoring it accordingly.

Towards evidence-based management

Bolstering the practice of evidence-based management will require several things: stronger, and more timely evidence, a stronger culture of evidence-based management; efficient and effective dissemination of evidence to decision-makers, and stronger evaluation of efforts to practice evidence-based management.

Axelsson[2]

If there is to be an impact, it is necessary to mount a significant effort within the organization or system, to communicate the research results broadly and deeply, embedding them in "the way things are done." Only a comprehensive dissemination effort will result in actual implementation of findings. A pro-active education program, as contrasted to just making information available (to those who know to look for it), can spell the difference between research for its own sake and applied, action research.

Evidence exists about the basic conditions necessary for strategic dissemination and the best dissemination methods to use in health care settings. See MDRC's Information Dissemination Program (IDP) Dissemination Note.

Management researchers need to explore a variety of venues and written and interpersonal methods for disseminating research results. An MDRC outline to assist researchers in identifying the target audiences, developing an accessible presentation and identifying all of the appropriate dissemination channels to get the message to the target audience can be found the Research Dissemination Planning Outline.

There are a number of print dissemination channels available for management research results that may not be familiar to all health services researchers. A list of potential policy and management journals as well as other VA publications for HSR&D authors can be found at HSR Management Journals Publication Information.

A Paradigm Shift for Managers and Researchers

There are strong arguments for the practice of evidenced-based management. But, currently, most managers do not consistently make decisions on the basis of formal evidence, and, even when they seek it, the availability of systematic evidence is sparse. To remedy this situation - to move toward acceptance and widespread practice of evidenced-based management on a par with evidence-based clinical practice - there must be a paradigm shift in attitude and actions of both managers and researchers.

Managers will need to focus more on using empirical evidence to make decisions rather than relying solely on consultants and management gurus without determining if their solutions have been successful in the past. Reviewing empirically based research can provide a reference for what has already been shown to be successful or not. While most healthcare managers do not have a background in research methodology, they need to be more accepting and willing to learn from empirical research.

Researchers need to better focus research questions on the real and immediate needs of organizations. To achieve this goal they must put more effort into establishing closer relationships with management. Researchers' objectives should be to explain and predict the consequences of managerial actions instead of just trying to understand the life of the organization.

III. Methodological Challenges

As a discipline, management research is a social science that seeks to contribute to both theoretical and applied knowledge. To make this contribution, management research, like all other social science research, must be conducted in accordance with methodological principles that ensure the validity and utility of the results. But meeting standards for vigorous research is not always easy for management researchers. Health care organizations are complex. Concepts of interest are often difficult to measure. In this vein, management research presents special methodological issues and challenges that need to be recognized in any initiative to support and expand this discipline.

This section discusses the specific challenges presented by management research - and some strategies for dealing with them. To illustrate selected strategies, the section offers a case example of a reviewer critique of a management research proposal - and the investigators' response to the critique. It also includes a discussion about using qualitative research for hypothesis testing.

For basic methods of good health services research, consult the white paper by Lee Sechrest, Ph.D., entitled Methodological Issues in Management Research, prepared for the MDRC workshop on Management Research in VA.[5]

A Conceptual Framework for Good Management Research

Conceptually, three principles can be said to be central to good management research. These principles are not intended to be comprehensive of all that is to be expected of good management research but do serve as key criteria for judging the value of such research.

First, the research should be internally valid. Internally valid research is research that minimizes the number and degree of confounding factors relative to study results. For example, a study may report a relationship between the use of self-directed teams and employee productivity, but the research should be designed such that other common determinants of employee productivity are eliminated or limited as competing

explanations for the reported relationship between organizational structure and productivity.

Second, the research should be externally valid. As noted, management research seeks to contribute to both theoretical and applied knowledge. In the quest to contribute to theoretical knowledge, management research should produce results that can be generalized beyond the confines of what is directly measured and observed in a particular. Thus, in our previous example of self-directed teams and employee productivity, the use of self-directed teams may be related at least in part to the broader construct of organizational structure, more specifically the degree to which decision-making is centralized/decentralized. For management research to be externally valid, care must be taken in the selection, measurement and operationalization of variables. Of course some management research is conducted at managers' request with a very applied orientation and may have no explicit or implicit objective of contributing to theory. While purely applied management research is appropriate under certain circumstances, for the field of management research to progress, research is needed that is both externally and internally valid.

Tips on Proposal Writing

- Demonstrate how the research will contribute to and close gaps in the body of knowledge.
- Provide strong theory that makes evident that the project is reasonable.
- Review and discuss relevant literature. (The review committee may not have the information or background that you do in the particular area.
- Select the strongest methodological design possible and persuade the group that it is the best approach to studying the issue.
- Specify all of the methodology in advance (not one that may depend on circumstances). Provide contingency plans for unique characteristics that may come up during the study.
- Describe the relevancy to and possible impact on VA.
- Demonstrate your credibility as well as your grounding in science. Junior investigators need to be linked with senior researchers with a track record of experience and publications. Provide evidence of sufficient support and resources backing your study.

Third, the research should have immediate or potential relevance to managers. In keeping with the objective to contribute to applied knowledge, the results of management research should offer managers insight about the work they do and how they carry out their work more effectively and efficiently.

Challenges to Conducting Management Research

Several important challenges exist to conducting management research in accordance with these three principles of good management research. With

respect to internal validity, since management research is often conducted in organizational settings, it is often not technically possible or feasible to use experimental design with randomization, which is the gold standard in scientific research. Many variables that are of interest to management researchers simply cannot be incorporated into an experimental research protocol as an intervention. For example, the senior managers of an organization would be reluctant to agree to participate in a study in which the variable of interest is decision-making centralization if participation meant that the organization would have to adopt a particular structure based on random assignment. Moreover, organizations cannot often be randomized to intervention and control groups because of geographic and other logistical barriers. Consequently, management research must often be conducted using non-experimental designs that are more vulnerable to confounding factors.

Additionally, the concepts of interest in management research can be difficult and complex to measure and operationalize. Measurement of many management concepts, such as culture, organizational structure, and coordination, typically requires primary data collection and the use of sophisticated psychometric procedures. Moreover, surveys will need to be conducted, presenting challenges of obtaining adequate response rates. Thus, in contrast to economic or clinical research where many standard variables are available through secondary data sources and can be measured in a fairly straightforward manner, management research is complicated by the need to measure complex variables.

With respect to external validity, the fact that management research is frequently conducted in organizational settings means that the research setting will often have unique features or characteristics. No two organizational settings will ever be exactly alike, and in most cases an organizational setting will have many unique features pertaining to its clientele or service market that may raise issues about whether the study results are to some degree context specific.

External Review Considerations

The previously mentioned challenges confronting management research have important implications for efforts to obtain funding to conduct management research in the VA or elsewhere. In general, study sections or other peer review panels responsible for funding decisions are very focused on factors that threaten a proposed study's internal validity. As such, study sections are likely to have a decided preference for experimental designs since, as noted, these are the gold standard. The proposed use of non-experimental designs, while certainly legitimate and common in social science research, will inevitably lead to heightened concerns among reviewers about the internal validity of the proposed study.

Similarly, proposed management research entailing complex variables and primary data collection will also heighten concerns among study section members no matter how favorable their orientation to management research. The proposed study of complex variables such as culture and coordination raises concerns about possible poor reliability and validity of measures.

Primary data collection raises concerns about the possibility of low response rates to surveys. In addition, because management research is conducted in organizational settings, some logistical issues in conducting a study cannot be fully appreciated and addressed until the study is actually underway. However, this also presents an element of uncertainty when the inclination of study section members is to have all research procedures specified completely in advance as part of the protocol.

To counter these concerns, study designs for management research should include:

- Strong conceptual or theoretical frameworks for the questions being studied; and
- A well-specified methodology that anticipates threats to validity and problems in data collection, and details how they will be addressed.

** The official guide to research proposals in the VA system can be found at http://www.va.gov/resdev/fr/funding.cfm*

Responding to Reviewer Critiques: A Case Example

One way to learn about strategies for addressing methodological challenges to conducting management research is to look at a specific case example. This example provides some insight into specific challenges inherent in study design and it offers a glimpse into the thinking of scientific review committee members. The initial proposal was rejected pending modification. The revised proposal, changed along the lines described here, was accepted.

Martin Charns and Gary Young of the MDRC submitted this study as an Investigator-Initiated Research project in 1995. The study was designed to investigate the implementation of quality improvement (QI) practices in Veterans hospitals. Most VA medical centers had implemented QI or were in the process in 1995. However, there appeared to be much variation regarding the organization and management of these initiatives. The study was designed to capitalize on this variation to examine the relationship between the degree to which VA medical centers have implemented QI and various influence factors. The study used an observation research design with statistical controls to account for various confounding factors. The complete abstract is available here.

Below are five critical comments from reviewers about the original proposal (in italics). For each comment, the original design element being criticized is summarized in parentheses, followed by the response by Charns and Young.

