# A Front-to-Back Guide to Writing a Qualitative Research Paper

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**Abstract**

To write down a qualitative research paper/article is a very tough task. This paper aims to offer junior scholars a front-to-back guide to writing an academic, theoretically positioned, qualitative research article in the social sciences. The paper draws on formal (published) advice from books and articles as well as informal (word-of-mouth) advice from senior scholars. Most qualitative research articles can be divided into four major parts: the frontend, the methods, the findings and the backend. This paper offers step-by-step instructions for writing each of these four parts. Much of the advice in this paper is taken-for-granted wisdom among senior scholars. This paper makes such wisdom available to junior scholars in a concise guide.

**Keywords:** Qualitative Research, Theoretical Contribution, Writing an Article.

**Introduction**

To imitate other paper/articles is a way to write down qualitative research paper/article because imitation is a natural way of learning new skills. As a novice reader, it is found difficult to distinguish between an article's generic and specific content, making imitation more challenging. There is another that suggests that "there

is no formula; each article is unique". That perspective also has some merit because writing qualitative research articles is a creative endeavor with unlimited possibilities. However, for better or worse, most academic journals seem to have rather standardized expectations, from research motivations in the introduction section to theoretical contributions in the discussion section. A few scholars also referred to their favorite resources on writing, a few of which are noted in the references. In the following author's guide, I draw on formal (published) advice from books and articles as well as informal (word-of-mouth) advice from senior scholars into a front-to-back guide to writing a qualitative research article.

First of all, let a few disclaimers be issued. This author's guide is composed for a very particular audience: junior scholars who are just beginning to write their very first academic, theoretically positioned, qualitative research article in the social sciences. Junior scholars value clear, step-by-step guidance, and that is what is aimed to provide. The psychological goal of this how-to manual is to ease the process of writing a qualitative research article, which can be daunting at first try. Please note that this guide does not address qualitative research methodology (Belk et al., 2013; Denzin and Lincoln, 2011; Yin, 2010). Rather, this guide elaborates what to write, in what sequence and to what end. Like any advice, the advice presented here is subjective opinion, not hard truth. The proposed template is just one of many possible templates for writing qualitative research articles. Authors are strongly encouraged to adapt the template to their own discipline, research project and target journal. To animate a few key points in the guide, is used a fictitious example of a qualitative study on the community factors that promote drunk-driving. The sample sentences are expressively crafted for this author's guide. A final disclaimer is that scholars unfortunately use various terms to refer to the same aspect of an article. It is tried to acknowledge the variety of terms in this guide, but to reduce confusion. Nonetheless, junior scholars will need to familiarize themselves with the variety of terms because different reviewers use different terms when evaluating manuscripts. A qualitative research

article typically consists of four parts: the frontend, the methods, the findings, and the backend. All four parts are important, but the frontend is paramount because it not only establishes the phenomenon, relevant literature, theoretical problem, research question, research motivation and theoretical perspective, but also sets expectations for the empirical findings, theoretical contributions and practical implications to come. In other words, the frontend serves as a summary of the critical aspects of an article. As the first thing one reads, the frontend also contributes disproportionately to a reviewer's impressions of an article. Accordingly, I recommend writing a rough draft of the frontend at the outset, then refining it periodically as you advance other sections of the article.

**The Frontend**
**Organization**

The frontend is sometimes written as one long section entitled "Introduction" and sometimes as a series of shorter sections with generic titles such as "Theoretical Background" or domain-specific titles such as "Prior Research on Drunk-Driving". Regardless of how it is organized, the frontend answers several critical questions, roughly in the following order.

**Phenomenon**

What is the domain, field or phenomenon that you are investigating? Why is it important to study it? Many qualitative research articles begin with a provocative data vignette or news story to pull readers in and indicate the importance of the phenomenon. For example, "After a brief decline in the last decade, fatal accidents caused by drunk-driving are again increasing at an alarming rate of x per cent per year". Another approach is to begin an article with a brief description of the focal phenomenon in plain (non-specialist) language. Common reasons given for studying a phenomenon are that it is historically new, growing in size, changing in nature, critical to a profession or critical to a social cause such as environmental sustainability or public welfare.

## Review of Literature

What does the literature say about the phenomenon? Or what do we know? A literature review introduces the reader to the theoretical conversation about the phenomenon thus far. If there is considerable literature on the phenomenon, cite the landmark articles that started the theoretical conversation and those that changed the conversation significantly, especially those that were published in the journal you are targeting. Common ways of organizing literature are by chronology, discipline, level of analysis, methodology or theoretical perspective. For example, "Many studies address the national and individual factors that promote drunk-driving. At a national level, studies show that […] " How one reviews literature must be directly related to the theoretical problem, which is discussed next.

## Theoretical Problem

What aspect of the phenomenon does the literature overlook? Or what do we not know? This aspect of an article is variously called a "gap", "oversight", "problem" or "problematization" because problems are rarely self-evident; authors must actively problematize the literature for a problem to become apparent. For example, one could say that the literature is incomplete, inadequate or incommensurable (Locke and Golden-Biddle, 1997). Claiming that the literature is incomplete ("nothing is known about […] ") is much too risky, as there may be studies using different keywords than those you searched. The inadequacy problematization is a safer framing: "Although many studies address the national and individual factors that promote drunk-driving, less is known about the community factors that promote drunk-driving". Claiming that the literature is incommensurable ("there is debate about […] ") only makes sense if you can advance or resolve the debate in a significant way. Taking a side is rarely considered a theoretical contribution.

## Research Question

To leave no room for doubt about the research focus, I recommend restating the theoretical problems as research questions. While"who", "what", "when", "where", "why" and "how" questions are all essential building blocks of any theoretical puzzle (Whetten, 1989),

top academic journals really value answers to "why" and "how" questions. Fortunately, qualitative research is especially well-suited for developing explanatory ("why") and processual ("how") models. This does not necessarily mean that your question needs to contain the word "why" or "how". For example, the following is a "why"question, implied by the verb "promote": "What are the community factors that promote drunk-driving?"

## Research Motivation

Why is it important to solve the theoretical problem? The answer to this question is called the "research motivation", "potential contribution" or "so what"? Here is an opportunity to foreshadow the core theoretical contributions and practical implications. For example:

"Understanding the community factors that promote drunk-driving is important for theoretical and practical reasons. First, this knowledge can help researchers bridge disconnected insights at the national and individual levels. Second, this knowledge can also help policymakers develop much-needed interventions at the community level."

