

Quantitative research  
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This hypothesis must be provable by mathematical and statistical means, and is the basis around which the whole experiment is designed. What is research hypothesis? A research hypothesis is the statement created by researchers when they speculate upon the outcome of a research or experiment. Every true experimental design must have this statement at the core of its structure, as the ultimate aim of any experiment. The hypothesis is generated via a number of means, but is usually the result of a process of inductive reasoning where observations lead to the formation of a theory.

Scientists then use a large battery of deductive methods to arrive at a hypothesis that is testable, falsifiable and realistic. The research hypothesis is a paring down of the problem into something testable and falsifiable. In the aforementioned example, a researcher might speculate that the decline in the fish stocks is due to prolonged over fishing. Scientists must generate a realistic and testable hypothesis around which they can build the experiment. A hypothesis must be testable, taking into account current knowledge and techniques, and be realistic. Generating complicated hypotheses.

A hypothesis must be verifiable by statistical and analytical means, to allow a verification or falsification. In fact, a hypothesis is never proved, and it is better practice to use the terms 'supported' or 'verified'. This means that the research showed that the evidence supported the hypothesis and further research is built upon that. Randomization of any study groups is essential, and a control group should be included, wherever possible. A sound quantitative design should only manipulate one variable at a time, or statistical analysis becomes cumbersome and open to question.

Ideally, the research should be constructed in a manner that allows others to repeat the experiment and obtain similar results. " (HTTPS://expellable. Com/quantitative-research-design) " Importance of Quantitative Research More reliable and objective Can use statistics to generalize a finding Often reduces and restructures a complex problem to a limited number of variables Looks at relationships between variables and can establish cause and effect in highly controlled circumstances Tests theories or hypotheses Assumes sample is representative of the population alliterative data and may miss a desired response from the participant.

Quantitative Analysis Laboratory experiments deliberate manipulation of independent variable, strict control of other variables test cause and effect relationship Field experiments natural environment but independent variable still manipulated difficulty in controlling the situation so more likelihood of extraneous variables ethical problems of consent, deception, invasion of privacy Quasi-or natural experiments examine effects of independent variable without control over independent variable itself which often occurs naturally unable to manipulate independent variable because of ethics or because it is impossible Quantitative Observation Observation can also be carried out in a quantitative context and may involve: Counting the use of services Number of people accessing services Ascertain busy/quiet times " (http://libber. Surrey. AC. UK/library/skills/illumination 20theresearch andgimanagingtinformation/leisteredm) " AdvantHTMLs Quantitative research design is an excellent way of finalizing results and proving or disproving a hypothesis. The structure has not changed for centuries, so is standard across many scientific fields and disciplines. After statistical

analysis of the results, a comprehensive answer is reached, and the results can be legitimately discussed and published.

Quantitative experiments also filter out external factors, if properly designed, and so the results gained can be seen as real and unbiased. Quantitative experiments are useful for testing the results gained by a series of qualitative experiments, leading to a final answer, and a narrowing down of possible directions for follow up research to take. Disadvantages

Quantitative experiments can be difficult and expensive and require a lot of time to perform. They must be carefully planned to ensure that there is complete randomization and correct designation of control groups.

Quantitative studies usually require extensive statistical analysis, which can be difficult, due to most scientists not being statisticians.