1. *The sampling frame for the site visits does not seem appropriate for developing a more general understanding of the relationships among the variables.*

(The original study design was to examine the five highest and five lowest scoring VA hospitals on quality improvement implementation.)

The study hospitals will be stratified into high, medium and low Quality Improvement (QI) implementation sets and six facilities will be randomly selected from each strata. Additional criteria may be used if the data indicate that certain characteristics or

implementation design features have a substantial impact on QI implementation. We will visit at least three high- scoring hospitals that have experience conducting QI projects.

2. *The proposal lacks a discussion of the potential bias associated with the timing of the adoption of QI techniques by hospitals-e.g., innovative high quality hospitals might be the first to adopt QI techniques. As a consequence the analysis with performance measures only after QI implementation might erroneously attribute continued high quality to QI implementation.*

(The original design included a cross-sectional approach assessing the relation between quality and culture.)

A third performance measure, for which data is available from before implementation of QI, will be added. We will also add longitudinal data on all measures and will examine the relationship between degree of implementation and hospital performance using percentage change in performance on each measure. Thirdly, we will use several proxy measures to examine bias associated with historical quality.

3. *The proposal does not discuss the role unions or mid-level managers will play in the implementation of QI initiatives.*

(Originally there was only one item included to assess this concept.)

The Medical Center Questionnaire has been revised to include several questions to gather information from the medical center director about the degree or resistance or cooperation the hospital has had from its union(s) and QI implementation. In addition, we have revised our site visit format to include interviews with officials from the unions at each hospital selected for a site visit.

Mid-level managers will be included in the pool of employees from which we will select to complete the scales. We have also revised our site visit format to include employee group interviews that will include mid-level managers.

4. *The proposal seems limited by assessing many variables that may be immutable.*

(Several of the variables, such as facility size and culture were considered difficult to manipulate and evaluate scores.)

We recognize that a few of the study variables are immutable, including urban/rural status, prior innovation experience and hospital mission. If medical center directors are aware that their facility faces a major barrier to quality improvement (e.g., the facility has little or no prior innovation experience and our study demonstrates that this variable plays an important role in facilitating QI), they may be able to anticipate specific implementation problems and adopt certain strategies to improve the chances of a successful QI initiative.

5. *The strategies for data collection may intimidate employees from responding as candidly as they might.*

(The description in the original proposal did not include enough details about data collection procedures.)

We have given careful thought to whether the employee questionnaires should be distributed to employees in a group setting or through the mail. We have chosen a group setting approach because, based on the experience of several members of the research team, we believe that it will lead to a substantially better response rate. The potential drawback of a group setting approach is that it may intimidate some employees because of concerns about confidentiality. In anticipation of this concern, we will distribute a letter to each selected employee that will (1) ask for their participation, (2) outline the primary study objectives, and (3) describe the procedures for distributing and collecting the questionnaires. We will also assure employees that all responses will be strictly confidential. We will make clear to employees that service chiefs and department managers will not be involved in distributing or collecting the questionnaire.

Using Qualitative Research Methods

One important methodological option in conducting management research is the use of qualitative methods for data collection and analysis. Qualitative research, with its emphasis on understanding complex, interrelated and/or changing phenomena, is particularly relevant to the challenges of conducting management research. Qualitative methods combined with quantitative ones can provide particularly rich and robust inquiries. Either alone or in combination, qualitative research must be conducted with methodological rigor.

This section does not attempt to provide a primer on qualitative methods. The role, benefits and appropriate use of qualitative research have been discussed extensively in the literature. Several references to excellent articles can be found in the references section and links to references. .

Our more limited aims here are:

- To offer, for those who are not familiar with qualitative methods, a brief overview of how they are used and what value they offer, drawing heavily from articles by Shoshanna Sofaer. [6]
- To propose the use of qualitative methods in hypothesis testing. Qualitative methods are often used inductively, for exploration, theory building and description. Less attention has been given to their use in deductive hypothesis testing. The white paper, prepared by Brian Mittman [7] discussed in this section explores those potential uses.

> Qualitative research methods are valuable in providing rich descriptions of complex phenomena; tracking unique or unexpected events, illuminating the experience and interpretation of events by actors with widely differing stakes and roles; giving voice to those whose views are rarely heard; conducting initial explorations to develop theories; and to generate and test hypotheses; and moving toward explanations.
>
> Mittman[7]

Specially this section addresses four questions:

- What are the uses and value of qualitative research?
- What are the methodological challenges in qualitative research?

- What are some key qualitative research methods?
- What is the role of qualitative research in hypothesis testing?

What are the uses and value of qualitative research?

Qualitative research is characterized by an emphasis on describing, understanding, and explaining complex phenomena - on studying, for example, the relationships, patterns and configurations among factors; or the context in which activities occur. The focus is on understanding the full multi-dimensional, dynamic picture of the subject of study.

Its approaches contrast with quantitative methods that aim to divide phenomena into manageable, clearly defined pieces, or variables. Quantification is good for separating phenomena into distinct and workable elements of a well-defined conceptual framework. But when we focus research on what we already know how to quantify, (e.g., what can be reliably quantified), we may miss factors that are key to a real understanding of the phenomena being studied. The downside of quantification is that it does not always support (as well as qualitative methods) understanding of complex, dynamic, and multi-dimensional wholes.

Qualitative methods are useful, not only in providing rich descriptions of complex phenomena, but in constructing or developing theories or conceptual frameworks, and in generating hypotheses to explain those phenomena.

What are the methodological challenges in qualitative research techniques?

Key challenges to conducting rigorous qualitative research range from instrument development through data collection to data analysis. In addition, results need to be documented and reported using formal accepted methods.

For example, typical deficiencies are unfocused instrument development and lack of supporting theory. Rigor related to instrument protocol development requires attention to validity, intrusiveness (the Hawthorne effect) and triangulation. In addition, attention must be paid to distinguishing between collecting subjective and objective data,

information on the formal vs. the informal organizational structures and processes and the differences between collecting facts vs. opinions vs. interpretations.

Planned, systematic, comprehensive data collection requires variable definitions and measures, document coding form protocols, administrative database specifications and survey instrument question libraries. In the data collection phase, problems can be minimized through pilot-testing and pretesting, validity/quality checks, triangulation and monitored flexibility. Sole reliance on subjective data, self-reports, etc. can reduce validity. Some tips to insure rigor in data collection management include training of all data collection staff and conducting immediate post-collection coding for time/memory sensitive data. Other methods to ensure the validity of data include tape recording interviews, performing real time data entry and editing, using paired interviewers, and implementing quality assurance for each instrument. And, to avoid further problems, incomplete, missing or unusable data should be corrected immediately.

Pitfalls related to data analysis include using ad hoc, emergent, exploratory, informal analyses that may lead to inappropriate conclusions and unpublishable results. Rigorous analysis requires an a priori theoretical model and hypothesis, a formal framework guiding data collection and analysis and adherence to the formal framework and research best practices.

Finally, reporting requires results structured by hypotheses and an analysis plan. Reports need to include data syntheses and summaries with a focused analysis of the data. Conclusions must have a documented basis and systematic formal analysis methods, and validity must be documented.

What are some key qualitative research methods?

A wide range of tested qualitative research methods are available to address these challenges. The selection of method, or combination of methods, will be tailored to the questions being studied and the setting for research. Typical methods include:

- Naturalistic inquiry and participant observation

- Case study research
- Structured observations of meetings and events
- Content analysis of documents
- Collection and analysis of other archival, administrative and performance data
- Focus groups
- Cognitive interviews
- Mail and telephone surveys

Naturalistic inquiry, or ethnography, has its roots in anthropology and sociology and involves long-term exposure to a setting or a group of people. Extensive use of unstructured observations and conversations documented by detailed field notes form the basis for this type of research, often considered the purest form of qualitative research. Naturalistic inquiry is used when situations are unique or complex, when the level of uncertainty about the questions to ask is high and when there is little or no theory to direct the investigator.

A subset of this type of inquiry involves participant observation in which the investigator becomes a part of the setting or the process being studied. (Sofaer) reports that she was able to learn more from attending a few group meetings in a particular setting than she could have by using more structured qualitative methods such as interviews or surveys.

Case studies are the preferred strategy when 'how' or 'why' questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context. The case study is especially appropriate when the boundaries between phenomenon and context are not clearly evident. The case study copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion.

The case study approach can involve a single event or multiple cases and can be short or long term. However, rather than requiring total immersion in the setting or culture, sampling of sites, experiences and/or informants is typical. The methods used in case study research is similar to those of naturalistic inquiry. However the data collection is often more structured, using key informant interviews, structured observations of events and interactions and the collection and content analysis of relevant documents (e.g., to help establish the facts, the assumptions, values and priorities, or to illuminate differences in perceptions). Case studies often also include quantitative data for background or to help generate questions to ask informants (e.g., data on demographics, heath status, utilization, finances, etc.).[10]

Structured Observations of meetings

This involves attending meetings of the group that you wish to research. This can also be extended to observation of individuals in their daily work routine or on special tasks. The purpose of observing is to learn what is going on at the meeting and witness the group dynamic in process. This can be a rich information source as it can give researchers insight into the group.

