

**If you have any problem in writing an A+ Research Report don't hesitate to call**

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### **Research Methodology**

Research methodology is a collective term for the structured process of conducting research. There are many different methodologies used in various types of research and the term is usually considered to include **research design, data gathering and data analysis**.

Research methodologies can be quantitative (for example, measuring the number of times someone does something under certain conditions) or qualitative (for example, asking people how they feel about a certain situation). Ideally, comprehensive research should try to incorporate both qualitative and quantitative methodologies but this is not always possible, usually due to time and financial constraints.

Research methodologies are generally used in academic research to test hypotheses or theories. A good design should ensure the research is valid, i.e. It clearly tests the hypothesis and not extraneous variables, and that the research is reliable, i.e. It yields consistent results every time.

Part of the research methodology is concerned with the how the research is conducted. This is called the study design and typically involves research conducted using questionnaires, interviews, observation and/or experiments.

The term research methodology, also referred to as research methods, usually encompasses the procedures followed to analyze and interpret the data gathered. These often use a range of sophisticated statistical analyses of the data to identify correlations or statistical significance in the results.

Objective, representative research can be difficult to conduct because tests can normally only be conducted on a small sample (e.g. You cannot test a drug on every person in the world so a sample needs to be used in research). This means that researchers need to have a very detailed understanding of the types and limitations of research methodologies which they are using

### **Reliability and Validity**

Reliability is the ability of separate researchers to come to similar conclusions using the same experimental design or participants in a study to consistently produce the same measurement. For example, a person who takes a risk toleration survey will achieve the same score regardless of whether he or she takes it in the morning or evening, in January or July, etc.

Validity refers to the ability of an instrument to measure what it is supposed to measure. If I conducted a survey to measure the degree of financial risk a person was willing to tolerate and the survey measured the respondent's IQ instead, it would not be valid.

*Internal Validity* refers to the veracity of the study, how well it was constructed and run, accuracy of definitions and theories employed accurate measurement of variables, and the researcher's degree of confidence that the change in the dependent variable was effected by the independent variable.

*External Validity* is a study's ability to have the results generalized to the population. In quantitative studies this is done by ensuring that sampling was done in an appropriate way, such as randomizing selection so that every element in a population has a chance to participate or to use selective techniques, such as stratified or snowball sampling, to ensure that various groups are adequately represented. The elimination of extraneous variables as causative factors increases external validity.

### **Quantitative Research**

Quantitative research (the word 'quantitative' comes from the word 'quantity') involves information or data in the form of numbers. This allows us to measure or to quantify a whole range of things. For example: the number of people who live below the poverty line; the number of children between specific ages who attend school; the average spending power in a community; or the number of adults who have access to computers in a village or town.

A common way of conducting quantitative research is using a *survey*. Surveys usually involve filling in a questionnaire. The usefulness of a survey is that the information you get is standardized because each *respondent* - the person who fills out the questionnaire - is answering the exact same questions. Once you have enough responses to your questionnaire, you can then put the data together and analyse it in a way that answers your *research question* - or what it is you want to know.

**It is important to realize that quantitative research does not necessarily mean that respondents will give numbers for their answers to your questions. Sometimes they may answer a 'yes' or 'no' question, as in: 'Do you have a computer?' Sometimes they might write down an answer, a word, a sentence, or a paragraph to describe something, as in answers to: 'What is the brand or make of your computer?' and 'Please describe in detail what you use your computer for.' Other answers may involve numbers, as in: 'How many computers do you have in your business or organization?'**

How these varied responses become numbers is in the way they are analysed. From the example questions above, one might be able to say: 20 out of the 30 (66%) respondents use a particular brand of computer, while 5 (16%) use another. The remaining five respondents all used different brands of computers which you would list. You might then want to provide some examples of how the computers are used.

There are, of course, many different kinds of quantitative research besides the survey. *Observational research* involves watching or observing various behaviours and patterns. Perhaps you want to find out how many cars of a particular make use a specific intersection. To do this you might stand at the intersection at a particular time of day, and record the makes of cars.

Perhaps you want to monitor the number of people entering a particular shop at specific times of the day, recording their behaviours, and whether or not they buy anything or are just browsing.

More complicated forms of quantitative research are *experimental research* or *mathematical modelling research*. (See the glossary for their definitions.)

Media research may use a form of quantitative research to understand the number of articles published in a range of newspapers on a particular topic. These articles are then analysed according to various *monitoring criteria*, such as the specific focus of the article, the author, the date of publication, page number, the column length and even the headline. From this, you can make analyses such as: 'Of all the commercial newspapers in Nigeria, 25% of them carried stories on HIV/AIDS during January and February 2004.' You may want to add that most of these were written by five journalists, or that none of them appeared on the front page of the newspaper during this period.

With all kinds of research, it is important to be as specific as possible, and to explain your assumptions. Remember, your research results might not tell you everything but they will be valuable for what they do reveal. In the example of the media research, we might be able to conclude that HIV/AIDS didn't feature prominently in the commercial media during the monitored period. We might want to find out the reasons for this and decide to interview the newspaper editors. By doing this, we would be doing some *qualitative* research.

**Quantitative research** is research involving the use of structured questions where the response options have been predetermined and large numbers of respondents are involved. By definition, measurement must be objective, quantitative and statistically valid. Simply put, it's about numbers, objective hard data. The focus for the quantitative researcher is often on representativeness and generalisability and the sample is carefully selected to ensure that there is representativeness.

**Quantitative research usually is one of two types: experimental or descriptive.** Experimental research tests the accuracy of a theory by determining if the independent variable(s) (controlled

by the researcher) causes an effect on the dependent variable (the variable being measured for change). Often, surveys, correlation studies, and measures of experimental outcomes are evaluated to establish causality within a credible confidence range.

