Quick Study: Quantitative Research Methods

Quantitative Research

- The researcher decides what to study. The researcher asks specific, narrow questions; collects quantifiable, measurable, observable data on variables from participants; analyzes these numbers using statistics; and conducts the inquiry in an unbiased, objective manner.
- Quantitative research describes trends or explains the relationships among variables.
- Collects data using instruments with preset questions and responses
- Collects information from a large number of individuals
- Includes pretest data collection and pilot tests procedures
- Goal is hypothesis verification.
- Interpretation of the results tends to consist of comparing results with prior predictions and past research.
- Provides **Nomothetic Explanations**: Explanations focus on a class of events and attempt to specify the conditions that seem common to all those events.
- Research designs include: **Experimental, Correlational, Survey**

Survey Research

- A survey is a data collection technique in which information is gathered from respondents by having them respond to questions or statements.
- Data are collected from large samples of people.
- It measures what people say, not what people do. It is their report of their attitude, behavior, and background that is being measured, not an independent observation of their attitudes, behaviors, and background.
- Designs and purposes:
  - **Longitudinal**: study over time; observes trends in the same population
  - **Cross-Sectional**: study at one point in time; studies current attitudes and behaviors
- **Closed Ended Questions**: A fixed set of alternatives that are all possible, theoretically relevant options determined in advance. This allows for ease in data handling.
- **Open Ended Questions**: Respondents develop their own responses, so response options are not predictable. Data handling is complex.
- Two basic forms of surveys:
  - A questionnaire
  - An interview
Experimental Research

- It is a quantitative research method in which the investigator studies cause-and-effect relationships between two or more variables.
- It is designed to infer causality.
- **Units**: the basic objects on which the experiment is done; When the units are human beings, they are called subjects.
- **Variable**: a measured characteristic of a unit that is capable of taking on more than one value
  - **Dependent Variable**: a variable whose changes are being measured
  - **Independent Variable**: a variable that is being manipulated; the impact of such manipulation upon the dependent variable is being studied. An independent variable in an experiment is called a factor.
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• **Treatment:** Any specific experimental condition applied to the units.

• **Double-blind technique:** Both the subjects and those who evaluate the outcome are ignorant of which treatment was given.

• **Internal Validity:** whether the independent variable actually produces the effect that it appears to have had on the dependent variable, controlling for extraneous variables.

• **External Validity:** refers to the capacity to generalize causal inferences to other times, settings, or groups of people.

• **Categories of Experimental Designs:**
  - **Pre-Experimental Designs**
  - **True Experimental Designs:** use randomization and control groups
  - **Quasi-Experimental Designs:** use procedures other than randomization to create experimental and control groups; used when conditions do not allow for the use of true experimental design.

• Example: A study with the following research question: “Does the use of special lecture program dealing specifically with the health problems related to smoking deter teen smoking in both men and women as compared to the normal health curriculum being used in this school district? Does the use of explicit graphics and visuals regarding the health problems associated with smoking have effectiveness in deterring smoking among teens?”
  - **Independent variables:**
    - Age: can’t manipulate
    - Gender: can’t manipulate
    - Types of Instruction: can manipulate
      - Standard Lecture: control
      - Health lecture: experiment group 1
      - Health lecture + graphic visual display: experiment group 2
  - **Dependent variable:** frequency of smoking