Content analysis of documents

This is a non-intrusive form of research. This involves reviewing documents, memos or other pieces of written information for content and themes. By examining written word, the researcher is studying one type of communication that occurs in the selected sample.

Collection and analysis of other archival, administrative and performance data

This method also is non-intrusive. Information that has been previously collected, or secondary data, is reviewed to gain a better understanding into the topic. This information is part of the organization's history and can be a valuable key to understanding the past.

Focus groups usually explore specific issues. The focus group brings together individuals chosen to meet a specific profile. They may be homogenous along some dimensions and heterogeneous along others and a structured, yet informal, setting is used to explore a limited number of questions. Focus groups, unlike individual interviews, provide the added dimension of the interactions among members. Focus groups are often combined with more quantitative approaches such as surveys that can be administered at different points in the group discussion and even used as grist for additional discussion.

Cognitive interviews are typically used in survey development. One-to-one interviews are conducted (with people meeting the criteria for completing a particular survey) as the individuals complete the instrument being tested. This method helps investigators understand how people perceive and interpret language and their own experiences as they refine the survey instruments.

Mail and telephone surveys are a method of collecting information by sending surveys via email or postal mail. Participants return completed forms to the researcher or an outside vendor. Surveys may ask respondents to rate items on a scale (e.g., Likert scale of 1-5). Some surveys also allow respondents to write their feelings or attitudes about a particular event or to elaborate in more detail on an item, or to express suggestions, etc.

What is the role of qualitative research in hypothesis testing?

The origins and development of qualitative research methods and their close association with inductive, interpretive and historical research have led many researchers to associate these methods exclusively with these forms of research and to fail to recognize their value in conventional deductive empirical research.

Some investigators, however, contend that hypothesis-testing, deductive research can benefit from the use of qualitative research methods - and that these methods can be used in a manner consistent with accepted standards of rigor and validity. In particular they believe that the acknowledged strength and unique contribution of qualitative methods in developing insights into actors' values, beliefs, understandings and

interpretations of events and other phenomena, or in explaining historical occurrences, can enhance "conventional" forms of empirical research.

Brian Mittman, in a white paper prepared for the MDRC workshop on Management Research in VA, argues for the use of qualitative methods in hypothesis testing, and outlines the key components of the rigorous approach needed to use these methods successfully. His paper is motivated by two interests: first, convincing researchers not experienced in qualitative methods that they can enhance their empirical, deductive work, and, second, minimizing the misuse of qualitative methods in ways that threaten the validity of studies. Dr. Mittman's paper is linked here.

VA-wide Projects

Below is a compilation of VA-wide projects to provide researchers with information about what colleagues are studying, to encourage the exchange of information, and potentially collaboration among investigators with similar interests. The listing of projects are broad: Research about the organization and management of health care organizations, from the highest level of the whole health care system, down to the clinic level.

If you would like to add or update the list of research projects, please contact us at mdrc.boston@med.va.gov.

We have grouped the projects under four headings:

- health system/hospital/service lines;
- disease or clinical processes,
- organizational change and dissemination of knowledge,
- and organizational surveys.

Health Systems/Hospitals/Service Lines

Evaluation of VA Service Lines

Martin Charns

email:Martin.Charns@med.va.gov

Mark Meterko

email: Mark.Meterko@med.va.gov

VA (MRR 97-006)

Implementation of Service Lines in Integrated Delivery Systems

Martin Charns

email: Martin.Charns@med.va.gov

Industry Advisory Board

Case Study of VISN 2 Mental Health Care Line Implementation

Martin Charns

email: Martin.Charns@med.va.gov

VA (MRR01-008)

The Effects of Local Hospital Networks on the Cost and Accessibility of Hospital Services

Gary Young

email: Gary.Young@med.va.gov

Robert Wood Johnson Foundation

Case Study of Integration of Affiliated Medical Centers

Carol VanDeusen Lukas

email: Carol.VanDeusenLukas@med.va.gov

VA (MRR 00-003)

Scorecards on Health Systems Integration: VISNs 1,2,13,14

Carol VanDeusen Lukas

email:Carol.VanDeusenLukas@med.va.gov

VA (MRR 01-010)

Analysis of New York Harbor Health System Integration

Carol VanDeusen Lukas
email:Carol.VanDeusenLukas@med.va.gov
VA (MRR 99-011)

Analysis of New York Harbor Health System Integration

Carol VanDeusen Lukas
email:Carol.VanDeusenLukas@med.va.gov
VA (MRR 99-011)

VISN 1 Governance Study

Carol VanDeusen Lukas
email:Carol.VanDeusenLukas@med.va.gov
David Mohr
email: David.Mohr2@med.va.gov
VA (MCR 02-008)

Disease Or Clinical Processes

Survey of Current Hepatitis C Clinical Practice and Attitudes Within the VA
Michael Chapko
email: Carol.VanDeusenLukas@med.va.gov
VA

Evaluation of Pilot Programs in Assisted Living
Michael Chapko
email: Michael.Chapko@med.va.gov
VA (MRR00-016)

Parkinson's Disease Research, Education and Clinical Centers – Evaluation of Development of Implementation Centers Improvement of Care
Martin Charns
email:Martin.Charns@med.va.gov
Irene Cramer
email: Irene.Cramer@med.va.gov
VA (SDR proposal under review)

Organizational and Occupational Health Factors Affecting Patient Safety in Community Health Centers
Martin Charns
email:Martin.Charns@med.va.gov
Agency for Healthcare Research and Quality

Organizational Factors and Foot Care Outcomes for Diabetic Patients
Martin Charns
email:Martin.Charns@med.va.gov
VA

Impact of VA Prevention Performance Measures on Outpatient Chronic Care Outcomes
Amy Kilbourne
email: Amy.Kilbourne@med.va.gov VA Career Development Award

Improving Depression Management in Primary Care: Role of Healthcare Organizational and Provider Incentives

Amy Kilbourne

email: Amy.Kilbourne@med.va.gov VA Career Development Award

Organized Factors and Delivery of Depression Care

Amy Kilbourne

email: Amy.Kilbourne@med.va.gov VA Career Development Award

Alzheimer's Disease Collaborative Care for San Diego Seniors

Brain Mittman

email: Brain.Mittman@med.va.gov

California HealthCare Foundation

Determinants and Consequences of Practice Patterns in Early Retirement

Brain Mittman

email: Brain.Mittman@med.va.gov

National Institutes of Health

Determinants of Nurse Practitioner Use by VA Primary Practices

Becky Yano

email: Becky .Yano@med.va.gov

VA Ambulatory Care Fellow

Describing VA Health Services for Women Veterans

Becky Yano

email: Becky .Yano@med.va.gov

VA

Variation in HIV/AIDS Programs and Policies in VA Medical Centers

Becky Yano

email: Becky .Yano@med.va.gov

VA QUERI HIV

Nursing Outcomes Database Development

Martin Charns

email:Martin.Charns@med.va.gov

Anne Sales

email: Ann.Sales@med.va.gov

VA (MRC 03-067)

Organizational Change And Dissemination Of Knowledge

Transitions in Organizational Design: A Study of Product Line Management Implementation

Martin Charns

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Gary Young

email:Gary.Young@med.va.gov

National Science Foundation

Evaluation of Dissemination and Impact of Practice Matters

Martin Charns

email:Martin.Charns@med.va.gov

Irene Cramer

email: Irene.Cramer@med.va.gov

Gary Young

email:Gary.Young@med.va.gov

VA (MRR 01-214)

Evaluation of Implementation of IHI Advanced Clinical Access

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email: Carol.VanDeusenLukas@med.va.gov

Mark Meterko (Mark.Meterko@med.va.gov)

David Mohr (David.Mohr2@med.va.gov)

VA (MCR 00-012)

Case Study of Organizational Change in VISN 13

Carol VanDeusen Lukas

Carol.VanDeusenLukas@med.va.gov

Irene Cramer (Irene.Cramer@med.va.gov)

VA (MCR 02-001)

Case Study of the Development of VISN 23

Carol VanDeusen Lukas

Carol.VanDeusenLukas@med.va.gov
Irene Cramer (Irene.Cramer@med.va.gov)
VA (MCR 02-003)

Evaluating Pursuing Perfection
Martin Charns
Martin.Charns@med.va.gov
Irene Cramer (Irene.Cramer@med.va.gov)
Carol VanDeusen Lukas (Carol.VanDeusenLukas@med.va.gov)
Robert Wood Johnson Foundation

Translating Research Into Action for Diabetes in the VA
Sarah Krein (Skrein@umich.edu)
VA (SDR 01-019)

Translating Interventions for Depression to Enhance VA Care Solutions
Becky Yano
Becky .Yano@med.va.gov
QUERI SDP

QUERI Translation Research Projects
Brian Mittman (Brian.Mittman@med.va.gov)
VA

Learning Xchange
James Burgess (James.Burgess@med.va.gov)
N/A

Evaluation of Rewarding Results
Gary Young (Gary.Young@med.va.gov)
Bert White (Bert.White@med.va.gov)
Agency for Healthcare Research and Quality

Organizational Surveys

National Organizational Survey

Mark Meterko (Mark.Meterko@med.va.gov)
David Mohr (David.Mohr2@med.va.gov)
VA MR (01-007)

Survey of VHA Researchers

Mark Meterko (Mark.Meterko@med.va.gov)
Carol VanDeusen Lukas (Carol.VanDeusenLukas@med.va.gov)
Danielle Valley (Danielle.Valley@med.va.gov) VA MR (01-006)

Research Instruments

This section presents brief profiles of the instruments provided by VA investigators. The actual instruments are not attached. We encourage you to contact the person listed for the details about the content, administration and psychometrics of each instrument. Another source of information about instruments is Measurement Excellence Initiative (MEI).