**Descriptive research measures** the sample at a moment in time and simply describes the sample's demography. Although this is not seen as a statistically robust or difficult exercise, a good description of the variables helps the researcher evaluate the statistical output in the proper context.

**Some researchers think that quantitative research is better than qualitative research at establishing causality because of the precise measurements and controlled environment of experiments; however qualitative studies can also be used to establish causality but with less external validity.** Laboratory experiments are used when all extraneous variables need to be controlled so that the specific action and effect of the independent variable can be controlled. In addition, it may be important to be able to replicate the study and a laboratory setting makes these things possible. Field experiments are conducted when it is important to measure what the research element actually does, rather than what they say they will do. As can be seen with concept studies, what a person says they will do and what they actually do can be very different.

### **Qualitative Research**

Qualitative Research is concerned with meaning. Whereas, quantitative research refers to counts and measures, qualitative research refers to the meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions of things. If you wish to explore the meaning underpinning action then it is probably best to take a qualitative approach.

**Qualitative Research** describes an event in its natural setting. It is a subjective way to look at life as it is lived and an attempt to explain the studied behavior.

Rather than design an experiment and artificially control the variables, qualitative researchers use anthropological and ethnographic methods to study the participants. As little intrusion as

possible should occur in qualitative research and a researcher will frequently observe the participants unnoticed.

Instead of providing a broad view of a phenomenon that can be generalized to the population, qualitative research seeks to explain a current situation and only describes that situation for that group. Since only a current situation is observed, all qualitative research is done in the field. A possible exception is the focus group, which is conducted with 3-10 persons and uses a script of questions. The moderator asks the questions and the recorder records the responses. Although a focus group is conducted in a controlled environment, the open ended questions and lack of rigid sample selection make it seem more like a field exercise.

Whereas quantitative research seeks to validate a theory by conducting an experiment and analyzing the results numerically, qualitative research seeks to arrive at a theory that explains the behavior observed. In this way, it can be said that quantitative research is more deductive and qualitative research is more inductive.

## **Methodology**

It should act as a blueprint that provides the work plan and detailed activities required to complete the study. It should also inform the readers that the approach taken is the most appropriate and sound method to address the research problem. This section should clearly outline the following:

1. Type of study design to be used to address the problem
2. **Sampling:** type of sampling method to be used- randomized or non-randomized sample selection; type of samples that shall be used and indication of location
3. Clear sample inclusion and exclusion criteria
4. **Data collection:** type of data to be collected, the instruments or tools to be used to collect the information and the people responsible in collecting the data
5. **Data analysis:** information on the type of analytical tools or procedures to be used to analyze the data collected.
6. **Dissemination of information:** outline of how the results or findings of the study will be disseminated to concerned stakeholders, agencies, etc.

**Benefits**

This section should state the beneficiaries (e.g. individual, community, country, etc) of this proposed study and its long and short-term benefits.

**Ethical issues**

This section should specify how ethical clearances can be obtained. Confidentiality and safety of participants should be taken into account in case of any risks associated with the study. The proposal should also clearly outline the methods to overcome or deal with ethical issues, if any, which arise during implementation of the research project.

**Budget**

The proposal should provide a detailed estimated budget required in order to successfully carry out the proposed study.

**Time frame**

This section should indicate an estimated timeframe within which the research study will be completed. It should also provide the date of commencement and completion.

**Referencing**

The sources of reference used for the research should be acknowledged and plagiarism should be strictly avoided.

**A model**

it is “a set of propositions or statements expressing relationships among constructs.” identify models with *problem and solution statements*. They are proposals for how things are. Models differ from natural science theories primarily in intent: natural science has a traditional focus on truth whereas design research focuses more on (situated) utility. Thus a model is presented in terms of what it does and a theory described in terms of construct relationships. However a theory can always be extrapolated to what can be done with the implicit knowledge and a set of entities and proposed relationships can always be expressed as a theoretical statement of how or why the output occurs.

## **A method**

It is a set of steps (an algorithm or guideline) used to perform a task. "Methods are goal directed plans for manipulating constructs so that the solution statement model is realized." Implicit in a design research method then is the problem and solution statement expressed in the construct vocabulary. In contrast to natural science research, a method may well be the object of the research program in design research. Since the axiology of design research stresses problem solving, a more effective way of accomplishing an end result - even or sometimes especially a familiar or previously achieved end result - is valued.

## **Quantitative vs Qualitative Research**

Quantitative Research is employed for measuring the quantity or amount of a particular phenomenon by the use of statistical analysis. Qualitative Research is a non-quantitative type of analysis which is aimed at finding out the quality of a particular phenomenon.

## **Conceptual vs Empirical Research**

**Conceptual Research** is generally used by philosophers and thinkers to develop new concepts or to reinterpret existing ones.

**Empirical Research** is a data based research which depends on experience or observation alone. It is aimed at coming up with conclusions without due regard for system and theory.

## **Some other types of research**

1. **One-time Research** - Research confined to a single time period.
2. **Longitudinal Research** - Research carried on over several time periods.
3. **Diagnostic Research** - It is also called clinical research which aims at identifying the causes of a problem, frequency with which it occur and the possible solutions for it.
4. **Exploratory Research** - It is the preliminary study of an unfamiliar problem, about which the researcher has little or no knowledge. It is aimed to gain familiarity with the problem, to generate new ideas or to make a precise formulation of the problem. Hence it is also known as formulative research.
5. **Experimental Research** - It is designed to assess the effect of one particular variable on a phenomenon by keeping the other variables constant or controlled.
6. **Historical Research** - It is the study of past records and other information sources, with a view to find the origin and development of a phenomenon and to discover the trends in the past, in order to understand the present and to anticipate the future.