## Theoretical Perspective

What interpretive lens are you using to examine the theoretical problem, and why? Some popular lenses or perspectives in contemporary qualitative research include actor-network theory, institutional theory and social practice theory. Theoretical perspectives are necessary in qualitative research to help focus your data analysis. Without them, analyzing rich qualitative data can be over whelming. Theoretical perspectives also provide you with a vocabulary for conceptualizing your emergent findings. To justify your selected perspective, emphasize similarities between the perspective and research question. For example, "Actor-network theory is well-suited for our study because we are interested in the heterogeneous material and semiotic elements in a community that interactively produce drunk-driving".

**Roadmap**

How is the paper organized? So-called "roadmaps" describe the contents of the rest of the paper. Roadmaps are usually placed at the end of a short introduction, just before the literature review, or at the end of a long multi-component introduction, just before the methods. For example: "The next section describes the empirical study. The section thereafter presents the emergent findings. The final section discusses the theoretical contributions and practical implications".

**The Methods**

**Organization**

The "method(s)" section is often the shortest section of an article, unless the methods are unusual for the field, in which case they require more elaboration. Three critical elements of the methods section are the research context, data collection and data analysis. Each element should be theoretically justified.

**Research Context**

What is the context, or real-world setting, of your research, and why? By the time you start writing your article, your research context may seem ordinary to you, but it will almost certainly be unfamiliar to most readers. Accordingly, when describing the context, it may be useful to pretend that you are writing to someone very far away in a very different context. To justify your selected context, explain how the context embodies the theoretical problem. For example, if you are studying the community factors that promote drunk-driving, you could select a region in which otherwise similar communities have a broad range of drunk-driving rates.

**Data Collection**

How were the data collected, and why? The strength of qualitative research is that it can include various forms of data, including primary and secondary data; textual and visual data; and interviews, observations and surveys, but it is advisable to only mention those data that are actually used to answer your research question. Most qualitative research uses theoretical sampling, that is, data collection based on theoretical goals. For example, within the

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communities, you could interview bartenders, drunk drivers and traffic police to understand drunk-driving from multiple perspectives.

**Data Analysis**

How were the data analyzed, interpreted or developed into theory, and why? Some articles choose to discuss their theoretical perspective here rather than in the frontend. However, if your theoretical perspective has already been discussed in the frontend, you can discuss the more procedural aspects of data analysis here, procedures such as "categorization, abstraction, comparison, dimensionalization, integration, iteration, and refutation" (Spiggle, 1994). Focus your discussion on the unusual, interesting or creative steps that you have taken rather than describing standard protocols for qualitative data analysis. Some examples of unusual steps could be coding the data using a radically new software application or presenting initial findings to a focus group of community members for feedback.

**The Findings**

**Organization**

The findings are the answers to your research question. They can be organized into any number of subsections, but it is typical to have three to five subsections. If you have multiple research questions, then each subsection could answer one research question. If you have a single research question with multiple answers, then each subsection could offer one answer.

**Figures**

Qualitative research articles often use a figure to illustrate the emergent framework, model or theory. A good figure includes a visual representation of all the key concepts as well as all the key relationships among these concepts. Unlike standard box and arrow drawings of causal models in quantitative research, figures in qualitative research evince greater diversity. Common visual tropes include core-periphery relationships via inside-outside placements, macro-micro relationships via up-down placements and antecedent-consequence relationships via left-right placements.

## Quotes

One type of in-line quote is an informant's word or phrase placed within an author's sentence. A second type of in-line quote is an informant's sentence placed among the author's sentences. A third type of quote, called a block quote, is anywhere from a paragraph to a long interview excerpt. This type of quote is indented from the margins. Some journals have word count guidelines for in-line quotes versus block quotes (e.g. under vs over 100 words). When deciding how much of a text or transcript to quote, err on the side of including more text because it is easier to trim unnecessary clauses later on when it is clearer which aspects of the excerpt are most relevant to your theoretical claims.

## Tables

Qualitative research articles sometimes present additional data in tables. The most effective tables are self-explanatory with meaningful column and row headers. Use consistent terms across the tables, figures and text.

## Theorizing

I am using the term "theorizing" here to denote the writing up of qualitative findings, which involves rhetorically combining extant and emergent observations along with figures, quotes and tables to make your theoretical arguments. There are innumerable ways to discuss qualitative findings, but my favorite approach combines a three-part sequence of first stating your theoretical claim, then offering data to support your claim and, finally, elaborating on how your assumptions, data and interpretations collectively justify your claim. I refer to this approach as the "Claim, Data, Elaboration" sequence. Note that the punch line is at the beginning. Another approach is first elaborating on your initial expectations based on conventional wisdom or prior research, then offering data that address those expectations and, finally, concluding with (dis)confirmations of those expectations. I refer to this approach as the "Expectation, Data,(Dis)Confirmation" sequence. Note that the punch line is at the end. Whicheverapproach is taken, a slice of data is usually sandwiched between two slices of theauthor's comments. Some scholars refer to this data sandwich as the "Telling, Showing, Telling" sequence (Golden-Biddle and Locke, 2007). How to make yourarguments more persuasive is beyond the

scope of this guide, but excellent adviceon enhancing authenticity, plausibility and criticality is published elsewhere(Golden-Biddle and Locke, 1993).

**The Backend**
**Organization**

The backend is sometimes written as one long section entitled "Discussion" and sometimes organized as a series of sections with titles such as "Interpretive Summary", "Theoretical Contributions", "Practical Implications", "Limitations and Opportunities" and "Conclusion".

**Primary Theoretical Contributions**

While your findings include several pages of theoretical insights and empirical evidence, the "core contribution" or "interpretive summary" is an abbreviated version of your key insights. This section typically restates the research question and your study's answer in theoretical language, with little or no reference to the empirical context. "Drawing on a multimodal study of demographically similar communities with high and low drunk-driving rates, this study reveals four community-level factors that promote drunk-driving".

**Secondary Theoretical Contributions**

My notion of primary and secondary theoretical contributions could also be referred to as theoretical "contributions" and "implications". Primary theoretical contributions tend to be strongly evidenced theoretical insights directly related to the literature in the frontend. By contrast, secondary theoretical contributions, or implications, tend to be more speculative theoretical insights that are applicable to other related literature. Accordingly, secondary theoretical contributions often begin with a brief literature review, in a paragraph or a few sentences, to clarify the status quo before declaring the novel insights. A classic phrasing of a theoretical implication is as follows: "This study also [challenges, extends, or revises] existing theory on [another related phenomenon]".