If you would like to contribute an instrument that you feel successfully measures an important management or organization domain, please contact us at mdrc.boston@med.va.gov.

MDRC Instruments

- Coordination Among Health Care Professionals
- Network Integration Survey
- VA National Quality Improvement Survey

Other Instruments Within VA

- Smoking Cessation Arrangements in VHA Facilities

- VHA Survey of Women Veterans Health Programs and Practices
- VHA Survey of Primary Care Practices
- Work Environment Scale
- The Organizational Trust Inventory
- The Organizational Assessment Survey

Instrument: **Coordination Among Health Care Professionals**

Construct(s) measured	Programming (standardized) and feedback (personal) modes of coordination
Method of administration	Paper and pencil
Targeted populations	Separate versions for nurses, physicians, other health care professionals
Number of studies Sample size	Coordination and surgical outcomes 44 sites, n = 900 Coordination and lower extremity amputation rates (instrument names FOOTSAT), 10 sites, n = 250
Psychometric properties (with scales and Cronbach Alpha range)	2 scales, coefficient alpha to be provided
Contact person for more information	Martin Charns martin.charns@med.va.gov MDRC

Instrument: Network Integration Survey

Construct(s) measured	Health system integration (focus on coordination across medical centers); employee satisfaction
Method of administration	Paper-and-pencil mailed survey
Targeted populations	Employees of VA medical centers (stratified by managers, clinicians and general staff)
Number of studies Sample size	Administered once in the following VISNs: 1: completed sample size: 1166; response rate: 50% 2: completed sample size: 851; response rate: 55% 14: completed sample size: 851; response rate: 64% Administered twice in VISN 13 1999: n = 1042; response rate: 73% 2000: n = 1110; response rate: 60%
Psychometric properties (with scales and Cronbach Alpha range)	Scales and Cronbach alpha range across studies: Leadership (.89 – .92) Staff Cooperation (.78 - .86) Clinical Coordination (.77 - .85) Alignment (.70 - .76) Service Cooperation (.78 - .87) Shared Vision (.72 - .80) Quality Improvement (.72 - .87) Manager Alignment (.70 - .78) Single Standard of Care (.70 - .79) Job Satisfaction (.78 - .83) Level of Integration (.77 - .87) Quality of Medical Care (.87 - .90) Service Line Support (.70 - .87)
Contact person for more information	Carol VanDeusen Lukas carol.vandeusenlukas@med.va.gov MDRC Danielle Valley danielle.valley@med.va.gov MDRC

Instrument: **VA National Quality Improvement Survey (NQIS)**

Construct(s) measured	Facility culture Implementation of and support for TQM/CQI Leadership Performance goals Evaluation and feedback Reward and recognition Job satisfaction
Method of administration	Paper-and-pencil self-report mail survey
Targeted populations	Employees of VA medical centers Separate forms for managers and non-managers Separate forms for integrated and non-integrated facilities
Number of studies Sample size	Three national administrations to date; n of respondents as follows: 1997: n=12,406 1998: n=11,024 2000: n=8,455
Psychometric properties (with scales and Cronbach Alpha range)	Cronbach alphas for TQI/CQI implementation and support subscales: Management Role: 0.92 Information & Analysis: 0.92 Planning for Quality: 0.89 Human Resource Utilization: 0.90 Quality Assurance of Produce/Services: 0.90
Contact person for more information	Mark Meterko, PhD Mark.meterko@med.va.gov MDRC

Instrument: Smoking Cessation Arrangements in VHA Facilities

Method of administration	Paper and pencil
Targeted populations	Separate versions for Primary/Ambulatory Care Manager and Smoking Cessation Coordinator at Phase 1 and 2
Contact person for more information	Becky Yano Elizabeth.Yano@med.va.gov VA & UCLA

Instrument: VHA Survey of Women Veterans Health Programs and Practices

Method of administration	Paper and pencil
Targeted populations	Separate versions for Senior Clinicians, VISN Directors, and Chief of Staff
Contact person for more information	Becky Yano Elizabeth.Yano@med.va.gov VA & UCLA

Instrument: **VHA Survey of Primary Care Practices**

Construct(s) measured	Programming (standardized) and feedback (personal) modes of coordination
Method of administration	Paper and pencil
Targeted populations	235 VA facilities, including 170 VAMCs and 65 CBOCs
Contact person for more information	Becky Yano Elizabeth.Yano@med.va.gov VA & UCLA

Instrument: **Work Environment Scale**

Construct(s) measured	Managers' and employees' perceptions of current work environment, conceptions of an ideal work environment, and expectations about work settings
Method of administration	Self-report
Targeted populations	Managers and employees
Psychometric properties (with scales and Cronbach Alpha range)	Involvement (.80-.84) Coworker Cohesion (.68-.69) Supervisor Support (.77) Autonomy (.72-.73) Task Orientation (.76) Work Pressure (.78-.80) Clarity (.74-.79) Managerial Control (.75-.76) Innovation (.82-.86) Physical Comfort (.76-.81)
Contact person for more information	Rudolf Moos bmoos@stanford.edu Palo Alto HSR&D Center of Excellence

Instrument: **The Organizational Trust Inventory (OTI)**

Construct(s) measured	Belief that an individual or group; makes good-faith efforts to behave in accordance with any commitments (Dimension 1), is honest in negotiations (Dimension 2); does not take excessive advantage of another (Dimension 3) Assessed by affect, cognition and intended behavior components
Method of administration	Self-report
Number of studies Sample size	One study, n =323 employees and students at University of Minnesota
Psychometric properties (with scales and Cronbach Alpha range)	Dimension 1: Reliability .84-.96 in SEM (structural equations modeling) Dimension 2: Reliability .78-.94 in SEM Dimension 3: Reliability .88-.92 in SEM
Contact person for more information	Kimberly O'Malley komalley@bcm.tmc.edu MEI

Instrument: **The Organizational Assessment Survey**

Construct(s) measured	Organizational Experiences Personal Experiences
Method of administration	Self-report
Targeted populations	managers, supervisors, team leaders, customers
Contact person for more information	Mary York mjyork@bcm.tmc.edu MEI

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Methodological Issues in Management Research

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White paper prepared for the Department of Veterans Affairs *Management Research in VA Workshop*, sponsored by the HSR&D Management Decision and Research Center
November 19-20, 2001

METHODOLOGICAL ISSUES IN MANAGEMENT RESEARCH

Managers want to make good decisions. Any decisions will, by definition, be made on the basis of some presumed information. Even if a decision were to be made by throwing dice, that process would almost certain stem from "information" indicating that no better basis for the decision could be discerned, e.g., that a randomly determined choice would be likely to be better than a decision open to bias. At least to some extent, it is axiomatic that the better the information, the better the decisions.

It is useful to distinguish between data, facts, and information. Data are simply observations, usually in the form of numbers thought to represent some systematic process underlying them, i.e., a process generating the numbers. Data do not mean anything or tell us anything until they are interpreted in some way. Merely to have an observation that on a particular day 43 patients were reported to have received a particular service is not in itself meaningful. Facts are merely data elevated in confidence to a point of suggested certainty. The observation that 43 patients received a service may be registered as a fact if it seems likely that the data are sufficiently trustworthy to justify confidence that the data are correct. Facts come in all varieties: numbers, declarative statements, equations, and so on. But facts are not necessarily information For example, if one is told that the land area of Bahrain is 231 sq.mi., that might be factual, but it might not constitute information. A useful definition of information is that it is any communication that reduces uncertainty with respect to some decision. That Bahrain is 231 sq. mi. is information only if one is in the position of having to make some decision involving that information, e.g., about whether to invest in a manufacturing enterprise in that country or whether, in a game, to choose Bahrain as the smallest of the Arab states. Even the precise estimate for land area might not be information if one already knows that Bahrain is very small and that is all the precision of knowledge that one requires.

