AEC 874 (2007)
Field Data Collection & Analysis in Developing Countries

I. Introduction

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Topic Outline

A. The Nature of Research
B. The Research Proposal
C. Planning the Field Study
D. Documenting Project Activities
E. Ethical Considerations in Social Science Research
A. **The Nature of Research**

1. **Goals of science?**
   - To gain a better understanding of world around us
     - Observe and describe
     - Discover regularity
     - Generalize regularity to theory

2. **Definitions**
   - **Research**: systematic investigation in some field of knowledge to discover facts/principles
   - **Scientific Method**: systematic approach for conducting the investigation. Scientific implies a rational, linear, cause & consequence sequence
     - Scientific knowledge is a subset of all knowledge, defined by the process used to obtain it
     - Systematic procedures adopted are intended to minimize the impact of our biases on our results
   - **Examples**: welfare moms, blonds, grain sales?

3. **What distinguishes science from other activities?**

   Both scientists and non-scientists observe, look for regularity, assert theories **BUT** science imposes greater rigor (Babbie-Yue-Mei)

   **“Good” Science is:**
   - **Logical**
     - Hayami: Ho: MV => sickle => change in bowan share
     - How would you test Ho (what data and analysis needed)?
   - **Deterministic**
     - Events (voting behavior, adoption) have antecedent causes that can be identified and understood, rationally explained
   - **General**
     - Interested in a general understanding, not a single case, goal is to generalize—sampling implications?

     (e.g., adoption by single farmer vs. farmer adoption in a district/region/country)
- Parsimonious
  - What's the minimum number of explanatory factors (simplicity)?
  - Everything is related to everything BUT…can’t look at everything (farming systems research tried to do this!)

- Specific
  - Must be precise in measuring a concept
  - Requires specific “operationalization”, which tell how the concept was measured (i.e., adoption: ever?, adopted but rejected? adopted & continue to use?)

- Empirically verifiable
  - We verify by collecting and analyzing data
  - Research must be able to specify the conditional under which the theory would be disproven. As we consistently fails to disprove the theory, then we becomes confident that the theory is correct.

  **But theory is NEVER proven**

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**Theory**: HYVs give > yield than TVs

- $H_0$: Adopters yields = non-adopters yields
- $H_A$: Adopters yields > non-adopters yields

Test to see if yields are equal. IF No: accept $H_0$, adopters > yield

- Inter-subjective
  - Two scientists will come to same conclusions, if they did the same experiment (Myrdal: is social science objective?)
  - So, why disagreement among scientists? (Rogers: different definition, conceptualization, data)

- Open to modification
  - Theory is evolving, “Today is a day in the history of economic thought”
  - Conclusions based on “today’s” weight of evidence
  - Errors in methodology are cumulative, many key decisions affect the quality of research
4. How do we prove things in science?
   o Proof in science is indirect
     There is no “proof” in science, since alternative Ho may later
give better answer

   o Concept of Disproof:
     Science advances by proposing alternative Ho, attempting to
   disprove them, and accepts the Ho that can’t be disproven

   o Hard science allows others to verify by replication, but
     social science research is impossible to replicate
     ✓ Results depend on integrity of researcher
     ✓ Similar results elsewhere (citations)

       (One study: same data, different conclusions…why?)

5. Where do we get our hypotheses?
   o Inductive reasoning: involves observing a particular instances
to general principles; facts to theory

   o Deductive reasoning: involves inferring from the general to the
   particular; theory to a particular case

   o Modern science is built on inductive reasoning.