**Practical Implications**

Practical implications are actionable recommendations that result from your research findings. Write your practical implications with specific stakeholders in mind. For example, if your research is about drunk-driving, write your practical implications for policymakers, counselors or alcoholics in your community. Be sure to review what actions your stakeholders currently take and how your recommendations will improve upon their current actions.

**Limitations and Opportunities**

Limitations and opportunities can be separated, but they go well together because opportunities often arise from limitations. Many limitations stem from the chosen research context, data collection or theoretical perspective. Once you have stated the limitations of your study, specify how future research could explore alternative research contexts, informant samples and theoretical perspectives to improve upon your current research. Avenues for future research can also be inspired by the theoretical contributions of the study.

**Conclusion**

This ultimate section is not always necessary, but it gives you an opportunity to leave your readers with what you believe are the key takeaways from your research.

**Finishing Touches**

**Front-to-back Integration**

Revise your article multiple times to check that all of the pieces fit together. Do the methods, findings and contributions flow from the research question? Do the findings actually incorporate all the types of data you have noted in the methods? Are the research motivations in the introduction actually realized as theoretical contributions or practical implications in the discussion?

**Editing**

Format your article, including the tables, figures and references, to the journal's style sheet. This may take several days the first time you do it. If you can afford it, hire a professional to edit your manuscript. Professional editors offer a range of services from relatively major "developmental" or "substantive" editing to relatively minor "copy editing" and "proofreading". All of these services are much faster and more affordable than you might imagine. Search online for "editing services".

## Friendly Reviews

Send your manuscript to at least three to five friendly reviewers for feedback, not all at once, but in stages, as you keep refining your manuscript. Contrary to popular belief, friendly reviewers need not be senior scholars in your field. In fact, PhD classmates, junior scholars in your field and non-academic friends can all be excellent friendly reviewers. Wherever you turn, seek diverse, tough and nit-picky readers as reviewers. You can certainly disregard idiosyncratic feedback that does not ring true for you, but if two or more friendly reviewers indicate a similar concern, then do take their concern seriously.

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# Importance of Research Design in Writing Research Paper

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## Introduction

In doing research or writing a research paper, the researcher is virtually without any perspective. One needs some specific principles and approach to meet the research objectives and to reach the appropriate suggestions. With the absence of any definite theory or the use of many theories and attitudes, the research work goes in the complex situation and illusion. The research project provides proper guidance for research, which reduces the chance of the researcher to get confused.

The research interests of social investigators are virtually unlimited. Any social setting is a potential target for scientific examination. In spite of the diversity of possible social topics and situation investigated, most contemporary social scientific research is characterized by some type of study plan. This plan is conventionally labelled the Research Design. Research Design decides the fate of the proposal and its outcome. If the design is defective, the whole outcome and report will be faulty and undependable. It is upon the design that the nature of data to be collected will very much depend. It is, therefore, desirable that research design should be methodologically prepared.

### Research Design: Meaning and Concept

Research design is defined as the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose within a procedure. In fact, the research design is the conceptual structure within which research is concluded; it constitutes the blue print for the collection, measurement and analysis of data.

### Functions of Research Design

Regardless of the type of Research design selected by the social investigation, all plans perform one or more functions outlined and discussed below. The number of functions performed by any design largely depends upon its sophisticated, coupled with the researcher's concerns.

### As a Blue Print

Perhaps the most important functions of research designs are that they provide the researcher with a blueprint for studying social questions. Without adequate drawings and plans, a home builder would become burdened with insurmountable problems such as where to place the foundation. What kinds and qualities of materials to use, how many workers are required, how large should the home be, and so on. By the same token, a social researcher faces comparable obstacles if he commences his study without some kind of research problems, there are several decision one should make before beginning his project.

### Directional Function

Research design dictate boundaries of research activity and enable the investigator to channel his energies in specific direction, without the delineation of research boundaries and objectives, a researcher's activities in a single project could be virtually endless.

### Anticipatory Function

A third function of a research design is that it enables the investigator to anticipate potential problems in the implementation of the study. It is customary of the researcher to review current literate central to the topic under investigation. In the course of the literature review, they may learn about new or alternative approaches to their

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problems. At the same time they can acquire information concerning what can reasonably be expected to occur in their own investigation. Many articles in the professional journals, as well as specialized monographs, include suggestions for further study more important, many authors provide criticisms of their own work so that future investigations of the same or similar topics may be improved. In addition, the design can fuction to provide some estimate of the cost of the research possible measurement problems and the optimal allocation of resources such as assistants (man power) and material.

**The need for Research Design**

Research Design is needed because it facilitates the smooth sailing of the various research operations, making research as efficient as possible, yielding maximal information, with minimal expenditure of effort, economical, and attractive construction of a house, we need blue print. We need a research design or a plan in advance of data collection and analysis for our research project.

Research design stands for advance planning of the methods to be adopted for collecting the relevant data and the techniques to be used in their analysis, keeping in view the objective of the research and the availability of staff, time and money.

**Types of Research Design**

**Explorative or Formulative Research Design**

Exploratory research studies are also termed as formulative research studies. The main purpose of such studies is that of formulating problem for more precise investigation or of developing the working hypothesis from an operational point of view.

**Research Design in Descriptive and Diagnostic Research Studies**

Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual, or of a group, whereas diagnostic research studies determine the frequency with which something occurs, or its association with something else.

**Hypothesis Testing or Experimental Research Design**

These are the designs where the research tests the hypothesis of causal relationships between variables. Such studies require procedures that will not only reduce bias and increase reliability, but also permit drawing inferences about causality. According to Chapin 1955, 'the fundamental rule of the experimental method is to vary only one variable (condition) at a time, maintaining all other variables constant.

**Quasi Experimental Research Design**

These are less efficient than true experimental designs, where some, but not all extraneous variables can be controlled. For example, there are designs in which subjects cannot be randomly assigned to conditions, but the independent variably can be manipulated, either by the investigator or by someone else. These are known as quasi experimental design

As the subjects are not randomly assigned to the experimental and the control groups, the equivalency of the groups is not maintained and thus it lives some uncontrolled threats for validity of the experiment. Some of the important types of quasi experimental research design are: (i) Time series design (i) Equivalent line sample design (iii) Non-equivalent control group design.

**Pre-Experimental Research Design**

Pre-experimental research design is a research design which is characterized by a lack of random selection and assignment. On the surface, the design below appears to be an adequate design. The subjects are pre-tested, exposed to a treatment, and then, post tested. It would seem that any differences between the pre test measures and post test measures would be due to the programme treatment.