These distinctions are important in thinking about research because not all research findings are necessarily factual, and the facts that are acquired from research efforts are not necessarily information. The reason is that research findings can be—must be—interpreted at different levels. It may be, for example, that in a particular organization more patients were processed by Unit A than by Unit B. That could lead to a conclusion that the management style employed in Unit A results in greater productivity than the management style employed in Unit B. That, in turn, could lead to the conclusion that Management Style A is superior to Management Style B. And so on. Reflection may show, however, that the only undeniable "fact" available is that more patients were recorded as having been processed by Unit A than by Unit B. The apparent better productivity of A could reflect no more than errors in recording patients processed. Or the difference, although real factually, might have happened simply by chance. The difference might be real enough but also so small as to be uninteresting. Or, even if the difference were real and sizable, there is a considerable leap in the conclusion that it should be attributable to differences in management style, and there is even a greater leap in the conclusion that one management style should be considered generally superior to the other.

Research, as suggested, may result in specific findings that can be regarded as factual and that may represent information in the sense of reducing uncertainty about decisions. Research may also be supportive of more general theory about the phenomena of interest. Thus, research on a particular management style in a particular context may be supportive of a more general theory of or about management. Even though a particular research project may be rather specific in many of its details, it may still bear on very general principles of organizational management. Conversely, a rather general theory may permit derivation of recommendations concerning specific practices. Although the precision either way, reasoning from specific findings to general theory or from general theory to specific practices, may be limited, the process is likely to result in better decisions that would be made by chance and probably better than would be made overall by intuition.

Theory and research should reflect a continuing interplay of observation and synthesis. It is possibile that theories may sometimes be better than our facts, i.e., the results of specific research. Any one research project is certain to be limited in important ways, at least in terms of its generalizability to other types of persons, to other settings, to different versions of the intervention, and so on. Moreover, any given research project is subject to limitations resulting from a wide range of errors that are inevitable. Measures are not perfect, interventions are not perfectly implemented, individuals differ in their reactions to the same set of conditions, reactions to interventions or other arrangements may vary over the course of a day, or a week, or a month. Thus, if there is a plausible, well-reasoned theory that tells us that a particular intervention ought to decrease the time taken to do some task, but the expected decrease does not happen, it may not necessarily be the case that the theory is wrong. It may well be that the data just were not up to the task of testing the theory.

In order to produce information that will be dependably useful to managers, research must be carefully planned, carried out, and interpreted. Good research does not just happen. It is the result of deliberate application of well-tested methods. The aim of this paper is to outline some of those methods and why they are important.

Causal attribution

The aim of research is, generally, to reveal causal connections between variables, i.e., to demonstrate that one variable is a cause of another variable. When the demonstration is sufficient, then we are, at least potentially, in the position of being in control of the "effect" (caused) variable. We may, if we are able to change the causal variable, e.g., eliminate it, strengthen it, produce a change in the effect variable. Research is sometimes carried out for descriptive purposes, but the results of descriptive research are rarely of great interest in their own right. For example, a manager may wonder whether costs of some activity are higher on some days of the week than on others and may assemble data relevant to that question. That costs are higher, let us say, on Mondays than on other days may be a curious "fact," but it is of value only insofar as it suggests the possibility of another, follow-on study that will explain the higher cost, i.e., that will explain why the cost is higher, what causes the higher cost on Monday. If that can be determined, then the manager may be able to intervene to reduce the excess cost or may understand that the

cost, although larger, is warranted because it is attributable to desirable features of the operation of the organization, e.g., more services are provided on Mondays or more serious problems are dealt with on Mondays.

Making correct causal attributions is often far from straightforward. At the heart of the matter is that a causal inference requires dealing with *the counterfactual.* That is, making a causal inference requires at least an implicit answer to the question "What would have happened if the causal event had not occurred?" That may be a relatively simple matter if a causal connection is direct and well understood. If more services are offered, then costs are almost certain to increase. Moreover, it is likely to seem pretty clear that if services are cut, costs will go down. If, however, it is observed that a group of new workers given three days extra training make "only" two errors per shift in the month following training, it may not be so easy to be sure how they would have performed had they not had the training. One cannot both given the training and not give the training. An inference is required.

Descriptive research may be quite useful when it helps to understand some process, particularly if that process is amenable to intervention. It may be important to know, for example, whether supervisors actually read documents that cross their desks for signatures in order to plan for streamlining of the flow of paper through an organization. Such a study might be limited to enquiry by questionnaire, but it might involve interviews or even observations.

Necessity for comparison observations

When one thinks about it, no observation is meaningful in and of itself. Observations acquire meaning by the opportunity to compare them to some expected or observed value. Stars are dim only because some other stars are bright. An object is likely to be seen as blue only if it might well have been another color. An observation (or set of observations) made in an organization is interpretable only in relation to some prior expectations. Those expectations might have been derived in any number of ways: logic, common sense, theory, or other observations.

We attribute causality to some intervention in relation to some event because we are capable of imagining that the outcome might have been otherwise, i.e., we invoke the counterfactual possibility. If an assistant tells a manager, “We are having fewer staff complaints from the long-term care unit,” and the manager replies, “That’s because of the new procedures we instituted last quarter,” the manager is implicitly accepting the proposition that had *the procedures not been instituted* the complaints would not have decreased. What might be the justification for that proposition?

Logic? Common sense? It may seem to the manager and the assistant simply logical if things are not going well and a new set of procedures to improve matters is introduced, improvement should occur and that any that does occur should be attributed to the intervention. Things are rarely so simple. Almost always some plausible rival explanations exist, and, if one of them is correct, it may change the decision about what

to do in an important way. For example, some studies had shown that the testing of prospective employees for honesty resulted in reductions in episodes of theft or inventory loss. More definitive studies, however, seemed to indicate that the primary effect was the result simply of the demonstration to employees that management cared about theft and was resolved to do something about it. Testing employees for honesty can be expensive and hard on employee morale; by comparison communication of managers' concerns for theft may be inexpensive and accepted as a legitimate managerial function. Complaints from a unit might be reduced for similar reasons, i.e., simply because a manager expressed concern for them and a determination to reduce them.

Theory? Similar to logic but more explicitly reasoned is a theoretical justification for a conclusion. A manager might rely at least to some extent on a theory of management that would predict that a particular type of intervention would have the effect intended and result in an outcome reflected in a decrease in complaints. The legitimacy of the conclusion would depend heavily on the resemblances between the specific intervention and the type represented by the theory and between the outcome supposed by the theory and that realized in the empirical study. A characteristic of a theoretical explanation is that the mechanism for producing the change is explicit. For example, a particular intervention might operate to reduce complaints by improving conditions leading to complaints, by helping staff to be more accepting of deficient conditions, or by improving staff morale so as to decrease the likelihood of complaints.

Other observations? By contrast, a manager might have access to other observations that would support the conclusion that the change could be attributed to the intervention. The manager might note, for example, that complaints had been at a consistently high level for quite some period of time, decreasing only when the intervention was implemented. Or the manager might know that on one or more other units in which no intervention was tried, no decrease in complains was found. The manager might even be satisfied to know that after the intervention, complaints were no more frequent than reported in other similar organizations in his or her geographic area.

Comparison data.

Interpretation of any observations is, obviously, much enhanced by having available data from other sources with which to compare observations at hand. Essentially, the reason is that the comparison data make it possible to make a judgment in relation to the counterfactual notion of what the data would have looked like under other circumstances, e.g., if the intervention had not occurred. If complaints seem high and an intervention is tried, followed by a decrease in complaints, the counterfactual asks what the complain level would have been without the intervention. Answering that question is not always easy, and the answer is not only obvious. Complaints might have been going down anyway; a change in patient mix might have made fewer complaints more likely; new personnel in the unit, independent of the intervention, might have elicited fewer complaints.

Comparison data could be helpful in varying degrees, depending on just what kinds of comparisons were available. Inspection of rate-of-complaint data prior to the intervention might show that the idea that complaints were going down anyway was unlikely. Those data would not necessarily be helpful in determining whether the change might have been due to changes in personnel or patient mix.

True (randomized) experiments.

The best comparison data would result from circumstances in which everything was identical to the conditions in the group exposed to the intervention *except* the occurrence of the intervention itself. The problem is that so often it is difficult, sometimes impossible, to be sure that everything was the same except for the intervention. Two units might, however apparently similar, differ in subtle ways in patient mix, or in personnel, or in some other variables that might be related to the occurrence of complaints. No matter how carefully units were selected and how similar they seemed to be, the possibility exists that the patients in them would differ in some unknown, but important way. By "important" is meant that the difference would be related in some way to an outcome of interest, say the tendency to complain.

The best way to maximize the likelihood that patients on two units will be the same even on unobserved variables is to assign them *randomly* to the two units. By such an assignment process, if a patient with a low tendency toward complaining were assigned to the unit to receive the intervention, probability would guarantee that a similarly low patient would be likely (but not certainly) to be assigned to the other unit. Over a series of observations, chance generally evens things out. The logic of scientific inquiry then is that if one can assume that two groups (units, in this case) were equivalent to begin with, then any later difference between them can be attributed to differences in the way they were treated, i.e., the intervention. The equivalent comparison group answers the question posed by the counterfactual, what things would have been like in the absence of the intervention.

