

## Research Methodology

Semester: III

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# School of Liberal Education

Course Code : ENG6005

Course Name: Research Methodology

## COURSE CONTENT UNIT-I

# Topic- Quantitative Research - Characteristics

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### Introduction to Quantitative Research

“Quantitative research is ‘Explaining phenomena by collecting numerical data that are analyzed using mathematically based methods (in particular statistics)’”.

“Quantitative methods emphasize objective measurements and the statistical, mathematical, or numerical analysis of data collected through polls, questionnaires, and surveys, or by manipulating pre-existing statistical data using computational techniques. Quantitative research focuses on gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon”.

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### **What is Quantitative Research?**

- In a nutshell, quantitative research generates numerical data or information that can be converted into numbers.
- Only measurable data are being gathered and analyzed in quantitative research.

### **Goal or Aim of the Research:**

- The primary aim of a Quantitative Research is to focus more in counting and classifying features and constructing statistical models and figures to explain what is observed.
- Quantitative Research is highly recommended for the late phase of research because it provides the researcher a clearer picture of what to expect in his research compared to Qualitative Research

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### When do Quantitative Research?

- If your study aims to find out the answer to an inquiry through numerical evidence, then you should make use of the Quantitative Research.
- In general, use qualitative research at the beginning of a design process to uncover innovations. Use quantitative research at the end of a design process to measure improvement.
- French sociology Pierre Bourdieu followed a typical arc to the narrative research by first investigating economic class in an open-ended fashion. Once he established what he thought was going on, he tested these ideas with large surveys.
- The main activity for which quantitative research is especially suited is the testing of *hypotheses*.

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### Advantages of Quantitative Research

- 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.

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### Disadvantages of Quantitative Research

- 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. The field of statistical study is a whole scientific discipline and can be difficult for non-mathematicians

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### Disadvantages of Quantitative Research

- The requirements for the successful statistical confirmation of results are very stringent, with very few experiments comprehensively proving a hypothesis; there is usually some ambiguity, which requires retesting and refinement to the design. This means another investment of time and resources must be committed to fine-tune the results.
- Quantitative research design also tends to generate only proved or unproven results, with there being very little room for grey areas and uncertainty. For the social sciences, education, anthropology and psychology, human nature is a lot more complex than just a simple yes or no response.

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### Characteristics of Quantitative Research

#### **Its main characteristics are:**

- The data is usually gathered using structured research instruments.
- The results are based on larger sample sizes that are representative of the population.
- The research study can usually be replicated or repeated, given its high reliability.
- Researcher has a clearly defined research question to which objective answers are sought.
- All aspects of the study are carefully designed before data is collected.
- Data are in the form of numbers and statistics, often arranged in tables, charts, figures, or other non-textual forms.
- Project can be used to generalize concepts more widely, predict future results, or investigate causal relationships.
- Researcher uses tools, such as questionnaires or computer software, to collect numerical data.
- The overarching aim of a quantitative research study is to classify features, count them, and construct statistical models in an attempt to explain what is observed.

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### Reference

Research Methodology,

<https://ugcnetpaper1.com/research-methodology/>

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