In a nutshell, the creation of research design is essential to complete the research effort with minimum effort, time and cost. The research design provides proper guidance for research, which reduces the chance of the researcher to get confused. The research design helps the researcher decide which methods are used to increase the range of control over research work. Keeping in mind the

suitability of the building, the study, helps the researcher to present suitable findings and suggestions. Good research design presents a logical and orderly plan that clarifies the compilation, analysis and evaluation of the facts and makes the research work simple and easy.

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# Importance of Review of Literature in Writing of Qualitative Thesis Paper in Standard Format
## (An Overview Study of Writing Suggestion)

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**Abstract**

A literature review may constitute an essential chapter of a thesis or dissertation, or may be a self-contained review of writings on a subject**.** Review of Literature one of the important tasks of research to go through existing literature and provides theoretical background to research study which shows important function to carry research work move forwards. It helps researcher to contextualise the finding by comparing them with what other researcher have found out in the relation to the own research work. It helps researcher to comprehensive compilation of the information from published sources. Review of literature focus on logical segment to fulfil the objectives with hypothesis.

**Keywords:** Review of Literature, Qualitative, Sources, Objective, Hypothesis.

**Introduction**

As we know that necessities is the father of invention .Where there is a problem there is a solution .In social science we start the journey of research after identifying the problem. Research is a journey of investigation. To write qualitative research required perfect review of literature so that researcher get perfect solution to meet there objective with hypothesis. Review of article also known as narrative review is a type of review article.. Scholars paper also known to be review of literature, which includes current knowledge including substantive findings, as well as theoretical and methodological contribution to particular topics. Secondary sources are the base for review of literature that sources found from academic journals are not be confused with reviews book that may appear in same publication.

Formulating a review of literature may also be part of post graduate student or PhD scholars during preparation of thesis, dissertation or journal article. In simple way say that journal or thesis related topic which has already work done before and student or scholars want what different author has told in his thesis or journey and try to fulfil the gap between the objective and hypothesis through proper review. There are various types of Literature reviews each with its own approach, analysis and purpose. Through rigorous review and analysis of literature that meets specific criteria, the systematic review identifies and compares answers to health care health related questions.

**Objectives of the study**

1.  To awareness to the scholar's what is the important function of review of literature.
2.  To awareness that how objective and hypothesis are related with review of literature.
3.  To awareness about review of literature how to helps researcher to write qualitative paper.

**Hypothesis**

1.  Review of literature helps to write qualitative research paper.

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2. Review of literature helps to analysis objective and formulating hypothesis.

**Purpose of Literature Review**

Purpose to develop and organise research paper in the social and behavioural sciences.

**Review of Literature**

Literature reviews show the theoretical background to the research study and contextualize the finding with compare with different authors. Here Authors focus different views of researchers and distinguish literature reviews in own concept that shows under below-

Shield and Rangarajan (2013) distinguish between the process of reviewing the literature and a finished work or product know as a literature review[1]. Review of literature is often ongoing process and informs many aspects of the empirical research project.

Baker, P. (2000) "says that review of literature is the process that requires different kinds of activities and ways of thinking[2].

Shield and Rangarajan (2013) and Granello(2001) link the activities of doing a literature review with Benjamin Blooms revised taxonomy of the cognitive domain includes ways of  thining: remembering, understanding, applying, analyzing, evaluating and creating[3].

From the above analysis by different author shows the view that review of literature is a systematic analyzing process with ongoing process and informs many aspects of the empirical research project it means it help to write standard qualitative paper to meet the objectives and hypothesis. Above analysis author found that his objective is fulfilled which shows the right direction awareness to write the article.

From the above analysis Author want to conclude that in thesis writing Literature reviews plays an important function to make standard format and from review of literature part scholar get the objective of his work with matching the hypothesis.

**Literature Reviews Role to Make Standard Research Papers**

A good review of Literature will not only summarize the information, but also point out the weaknesses in the experimental procedures as well as possible theoretical conflicts. It builds on the current knowledge by identifying gaps in the available literature and suggesting future directions for research. Review of literature is written overview of major writings and other sources on a selected topic. Sources covered in the review may include scholarly journal articles, books, government reports; web sites etc.The literature review provides description, summary and evaluation of each source. Formal literature reviews are a critical appraisal of a subject and are not only an academic requirement but essential when planning a research project and for placing research findings into context.

**Elements of Literature Reviews**

Literature review comprises various elements:

1. Overview of the subject, issue or theory under consideration, along with the objectives of the literature reviews.
2. Division of works under review into categories.
3. Explanation of how each work is similar to and how it varies from the others.
4. Conclusions as to which pieces are best considered in their argument, are most considered in their argument, are most convincing of their opinions and make the greatest contribution to the understanding and development of their area of research.

**Importance Steps to be Remember while Writing Literature Review**

It depends on researcher area of interest to do study. Researcher should analyse why they have choose this topic? What are the problem occur? How researcher topics of research help to society? Does Review of literature helps to find objective so that meet the hypothesis and final analysis that doing research in right direction? This question should be cultivated to the mind of researcher. Following steps should be remember while writing review of literature are –

1. Select a working Topics
2. Review the Literature
3. Focus the topic narrowly and select papers accordingly

4. Read the selected articles thoroughly and evaluate as well as interpreter them.
5. Organize the selected Papers by looking for patterns and by developing subtopics.
6. Develop a working thesis
7. Organize own paper based on the findings from steps 4&5.
8. Writing Body of the paper
9. Look at what you have written; Focus on analysis, not description.

**Logical Importance to Write the Paper Systematically**

Observation and analysis is an important part for thesis or article writing in qualitative manner. Looking after the topic sentences of each paragraph and read the sentences minutely so that researcher gets the clear position to develop logically from beginning to end. Literature give rosy picture so that research fulfil the gap of research work and help systematic standard format for qualitative researcher paper and help to meet the objective and develop hypothesis to get right direction.

**Conclusion**

Author want to conclude that in thesis writing Literature reviews plays an important function to make standard format and from review of literature part scholar get the objective of his work with matching the hypothesis. Review the literature creates the frame work of initial stages of the thesis. Review of literature is the first task for the researcher while writing standard systematic format thesis which act as a bridge to fill the research gap in analytical manner. Literature review is the comprehensive summary of the previous topic research.