That, in a nutshell, is the essence of the randomized clinical trial, almost universally regarded as the strongest basis for an inference about a causal relationship between two variables. Any other comparison data are considered inherently weaker as a basis for causal inference and, therefore, more likely to be misleading.

Threats to validity of the inference.

It is common practice to refer to problems with various comparison data series in terms of "threats to validity," meaning threats to the validity of a causal inference. It will help to review some of the more likely threats and to indicate how they might crop up in specific comparisons.

Selection. If groups, say intervention and comparison groups are assembled in any way other than by random selection, there is at least a possibility, often a near certainty, that differential selection into the groups will have made them different from the beginning,

thus making any final difference difficult to interpret. For example, if groups are assembled by asking for volunteers for the intervention, that group may be more enthusiastic, higher in risk-taking, more eager to please, of more of almost anything else than the left-over group of non-volunteers. Thus, if the intervention group turns out better than the comparison group, that difference cannot unequivocally be attributed to the intervention itself. Even if one takes intact groups, e.g., patients in two general medical units of a hospital, one cannot be certain that they do not differ in important ways. Medical studies, for example, have run afoul of the problem that patients selected for one treatment over another tend to be different from patients no so selected. In one well-known study, patients who received surgical treatment had better outcomes than patients not subjected to surgery, but that ultimately was shown to be because patients not selected for surgery were too sick to endure it.

Maturation. Naturally occurring processes may be mistaken for intervention effects under some circumstances. If one unit has very new leadership and another is well established, changes associated with the maturing of the leadership could be mistaken for effects of an intervention. If costs of some process are increasing over time, an intervention might appear to result in increased costs even thought it were cost neutral.

History. Sometimes in the middle of a research study, external events will occur that have an impact on the phenomenon being studied. A researcher unaware of a change in accounting procedures in an organization might mistakenly conclude that an intervention decreased costs when, in fact, the change was illusory. Events outside the system may, similarly, have effects that could be taken for the effects of an intervention. It is entirely likely, for example, that the events of Sept. 11 and subsequently may have affected all sorts of responses made within work and treatment facilities. Productivity probably dropped for a while, various complaints probably decreased, and absenteeism increased. Because of the enormous salience of Sept. 11, few investigators would be likely to miss its effects on most data being collected during that time. Similar effects might well be missed, however, if they were less obvious. History is a special threat to studies involving comparisons of data for the same group over time, but if history has more impact on one group than another, it can affect any comparison.

Regression artifact. Observed values of any variable must be considered to be in some part in error. If an observation is toward one extreme or another of a distribution, the probability is that error is in some degree involved in the location of the observation. For example, if on some occasion it is observed that complaints from a treatment unit are much higher than average, the probability is great that the number is high in part because of the odd confluence of factors not likely to persist for long, e.g., a temporary staff shortage, a malcontented patient, an equipment breakdown. Then, with no intervention at all, the number of complaints would fall at the next occasion of measurement (called regression toward the mean). Because interventions are likely to be initiated exactly when complaints are high, the natural effects of regression can easily be mistaken for an intervention effect. Incidentally, and conversely, an intervention that happens to come along when things are noted to be especially good may appear to have a bad effect because regression works in both directions.

Research Designs

As noted earlier, the randomized experiment is generally regarded as the gold standard for research, particularly for supporting causal inferences. So why are randomized experiments not used exclusively? In the first place, they simply cannot be done for many problems because the variable of interest cannot be experimentally controlled, whether for practical or for ethical reasons. We are interested in the effects of education on people's lives, but we cannot "give" education to people who do not want it. Similarly, we are interested in the effects of sanctions on criminal behavior, but we cannot, ethically—or legally—punish some people and not punish others on an experimental basis. Second, randomization may be unacceptable to some persons or groups, i.e., they may be unwilling to be randomized to experimental conditions. If randomization is possible, it is usually preferable as a research option, but often alternatives must be sought.

A wide range of options for research is available, each with specific advantages and deficiencies dependent on the nature of the problem. These options are frequently referred to a quasi-experimental designs. All research designs are, however, simply ways of systematizing observations in such a way as to maximize information concerning the counterfactual proposition. Those research designs likely to be of greatest usefulness are the following:

Nonequivalent comparison group design.

The most widely used quasi-experimental design is, undoubtedly, the nonequivalent comparison group design, by which is meant a research scheme that calls for collecting data from an intervention group and a comparison group that do not involve random assignments. Consequently, the groups must be *regarded* as nonequivalent, as potentially having been *selected* in such a way that they are unequal to begin with. Two hospitals differing in management types may be compared, and they may actually be quite equivalent save for management, but there is no way of knowing that, so they must be regarded as nonequivalent. Obviously, the more reason with which one can argue that the groups or organizations are equivalent, the better the case for interpreting any outcome differences between them. That is why when, as is inevitable, plans must be made to compare interventions between two groups or organizations, it is important to select the two (or more) with as much care as possible. One would not opt deliberately to compare two organizations of widely disparate size or from very different communities unless those variables, size or geography, were the exact conditions of interest.

Initial differences between groups or organizations may be dealt with statistically or by developing other, supportive comparison data sets. Statistical allowances for differences is often, but not always, straightforward, depending on the nature and size of the initial differences. Statistical corrections for initial differences also depend for their persuasiveness on the quality and relevance of the data available. If initial measures are available on the variables to be measured as outcomes, allowance for differences is not likely to be terribly controversial, at least if differences are not large and other

assumptions are tenable. When, however, it is necessary to use proxy variables, controversy is inevitable. For example, if one has to use a symptom-count as a proxy for severity of illness, the correction for potential initial differences in severity may be questionable.

Interrupted time series.

Often data are assembled systematically over time, usually for administrative or clinical rather than for research purposes. If, in the middle of a data series, some event occurs relevant to the processes involved in producing the series, it may be possible to estimate the effect of the event by comparing the values in the series prior to the interruption to those obtained afterwards; hence the label "interrupted time series." Consider, for example, that on a particular date, say the first day of July, the procedures involved in providing aftercare for patients is changed and later that year a manager wonders whether the change may have affected subsequent follow-up visits to an outpatient department. The manager discovers that records of such visits are available by week for the six-month period prior to the change and later. The manager might then plan to continue assembling the data until six months of records are available subsequent to the change. It might then be possible to compare the data series before the change with the data afterwards and reach some conclusions about the effect of the change. Basically, what the manager wants to do is estimate what the data would have looked like without the change (the counterfactual) and compare that estimate with the actual data. The manager's statistician would look for a change in level (intercept) of the two series at the point of the change and for differences in slopes of the series between the two time periods, e.g., whether a general trend in an upward direction prior to the change might reverse to a downward trend after.

The interrupted time series can be a very useful and persuasive research strategy under the right circumstances. Those circumstances begin with the availability of records if the time frame is long (managers will not want to wait for very long to assemble the necessary data) and will include the stability of the series (widely fluctuating values may frustrate attempts to detect changes) and the abruptness of the change (effects of phased-in interventions are difficult to detect). The research strategy does lend itself very readily to many administrative interventions if quick answers are not required or if a long-term perspective is needed.

Observational data with statistical corrections.

A very common research strategy, but scarcely a design in the usual sense, is to assemble observational data and attempt to "rule out" rival explanations by logic and statistical means. A recent example is a study based on a large data set including extensive questionnaire responses of 78,000 nurses. The investigators were interested in factors determining the occurrence of breast cancer and discovered that nurses who had worked on night shifts for an extended period of time had an increased risk of breast cancer. That is, they compared breast cancer rates in nurses who did and did not work night shifts and related breast cancer rates to number of years working night shifts. Since many other

variables could have been related both to night shift work and to breast cancer risk, they "adjusted" the data for those variables by statistical means. The data for the women who did not work night shifts, when adjusted for "confounding" variables, presumably showed what the data for the other nurses would have looked like if they had not worked night shifts.

An advantage of observational data is that they are usually fairly easy to obtain and are often already available in existing data files. On the other hand, the investigator must often make do with whatever data are available in those files. In the nurses data file, night shift work was defined only as at least three nights per month; a more refined measure would have been desirable. Even if observational data are being collected de novo, the investigator must rely on whatever values for variables happen to show up in the data. If a particular condition of interest is rare, then it simply will not show up very often, although when it does, the investigator can try to make sure that the case gets included in the data set. If a manager is interested in the effectiveness of bilingual supervisors, he or she will be limited to observing the effectiveness of those supervisors actually on the job.

Moreover, observational data are often not likely to be very persuasive when sample sizes are small. Statistical corrections for confounding groups usually require a fairly large number of cases.

Observational data are particularly subject to biases resulting from "data dredging," looking through large quantities of data until something interesting appears to turn up.

Measurement

Good measurement is of absolutely critical importance to good research. It is unfortunate that problems in measurement so often go unrecognized and, if recognized, are treated so lightly. It is impossible to demonstrate effectiveness of any intervention without reliable measurement. Think, for example, of trying to "influence" the a variable with values created by throwing dice. That is exactly what is involved when measures of outcomes are unreliable. Measures that have only modest reliability can be expected to show at best only modest effects of interventions. Poor (unreliable) measures will almost always result in an underestimate of the effects of any intervention.