     But typically, scientific research involves BOTH inductive and
deductive reasoning, as scientist shifts back and forth between
theory and empirical observation

   o Sources of our hypothesis?
     (i.e., proposed answer to a research question)
     ✓ A flash, inspiration, often based on experience
     ✓ Careful, logical, critical thought
     ✓ Draw on existing theory/literature
6. Must all research focus on testing Ho, established at the beginning of the project?
   - All research questions are not amenable to the strict formulation of hypotheses:
     - Some studies seek only to describe
     - Some questions involving measurement (yield level)
   - Popper: complex problems involve “sequential tinkering”. At the beginning, you don’t understand enough to formulate Ho (exploratory study required)
   - Leamer argues starting with hypotheses may bias the analysis (“Let’s Take the Con Out of Econometrics”)
   - Sherlock Holmes:
     - “It is a capital mistake to theorize before you have all of the evidence. It biases the judgment.”
     - Theory developed before facts can be difficult to discard

7. What are the major categories of research?
   - Basic research—researcher seeks to understand fundamental relationships, rather than specific application (disciplinary research)
   - Applied research—researcher seeks to understanding in order to solve a “real” problem
     (Hooperism: Are you seeking a solution to a problem that doesn’t exist?)
8. What factors determine data to collect in applied research? (Casley & Lury, Ch. 2—Ramzi; Alrick & Settle, Ch. 1—Eric)

a) Must set priorities—Why do you need these data?
   o Consider the needs of the client—there are many interesting, but fewer important issues
   o User-surveyor dialogue—discuss issues, draft proposal, questionnaire
   o Minimum data needed to address the issue
   o Consider alternatives to doing a survey
     ✓ Are secondary data available?
     ✓ Conduct a survey as the last option
   o Avoid tendency to “play safe” (due to poor identification of objectives) by collecting too much data

b) Must consider resource constraints for implementing survey research in developing countries (and the US)

1) Availability of Information/literature to guide your research

   Explore the availability of:
   o Published articles, reports
   o Gray literature, which is often extremely useful!
   o Primary data collected by other researchers
   o Secondary data—national statistics
   o Experimental trials/results

2) Human resource constraints
   (e.g., the availability of trained enumerators)

3) Physical constraints
   (e.g., availability of transport, office space, computers)
4) Availability of financial resources—relaxes other constraints

5) Time required to collect data—almost always underestimated!!!

**Funneling Diagram**: Trade-off between objectives and Resources; must reconcile conflict between means and ends

**Key question**
What research can you carry out with available resources (e.g., number of topics/question, sample size, spatial distribution of respondents)

9. Designing the Research Plan (Fox)

Detailed conceptualization of all stages in the research process

a) Format
   1) Underlying dynamics—why?
   2) The stage—what?
   3) Outcomes—results?

b) Stages of the research process  [Fig 2-1]  [Fig 2.1 cont.]

*Part 1 Designing the Research Plan (13 stages)*

**Stage 1**: The initial idea or need and problem area

**Stage 2**: The initial review of literature

**Stage 3**: Defining the specific research problem

**Stage 4**: Estimating the success potential of the proposed research

**Stage 5**: The second review of the literature
Stage 6: Selecting the research approach
Stage 7: Stating the hypotheses of the research
Stage 8: Selecting the data gathering method(s) and technique(s)
Stage 9: Selecting and developing data-gathering instruments
Stage 10: Designing the data gathering plan
Stage 11: Designing the data gathering plan
Stage 12: Identifying the population and invited sample
Stage 13: Pilot studies of the data-gathering approach, methods, and instruments, and the data-analysis plan

Part Two: Implementing the Research Plan (3 stages)
Stage 14: Implementing the data-gathering plan
Stage 15: Implementing the data-analysis plan
Stage 16: Preparing the research reports

Part Three: Implementing the Results (1 stage)
Stage 17: Dissemination of results and agitating for action

c) Assessment
   1) Are all of the stages necessary?
   2) Is this a useful guide for planning a thesis/dissertation?

d) Is the model fully applicable to implementing applied research in LDC (other than thesis/dissertation research)?
   Some limitations
   o Formal research proposals are often not required, considered important
   o Literature may not be available
   o Client may not demand the rigor expected by academic faculty
   o Time/resource constraints may make it difficult to follow all of Fox’s stages/recommendations

Any Lessons?