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# Qualitative Vs Quantitative Research

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## Abstract

In most plain terms, research is the systematic, diligent and objective investigation which involves logic either to solve the problem, to find better solution of the problem, to establish facts or to reach new conclusions. There are two approaches of research-inductive and deductive. Inductive approach is associated with Qualitative Research and deductive approach with Quantitative Research. Qualitative Research is flexible and Quantitative Research is contrived. One to one interview, focus groups, ethnography and content/text analysis are the popular methods of Qualitative Research. Survey, descriptive studies and correlation studies are the methods of Quantitative Research. Research is classified on the basis of purpose into the Fundamental Research, Applied Research, Action Research, Exploratory Research, Descriptive Research and Explanatory Research. The various general steps of research include identification of the research problem, review of the related literature, formulation of hypothesis, formulation of the objectives, designing the research, collection of the data, analysis of data, drawing the conclusion and reporting the findings. To qualify as valuable and useful, research must be valid, accurate and reliable as well as serve as base for further investigation. Research must not remain limited to

libraries and digital repositories but should be translated into action to realize the goal of sustainable development.

**Introduction**

Before understanding the concepts of qualitative and quantitative research one must has know how of fundamentals of research, which follows:

**Meaning of Research**

Literally the term research means to search again and again with intent to solve the problem, to evolve optimal solution of the problem, to evaluate/ verify the previous finding/s, to make picture clear by patching the extant gaps, to add something to existing corpus of knowledge to help it to understand better, to come up with something novel, to clear the errors and misconceptions, to elicit the facts, to dig out information useful for decision making and to establish cause and effect relationship.

In general terms, research is an systematic, objective, impartial and logical analysis of the problems; requiring critical thinking and an attitude of inquiry; carried out in both controlled and uncontrolled conditions; leading to the development of laws, principles, theories and generalizations which help us to understand the phenomena and events, even resulting in the prediction and possibly ultimate control of events.

**Characteristics of Research**

These include:

1.  Research is the patient and unhurried activity, requiring expertise at all steps.
2.  Research is systematic, objective, impartial and logical analysis directed either towards the solution of unsolved problem/ optimal solution of solved problem or determining the relation between/among variables.
3.  Research is directed towards the development of generalizations, theories or principles.
4.  Research involves gathering of new data from primary sources or using existing data for a new purpose.

5.  Research is generally characterized by carefully designed procedures, always applying rigorous analysis.
6.  Research demands accurate observation, careful recording, constructive attitude and exact description of events.
7.  In research each important term is defined, limiting factors are recognized and procedures are described in detail.
8.  Research is carefully recorded, results are carefully documented and conclusions are presented with scholarly caution and restraint.

**Characteristics of Good Research**

These include:

1.  Research should contribute to knowledge and human welfare.
2.  It must be able to solve problems optimally.
3.  It must be objective and free from bias.
4.  It should never be an ending process. It must open the new avenues of research.
5.  It should be specialized process rather than generalized one.
6.  It must not remain restricted to library, but should be tied with developmental action.

**Meaning of Researcher**

Researcher is the one who elucidate truth to overcome the existing fault and not the one who beats the beaten track.

Researcher attempts to be objective and logical applying every possible test to validate the procedure employed, the data collected and the conclusions reached.

Researcher must accept disappointment and discouragement as he pursues the answers to difficult questions.

**Meaning of Research Problem**

Research problem is the difficulty either theoretical or practical that requires solution. Problem must spring from the mind of researcher. For that problems cannot be borrowed.

There has always been a gap in existing corpus of knowledge due to its developing nature. Once the gap in existing corpus of knowledge becomes visible, the research problem crystallizes itself.

Most difficult phase in research is identification of the problem. Formulation of good research problem is considered a discovery in itself. Sources of identification of research problem includes literature, already completed works, course guide, conferences, seminars, workshops, mutual discussions, class room situations, et cetera.

Research problem should be novel, feasible, significant, limited in scope, least risky, simple, ethical and economical.

**Research Hypothesis**

It is the proposition to be put to test or assumption/speculation/postulation/educated guess about the phenomenon under study, based on common sense, theory or empirical facts. Hypothesis is formulated only as the tentative/ suggested solution to the problem, with the objective that the ensuing study may lead either to its rejection or its retention.

Hypothesis is formulated after the research problem has been stated and the literature study has been completed. It is formulated when the researcher is totally aware of the theoretical and empirical background to the problem. It can also be based on common sense. It is usually implied and not stated explicitly.

Hypothesis should be clear and precise. If it is not clear and precise, the inferences drawn on its basis cannot be taken as reliable.

Hypothesis which states that there is no relationship or difference between variables under study and any relationship found will be chance relationship is called null hypothesis/ simple hypothesis. Hypothesis entailing anticipated/expected relationship or difference between variables under study is called research/declarative hypothesis.

**Characteristics of Good Research Hypothesis**

These include:

1. It must state relation between/among variables.
2. It must have elucidating power.
3. It must be straightforward, clear and precise.
4. It must be quantifiable.
5. It must be testable.

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6.   It must be adequate answer to the problem.

**Population/Universe**

In common parlance researchers group of interest is called population or universe. It can be group of individuals, houses, collection of records in the file, et cetera. Nature of population is determined by objective of research. Every single unit of population is called sampling unit.

Technically speaking, population refers to the entire mass of observation from which sample is drawn.

The population which the researcher ideally wants to generalize is known as target population and the population which the researcher realistically generalizes constitutes accessible or available population.

The population consisting of countable number of units is called finite population and the population consisting of uncountable number of units is called infinite population.

**Sample and Sampling**

It is randomly or purposively selected small or large but representative proportion of the population.

The process of drawing sample from population for the purpose of observation, analysis, interpretation, synthesis and generalization is called sampling.

Sampling saves time, cost and energy. It brings in speed and increases scope. It gives greater accuracy and precision due to better control.

Sampling is probability sampling when every individual of the population has equal chance to be taken into sample. Probability sampling is employed for fundamental research. Sampling is non probability sampling when every individual of the population has no equal chance to be taken into sample. It is employed for action research.

**Data**

It is meaningful and coherent information.

Data obtained from internal reports or records of an organization are called primary data and the data obtained from outside organization are called external data.

Data collected by investigator himself/herself for answering question in hand are called primary data. Already available data in the form of journal, book, magazine, et cetera are called secondary data. Researcher must be very careful in using secondary data because they may be at times unsuitable and misleading.

Verbal and other symbolic materials are qualitative data. Numerical values attached to responses of informants are quantitative data. Quantitative data which are measured on interval and ratio scales are called parametric data. Quantitative data which are obtained by applying nominal or ordinal scales of measurement are called non-parametric data. These data are counted or ranked.