Prescriptions for good measurement are easily made but not so easily followed. Good measurement begins with good definitions of just what it is to be measured, good definitions of constructs. Multiple measures are highly desirable, especially when measures differ substantially in their structure and likely sources of bias. Measures should, ideally, be nonreactive, i.e., they should not be readily susceptible to self-serving biases and other sources of distortion. They should also be closely related to the phenomena of interest so that values on the measure map clearly onto the underlying variables of true concern. Such prescriptions are obvious; realizing them is difficult.

One measurement problem that is very often overlooked ins the assessment of the intervention or, the *independent variable*, as it is often called in the jargon of research

methodology. Just as we cannot expect to show much effect on a variable that is poorly measured, so we cannot show much effect from a variable that is only weakly implemented. Researchers too often take the independent variable for granted, and only infrequently do they attempt to quantify it. If an accounting system is to be evaluated, then it is important to know to what extent and how well the system is implemented. If those using it are poorly trained, if they do not like it and, hence, do not use it, or if it involves technical difficulties that result in frequent down-time, a fair evaluation of the system cannot be obtained. Just as it is important in evaluating medications to know how much of a dose was actually received by patients, so it is important to know how much of an intervention was actually achieved in a managerial setting.

Methodological consultation.

The design of a good, persuasive research project nearly always requires technical expertise for the many decisions to be made. Managers who wish to become involved in research should be quick to seek methodological—and statistical—consultation. Consideration may also need to be given to the need for consultation on measurement.

Statistical analysis

Data must be subjected to statistical analyses before they are interpretable. Summary statistics such as means, standard deviations, and correlations are easily calculated; in fact, they can be done on simple spread-sheet programs. Their interpretations are not always straightforward, but they usually pose no great problems. Analyses aimed at inferring causes, however, are usually more complex and often are highly complex, requiring specialized knowledge and software. Research outside laboratories, and most of that in laboratories today, is necessarily a multidisciplinary enterprise. A managerial team must include specialists in administration, purchasing, accounting, maintenance, and so on, and a managerial research team must, similarly, include an appropriate mix of specialists.

Research will in every way be improved if statistical expertise is enlisted from the very beginning of a project. Few projects can be brought to a fully satisfactory conclusion by turning things over to a statistician to make sense of after all the other work is done.

Generalizability of research

An issue of persistent concern in the interpretation and use of information derived from research is the extent to which the results of the research may be generalized to other settings, i.e. to settings similar, but not identical, to that in which the research was done. Concerns about generalization often relate to fairly obvious characteristics of settings, e.g., the identity of the organizations or the people associated with them, but legitimate bases for concerns may lie at a deeper level. Superficially, a manufacturing facility and a health care facility seem quite dissimilar, but with respect to the fundamental organizational processes by which they operate, they may be quite similar: leadership requirements, information needs, accountability provisions, quality controls, etc.

Researchers can facilitate generalization greatly by being explicit in their assumptions about the settings in which they are working and the nature of the variables underlying the processes they are studying.

To some extent every research study has to be regarded as constituting a "special case of real life." That is, real life is complicated, messy, dynamic; research studies, of necessity, either impose order on or derive order from the situation and the resulting data. Research Requires simplification along many dimensions, and that simplification may restrict the generalizability of the interpretations of findings. A great strength of experiments is that they are designed in such a way as to keep everything as simple as possible and as nearly identical as possible between groups. Those restrictions may mean, however, that conditions in the experiment are considerably different from those that obtain in "real life," thus making direct applicability of the findings questionable. For example, in an experiment to test a new accounting system, everyone involved would be likely to be very carefully trained and supervised, well beyond what would achievable in any ordinary, functioning organization. Research requirements often cause investigators to focus on specific outcome measures that may not capture all the consequences of interest, The important issues for generalizability often have to do with specific research arrangements related to the intervention, the circumstances of its implementation, and the measurement of outcomes. With respect to generalizability, those issues may be more important than more obvious things such as the identity of the organization of the types of people working in it or served by it.

In biomedical research a distinction is often made between *efficacy* and *effectiveness* of interventions, the former referring generally to effects of interventions implemented under carefully controlled and sometimes artificial conditions, and the latter to effects obtainable under more-or-less real life conditions. In biomedical research it is regularly necessary to carry out studies related to the transition from the "ideal" conditions to the laboratory to the conditions of the every day world. Undoubtedly, management research may sometimes require the same kinds of transitional studies.

Observational studies offer the advantage that they usually occur in real world settings, and they may not require as many constraints as are necessary to carry out experiments. (It is the case, however, that observational studies may at least require simplifications involved in quantifying inputs and outcomes.) A major shortcoming of observational studies, however, aside from their general messiness (because nothing is really controlled) is that the legitimacy of any causal inferences may be very much in doubt.

In the first place, the direction of causality may be more apparent than real. In a study of the effects of shift work on family relationships, it appeared that shift-workers had poorer family relationships than workers with only daytime jobs. Further investigation suggested, however, the probability that a good many workers choose shift work in order to get away from unpleasant family relationships. When that possibility was taken into account, the effect disappeared. Causal inferences must be developed with great care in observational studies.

Secondly, however, observational studies may be questionable as a basis for causal inferences because of the necessity for assuming that naturally occurring, observed correlations would hold for deliberate interventions. For example, an investigator might determine that a relationship existed between amount of training and productivity of workers. That finding might lead to the supposition that giving more training to workers would increase productivity. That inference would be a big leap, however. It is not only likely, but probable, that workers who have, on their own, acquired more training differ systematically from workers without such training. It cannot at all be assumed that "giving" workers training would have the same effect as their having gotten it.

Thus, observational studies, too, have limitations on their generalizability. All the foregoing leads to the generalization that it is unusual that any important uncertainties can ever be resolved by single studies, whatever their nature, and even multiple studies should have only modest effects on our confidence that we know what we are doing.

Finally, it is important to remember that generalizations can be invoked at different levels: findings, principles, and theory. A particular research finding, let us say that implementing a particular form of feedback to workers about their performance, may generalize to other settings so that those that implement the same feedback get pretty much the same results. At a more general level, it might be that the principal that feedback improves performance is supported, so that a range of feedback arrangements could be counted on. And at a still more general level, the results of a feedback study could be regarded as generally supportive of a "theory of participative management," strengthening it in some small way as a basis from which to derive a wide range of ideas about improving management and performance.

Qualitative Methods and Rigorous Management Research: (How) Are They Compatible?

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Qualitative Methods and Rigorous Management Research: (How) Are They Compatible?

Introduction

The role, benefits and appropriate use of qualitative research methods in the basic and applied social and clinical sciences have been discussed extensively in the research literature. The field of health services research, in particular, has benefited from several insightful, comprehensive discussions of qualitative research methods and their appropriate use.[1] Proponents have convincingly argued that qualitative methods contribute findings and insights that cannot be derived from "conventional" or "quantitative" research methods, and that research in the clinical, social and policy sciences requires careful application of both types of approaches to properly study their phenomena of interest

Although most discussions of qualitative research methods (including qualitative data collection and analysis methods) are careful to avoid over-simplifying or stereotyping, the dominant conception of qualitative methods continues to equate these methods with research perspectives and study goals often labeled "non-traditional" or "unconventional." Included in this broad category are exploratory or hypothesis-generating (inductive) studies, interpretive research, historical research and several other forms of knowledge creation distinct from deductive, hypothesis-testing research conducted within the positivist tradition. This view of qualitative methods is not without foundation: most authors view inductive, interpretive and related applications of qualitative methods as their strength and area of unique contribution, given their superiority over quantitative methods in developing insights into actors' values, beliefs, understandings and interpretations of events and other phenomena, or in explaining historical occurrences. Despite these strengths, however, the contributions of qualitative methods to deductive research are no less significant or unique, and are no less important nor valuable in these realms than in their traditional fields of usage. The contributions and role of qualitative methods in deductive research are often overlooked, however, or fall short of their potential when they are applied, due to shortcomings in their use. These shortcomings (1) limit the value contributed by qualitative methods and (2) undermine perceptions of their importance and applicability, further contributing to a cycle of under-use and misuse.

This paper addresses issues in the use of qualitative research methods in hypothesis-testing, deductive research (sometimes labeled "conventional" empirical research). The paper aims to illustrate how and why such research can benefit from increased application of qualitative methods, and how these methods can be used in a manner consistent with accepted standards of rigor and validity. The paper is a motivated by the

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[1] Several excellent references are provided in the Workshop bibliography, including the special issue of *Health Services Research* devoted to "Qualitative Methods in Health Services Research" (Volume 23, No. 5, Part II, December 1999). Additional references are available upon request. The current draft of this white paper does not explicitly reference these sources, although it draws heavily upon many of them.

belief that researchers who are not trained in qualitative methods (and are therefore accustomed to conducting empirical research using quantitative methods alone) are less likely to be interested in applying qualitative methods in inductive or interpretive research, but can—and should—be interested in applying qualitative methods to enhance the "conventional" forms of empirical research they are already conducting. The paper is further motivated by the observation that qualitative methods are too often applied inappropriately when used as a complement to quantitative methods in hypothesis-testing studies. The consequences of this misuse include threats to the validity of the study and its findings, as well as threats to the reputation or perception of qualitative methods as a valuable set of tools and approaches for a diverse set of researchers and research projects.