**Levels of Research**

There are three levels/types of research- fundamental, applied and action. That research is fundamental which aims to develop new laws, principles and theories and expands the existing ones. That research is applied where in the existing laws, principles and theories are tested and their usefulness is evaluated. That research is action research which helps to solve immediate, specific and practical problems. It is undertaken by practitioners to improve their practices.

**Research Methodology**

Research methodology is basically the pool of research methods. It guides the research about how to conduct research. It tells about various steps that are generally adopted by researcher in studying his research problem along with the logic behind them. Research methods are of utmost importance in a research process. They describe the various steps of the plan of attack adopted in solving research problem, such as the manner in which the problems are formulated, the definition of terms, the choice of subjects for investigation, the validation of data gathering tools, the collection, analysis and interpretation of data and the process of inferences and generalizations. Broadly speaking there are two methods of research-

qualitative and quantitative. Quantitative research draws upon logical positivism and qualitative research draws upon phenomenological inquiry (personal experience in specific context).

**Qualitative Research**

Qualitative research is also known as documentary research, constructionism, field study, status study and opinion study. It is actually an exploratory and explanatory activity. It is concerned with in-depth understanding and describing of behavior from informant's perspective and is applicable to the phenomenon that cannot be expressed in quantity.

In qualitative research no assumptions are made. It is based on inductive approach of inquiry. In inductive or bottom up approach a researcher generates new hypotheses and grounded theory from data collected during field work.

In qualitative research, phenomenon is explained on the basis of observation, open end and unstructured interviews, video recordings or collection of documents.

In qualitative research data are collected usually in natural and real life setting hence are rich, descriptive and extensive.

The analysis of qualitative data requires organizing raw data into logical, meaningful categories and examining them in holistic fashion for interpretation to others.

The qualitative reports are narrative with contextual description and direct quotations from research participants. It is mostly used in humanities and social sciences.

Qualitative research is value based and data is collected from small purposive samples hence its findings are not generalized to other contexts.

In qualitative research an effort is made to isolate strengths and weakness of phenomenon.

**Characteristics of Qualitative Research**

These include:

1. It takes place in real life/ natural setting.
2. It is fundamentally interactive.
3. It is flexible rather than predesigned.

4. It is guided by fewer universal rules, standardized and shared procedures.
5. It employs interactive and humanistic methods.
6. It describes the phenomenon holistically.
7. It reflects systematically on 'who' in the inquiry.
8. Researcher is the main instrument of research.
9. It considers the subject behavior flux, situational, contextual, personal and social.
10. It uses small purposive samples predominantly.

**Types of Qualitative Research**

Qualitative research is classified into following types:

1. Phenomenology
2. Ethnography
3. The case study
4. Grounded Theory
5. Heuristics
6. Ethnomethodology
7. Symbolic interactionism
8. Ecological psychology
9. Systems theory
10. Chaos theory: nonlinear dynamics
11. Hermeneutics and
12. Orientational qualitative

Major types of qualitative research are briefly discussed here under:

**Phenomenology**

It refers to one's personal conscious experience about the phenomenon under study in specific context. It is an attempt to avoid prior assumptions about the concerned phenomenon and requires empathy. Through this qualitative research approach, the researcher tries to gain access to individual's life worlds by conducting generally in-depth interviews.

**Ethnography**

It is also known as naturalistic inquiry. Through this qualitative research approach the researcher attempts to discover and

describe the culture of a group using participant observation and open end interview techniques.

**The Case Study**

This qualitative research approach is used to examine a social unit as a whole. The unit may be a person, a group, an institution or a community. In case study data is collected by observation, interviews, questionnaires, tests, inventories, et cetra.

When the objective of case study is to understand the particulars of the case, it is called intrinsic case study.

When the objective of case study is to understand something more general than case, it is called instrumental case study.

When the objective of case study is to study and compare multiple cases in a single study, it is called collective case study.

**Grounded Theory**

This qualitative research approach is used generally to generate theories from the analysis of data collected about the phenomena under study to explain the underlying phenomena. It is based on inductive/ bottom up inquiry.

**Merits of Qualitative Research**

These include:

1. It explains the phenomenon under study in a holistic manner.
2. Its flexible nature enables the researcher to adjust the direction of the research process to the selection and use of tools as well as samples.
3. Due to direct contact to the people and situation under study it helps to understand the phenomenon in depth and detail.
4. As it uses case study, small and purposive sampling hence is economic.
5. Its reports are narrative with contextual description and direct quotations from research participants.
6. Qualitative data provide depth answers to the research questions of decision makers and information users.

**Limitations of Qualitative Research**

Qualitative research is often criticized on the basis of following three limitations:

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1.  Problem of adequate reliability due to subject bias/ artificial behavior of subject being observed.
2.  Findings of qualitative research cannot be generalized because of small and purposive sampling.
3.  Difficult analysis and interpretation of qualitative data. Expert knowledge of an area is necessary for analysis and interpretation of qualitative data.
4.  Problem of anecdotalism.

**Qualitative Research Proposal**

Research proposal is a blueprint which brings to focus the initial planning that will be needed to accomplish the projected research study. Proposals for qualitative research typically have the following sections:

1.  Introduction
2.  Review of related literature
3.  Broad questions
4.  Focused research questions
5.  Design choices
6.  Overall approach and rationale
7.  Selection of the research site
8.  Data collection procedure
9.  Coding of collected data
10. Data analysis
11. Interpretation of data
12. Validation of results
13. Reporting
14. Bibliography
15. Appendices

**Quantitative Research**

It is concerned with discovering facts, making predictions and testing theories/hypotheses which have already been proposed and is applicable to phenomenon that can be expressed in quantity. It is used to quantify the problem in the form of attitude, opinion, behavior and the like as well as to generalize results. Quantification of

data not only facilitates their manipulation but essentially increases precision with which they can be analyzed and described.

**Characteristics of Quantitative Research**

These include:

1.  It is based on logical-positivism paradigm.
2.  It aims at description, explanation and prediction of social phenomena rather than deep understanding of the phenomenon or content.
3.  It attempts to study phenomenon under contrived conditions.
4.  It is based on probability sampling generally.
5.  It uses deductive or top down approach.
6.  It is deductive in the sense it seeks to establish facts, make predictions and tests theories which have already been proposed.
7.  Its findings are based on identified statistical relationships and are generalized.
8.  Structured tools are used to gather quantitative data.
9.  It is value neutral.

**Types of Quantitative Research**

These include:

**Experimental Research**

The research which is scientific in vigor, where in researcher controls the variables and deliberately manipulates the independent variable under controlled conditions to study its effect on dependent variable is called experimental research. It is used to test the hypothesis: If X then Y.

**Survey Research**

It is also known as descriptive research. It attempts to describe in detail the current status of a phenomenon under study. It serves as most fundamental tool for all quantitative studies.

**Correlation Research**

It attempts to determine whether and to what degree relationship exists between variables under study.

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**Causal Comparative Research**

It is also called quasi experimental research. It attempts to discover cause and affect relationship between two or more different variables. Here in independent variable is established and its impact on dependent variable is observed without its manipulation. It is also called ex-post-facto research because in this type of quantitative research researcher has no control over independent variable or causal factor as cause and effect relationship is studied after occurrence of event.

**Merits of Quantitative Research**

These include:

1. Results of quantitative research are scientifically objective and rational due to elimination of personal bias.
2. Findings of quantitative research can be tested, replicated, confirmed and generalized.
3. Quantitative data is useful for validating already constructed theories.

**Limitations of Quantitative Research**

Quantitative research is criticized on the basis of following limitations:

1. It requires sophisticated lab and expertise.
2. There is a chance of creeping in error during analysis and interpretation of data due to poor knowledge of the application of statistical analysis.
3. Large sized samples are required for more accurate analysis and more reliability of data.
4. It uses quantitative data which are close ended hence do not provide depth and detail.
5. In quantitative research issues are only measured if they are known before beginning of study especially in the survey research.

**Quantitative Research Proposal**

Proposals for quantitative research typically have the following sections:

1. Introduction

2. Review of related literature
3. Statement of the problem
4. Hypothesis
5. Experimental design
6. Data recording, analyzing and interpretation procedure
7. Reporting
8. Bibliography

**Qualitative and Quantitative Research a Comparison**

| S. No. | Qualitative Research | Quantitative Research |
|---|---|---|
| 1. | It is concerned with in-depth understanding and describing of behavior from informant's perspective and is applicable to the phenomenon that cannot be expressed in quantity. | It is concerned with discovering facts, making predictions and testing theories/hypotheses which have already been proposed and is applicable to phenomenon that can be expressed in quantity. |
| 2. | It has unique case, wide angle and deep angle orientation. | It has general orientation. |
| 3. | In qualitative research definite preference is for theory generation rather than for theory testing. | In qualitative research definite preference is for theory testing either to support or reject it. |
| 4. | It is value based. | It is value neutral. |
| 5. | It takes place in natural/real life settings hence is not systematic. | It takes place in experimental settings and is systematic. It tries to control extraneous variables. |
| 6. | It is guided by fewer universal rules, standardized and shared procedures. | Universal rules, standard and shared procedures are well followed in quantitative research. |
| 7. | Being flexible, it uses emergent design. | Methods, design and tools are pre determined in |

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| | | |
|---|---|---|
| | | quantitative research. |
| 8. | No assumption is made about the outcome of study in qualitative research. | Advance formulation of hypothesis is an important requirement of quantitative research. |
| 9. | It uses inductive/ "bottom up" approach. | It uses deductive/ "top down" approach. |
| 10. | Qualitative data is detailed, dense and in-depth verbal and other symbolic material. | Quantitative data is parametric and non parametric |
| 11. | Validity of qualitative data depends upon the skill of researcher as researcher is instrument itself. | Validity of quantitative data depends upon the instrument used. |
| 12. | Data is collected from small purposive samples. | Data is collected from large random samples. |
| 13. | Data is mostly collected by participant, observation, non structured interview and open ended questionnaires. | Data is collected by administration of tests, using different types of scales, controlled observation, close ended questionnaires and survey. |
| 14. | Qualitative data is interpreted by content analysis, thematic analysis, discourse analysis and grounded theory. | Quantitative data is interpreted by statistical analysis. |
| 15. | Research findings of qualitative research are not generalized, replicated, confirmed and disconfirmed | Research findings of quantitative research are generalized as well as replicated, confirmed and disconfirmed. |
| 16. | It is generally used in social sciences. | It is generally used in natural sciences. |

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# Qualitative Vs Quantitative Research- A Theoretical Understanding

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**Abstract**

Qualitative research is a scientific method of observation to gather non numerical data. Rather than by logical and statistical procedures, qualitative researchers use multiple systems of inquiry for the study of human phenomena including biography, case study, historical analysis, discourse analysis, ethnography, grounded theory, phenomenology, etc. Quantitative research on the other hand, is defined as the systematic investigation of phenomena by gathering quantifiable data and performing statistical, mathematical or computational technique.

**Keywords:** *Research, Qualitative research, quantitative research*

**Qualitative Research**

Qualitative research is a scientific method of observation to gather non numerical data. "Qualitative research is multi method in focus, involving an interpretive, naturalistic approach to its subject matter. This means that qualitative researchers study things in their natural settings, attempting to make sense of or interpret, phenomena

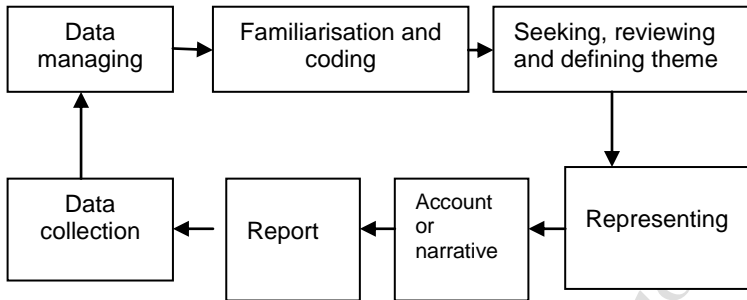in terms of the meanings people bring to them"- Denzim and Lincoln (1994).

Rather than by logical and statistical procedures, qualitative researchers use multiple systems of inquiry for the study of human phenomena including biography, case study, historical analysis, discourse analysis, ethnography, grounded theory, phenomenology, etc.