The paper does not attempt to provide an overview or tutorial in qualitative methods (given the existence of numerous excellent books and papers performing this role), nor does it discuss "mainstream" applications of qualitative methods in exploratory, interpretive or historical research. Instead, the paper has a far more modest aim, discussing, illustrating and advocating for the appropriate application of qualitative methods in hypothesis-testing research—including the types of studies often conducted in management research and in its reference disciplines in the social and behavioral sciences. A few key examples of these methods are listed in an Appendix.

Management research, qualitative methods and rigor

Threats to the validity and value of qualitative methods within management research arise throughout the entire process of their application, including (1) study design and conceptualization, (2) data collection instrument and protocol design and development, (3) data collection, and (4) analysis and interpretation. Most of these threats relate to need for rigor and for explicit, *a priori* goals, plans and implementation of qualitative methods. When harnessed for inductive, interpretive research, qualitative methods are typically used in a flexible, emergent manner, in which *a priori* specification of concepts, measures and data sources—and explicit limitations in the domains addresses and questions asked—would act to impede discovery of important phenomena and insights, thereby weakening achievement of the research goals. In such applications, qualitative analysis methods rely on formal, explicit techniques as well as less formal, implicit, intuitive interpretation. In deductive research, however, over-reliance on emergent, informal application of qualitative research methods and implicit analysis methods typically weakens their value, often producing inconsistent data and results with questionable validity.

Study design and conceptualization.

When applied to conventional, hypothesis-testing research, qualitative methods must be used within a study design and framework incorporating each of the key elements required in studies involving only quantitative methods. These elements include careful reviews of relevant theoretical and empirical research, derivation or development of formal hypotheses within an explicit theoretical framework, and *a priori* specification of variables and measures. Theory-based hypotheses specify expected causal relationships,

guide identification of the specific variables deemed relevant and requiring measurement and guide analysis and interpretation of data and results. Reviews of relevant literature also provide guidance in conceptualization and measurement of key variables, including identification of specific data sources, measurement tools with known characteristics and guidance in use of these tools.

Failure to adequately specify hypotheses and relevant variables typically results in unfocused measurement and analyses, including a failure to identify and measure key variables and concepts, and a failure to recognize or to properly interpret important findings. While use of formal hypotheses is not consistent with the use of qualitative methods in inductive or interpretive research, it is critical in the use of these methods in deductive research, whether this research involves quantitative data and analysis methods or qualitative methods.

Data collection instrument/protocol development

Data collection instruments and protocols in qualitative research are often informal, flexible and subject to large variations in application. While flexibility represents a strength in traditional qualitative research, it produces unfocused data collection and variable data quality when qualitative methods are applied in deductive research. For example, interview guides specifying general topics of interest, using broad, open-ended questions can be very effective in assessing interview subjects' assessment of important concept and issues and their beliefs and values, but ineffective in ensuring that comparable measures of identified variables are collected from a range of subjects (e.g., assessing organizational participants' views or their ratings of concepts or variables deemed important by the research team). In part, the distinction here is between data collection approaches designed to develop frameworks for understanding and describing the phenomena of interest, versus applying *a priori* frameworks to collect pre-defined data and test aspects of these frameworks. Similar problems result from the use of observation guides or protocols lacking adequate specificity and a firm foundation in *a priori* hypotheses and clearly-identified variables: such protocols often produce inconsistent data by (1) encouraging the observer to record events as they unfold and to record a wide range of attributes of the situation under study (whether or not they are deemed relevant to the hypotheses of interest), (2) limiting the likelihood that the observer will note the significance of events that do not occur, and (3) limiting the likelihood that the observer will collect complete, consistent data required for direct comparisons across observation samples.

Considerations of validity, intrusiveness or subject reactivity (Hawthorne effects) and triangulation (to minimize bias) are also too-often neglected in deductive applications of qualitative methods. Distinctions between subjective and objective data and between formal and informal organizational structures and processes are also frequently neglected, threatening the validity of study conclusions.

Avoiding these problems requires careful design of data collection plans, based on study goals and hypotheses, and involving use of systematic tables or other methods for

specifying key variables and suitable, multiple measures. Depending on the importance of each variable and the validity of available measures, two or more data sources are typically needed in qualitative research. Data planning tables listing concepts or variables, definitions and data sources are effective in ensuring appropriate rigor; data collection instruments (including document coding forms, survey questions and other data specifications) can be developed directly from these tables.

Rigor and validity are also enhanced through development and use of data collection instrument specifications and training protocols, including variable and measure definitions and instructions in instrument use. When used in management research, such protocols should include plans and instructions for approaching sites, making contacts, arranging interviews/visits, identifying and obtaining documents, following-up (to obtain documents and other post-visit/call information), managing informed consent and confidentiality, etc. Adequate pilot testing helps ensure the appropriateness of the data sources and measures, although data collection protocols must be flexible and allow for changes in data collection plans and strategies, when pilot testing fails to reveal valuable new data sources or validity problems with the sources in use.

Finally, study validity is further enhanced through development of data analysis protocols and plans together with the actual instruments, rather than after completion of data collection. Data planning tables created to guide data collection activities can be used to develop data reporting templates and specifications for translating raw data into variables and preparing for analyses; management data are often reported in a standardized "organizational profile" or other comparative format. These profiles store raw data and summary variables from all data sources, which are then converted to tables for analysis.

Data collection and data management

Use of qualitative methods, including interviews and observation, is subject to wide variations and interviewer/observer bias and interpretation. Steps to minimize these biases include adequate training of data collection staff; comprehensive plans for data collection, validation and storage; and frequent reviews of data quality and interpretation. Data collection and management plans should include immediate post-collection coding and review of data that are time- or memory-sensitive (e.g., interviews and observation). While data validity and completeness can be enhanced through tape recording of interviews, other methods may be more cost-effective, including real-time survey data entry and editing, use of paired interviewers, post-interview debriefing, and other methods. Quality assurance methods should be considered and operationalized for each instrument and data sources. Problems such as incomplete, missing, unusable data should be identified and resolved during the data collection phase, rather than after its completion.

Analysis and Interpretation

Analysis of qualitative data should be guided by the pre-specified, model-based hypotheses and detailed analysis plans developed at the outset of the study. Unfortunately, while quantitative analysis methods are well-established and accepted, methods for analysis of qualitative data are subject to variability and lack of consensus. Analyses of qualitative data are too-often informal, ad-hoc and emergent, with low reliability and validity. These threats can be countered through the use of formal table approaches, in which key variables relevant to each hypotheses are listed in tables and manipulated in a blinded fashion, using qualitative pattern-identification and non-parametric quantitative techniques. The analysis tables summarizing and synthesizing information from diverse sources in a standardized format may also serve as reporting tools, in papers and reports.

Analysis and interpretation follows the study hypotheses and research questions, but will often include detailed causal explanations and exploratory questions and findings as well, taking advantage of qualitative data's value in these areas. Combining the use of qualitative methods for hypothesis-testing and interpretive, inductive applications in this manner represents a powerful application of these methods, using their strengths to enhance management studies and other empirical research in important ways.

Conclusion

The origins and development of qualitative research methods and their close association with inductive, interpretive and historical research have led many researchers to associate these methods exclusively with these forms of research, and to fail to recognize their value in conventional deductive empirical research. Yet the rigorous application of qualitative methods in deductive research requires many modifications and adaptations. Qualitative methods, when properly applied, can contribute significant value to management and organizational research and research in health services more generally.

Appendix.

Outline of key qualitative research methods

Mail, telephone surveys

- **Effective for brief, fact-oriented, simple short-answer questions**
- **Do not work well for exploratory, open-ended, inductive questions**
- **Facilitate consistency, objectivity, completeness**
- **Mail vs. telephone considerations include development vs. administration effort**

Telephone, in-person interviews

- **Required for elite interviews, opinion and long-answer questions**
- **Infeasible for high-volume data collection**
- **Reduce consistency, objectivity, completeness**
- **Telephone vs. in-person considerations include sensitivity of information, need for candor; need for stories; risk of bias, social desirability, cues; interview-interviewee relationship**

Collection and analysis of documents and other archival, administrative data

- **May be more objective, consistent, complete, but incompleteness is more typical**
- **Interpretation and use require knowledge of creation conditions and factors**
- **Explanatory or supplementary interviews are generally needed**

Observation

- **Observation ranges from walk-throughs (to assess physical layout and facility characteristics), to attendance/observation at meetings, in routine work settings**
- **Observation is generally very expensive, often infeasible**
- **Observer's biases, organization's reactions to observers may affect validity of data, yet observation complements the biases, validity problems inherent in respondent reports**