Research following a qualitative approach is exploratory and seeks to explain how why a particular phenomenon or behaviour operates as it does in particular context. There are various aspects which cannot be quantified so for that kind of study qualitative research can be applied. The methods applied by researchers to collect data for qualitative research can be personal interview and observation. Even with the focused group and via action research, qualitative research can be conducted. The biggest advantage of qualitative research is it gives deeper insights into the study area. However qualitative research is often criticized for lacking generalization and being too reliant on subjective interpretation of researcher.
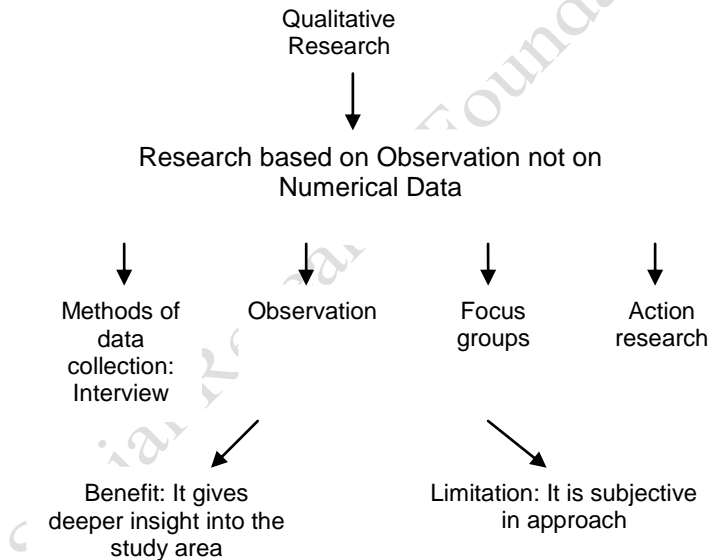
Prominently studies related to behavioral aspects of individuals and groups come under the ambit of qualitative research. Qualitative researchers investigate the meanings, interpretation, symbols and processes and relations of social life.

Qualitative researchers typically gather multiple forms of data such as interviews, observations, and documents rather than rely on a single data source. Qualitative interpretations are constructed and various techniques can be used to make sense of the data such as content analysis, grounded theory (Glaser & Strauss, 1967), thematic analysis (Braun & Clarke, 2006) or discourse analysis.

**Process of Qualitative Analysis**

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┌──────────────┐      ┌──────────────────┐      ┌──────────────────┐
│     Data     │─────▶│ Familiarisation  │─────▶│ Seeking, reviewing│
│   managing   │      │    and coding    │      │ and defining theme│
└──────────────┘      └──────────────────┘      └──────────────────┘
       ▲                                                   │
       │                                                   ▼
┌──────────────┐      ┌──────────┐      ┌──────────┐      ┌──────────────┐
│     Data     │◀─────│  Report  │◀─────│ Account  │◀─────│ Representing  │
│  collection  │      │          │      │    or    │      │              │
└──────────────┘      └──────────┘      │ narrative│      └──────────────┘
                                        └──────────┘
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**Conceptual Framework of Qualitative Research**

Qualitative
Research

↓

Research based on Observation not on
Numerical Data

| | | | |
|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ |
| Methods of data collection: Interview | Observation | Focus groups | Action research |

Benefit: It gives
deeper insight into the
study area

Limitation: It is subjective
in approach

**Quantitative Research**

      Quantitative research on the other hand, is defined as the systematic investigation of phenomena by gathering quantifiable data and performing statistical, mathematical or computational technique. Methods of collecting data for quantitative research are prominently

questionnaire and interview. As because quantitative research is based on facts and figures rather than on observation so it makes the research much more convincing and henceforth subjectivity is very much eliminated. Sophisticated software in quantitative research removes much of need for prolonged data analysis, especially with large volume of data involved. (Antonius, 2003) But there are some limitations of quantitative research. Firstly, it requires expertise knowledge to deal with statistics and mathematical tools which are backbone of quantitative research. So if a researcher has limited knowledge of such tools the outcome of the research may not be strong. Poor knowledge of the application of statistical analysis may negatively affect analysis and subsequent interpretation. (Black 1999) Secondly, sometimes the researcher faces difficulty to control the environment where the respondents provide answers to the questions in the survey. And third and the most important point is if the researcher unable to fix the target population for research and design the sample inappropriately the outcome will certainly be ineffective. Fourthly, quantitative experiments do not take place in natural settings. (Carr, 1994)

Some of the differences between quantitative research and qualitative research have been pointed out as follows:

Differences between quantitative research and qualitative research

| Basis | Quantitative Research | Qualitative Research |
|---|---|---|
| Meaning | It is research based on gathering numerical data | It is a research based on observation and gather non numerical data. |
| Nature | Particularistic | Holistic |
| Approach | Objective | Subjective |
| Research type | Conclusive | Exploratory |
| Reasoning | Deductive | Inductive |
| Data | Measurable | Verbal |
| Sampling | Random | Purposive |

| Hypothesis | Tested | Generated |
|---|---|---|
| Objective | To examine the cause and effect of the relationship between variables. | To explore and discover ideas used in the ongoing process. |
| Result | Recommends final course of action. | Develops initial understanding. |

**Conclusion**

So it must be interpreted that though both are having some loopholes still both are useful from the context of research. So it is important for the researcher to understand in which circumstance which type of research will fetch the best result. An ideal research is one which is conducted by considering both the methods together.

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# An Introduction to Writing a Quality Research Paper in Life Sciences

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## Introduction

Publication in a reputable, peer reviewed international journal should be the goal of every researcher, as this provides the most effective, efficient and permanent means of disseminating valuable information to a large audience. A researcher having invested many hours in undertaking research work, the temptation is to try to tell the reader everything you read and learned in the process and to provide all the data gathered. The art of writing a research paper improves with practice and also considerable guidance may be gained by asking others, especially those who have already published in high impact factor reputed international research journals. This also provides a means of a second check of accuracy and internal consistency in quality alleviation of the article. The process of writing the manuscript may seem easier if each section is conceived as a separate task. Nevertheless, before starting to write it may help to prepare an outline for each section which includes a number of major headings, sub-headings and paragraphs covering different aspects involved in the research work. In writing the first draft, the purpose is to get something down on paper and it does not matter if sentences are incomplete or the grammar is incorrect provided the main points and ideas have been interwoven and captured on paper. The repeated revisions of draft form a very

important component of writing a quality research article. It is also desirable to ensure that all important points of research work regarding the results and conclusion will be included in the draft. The incomplete inferences result in a poor quality of the research article. In the planning stages, it is essential to remember that a word limit is usually imposed and, therefore, unimportant or irrelevant information must be left out. In the case of a large study, it may be necessary to write more than one research papers which cover different issues of research.

The acceptance of a manuscript is invariably conditional on changes being made and, so be prepared to rewrite and revise the manuscript extensively. More often a manuscript has more than one author and thus the writing may be shared. However, the style needs to be consistent throughout and even if, sections of the early drafts are written by different authors, the first author must go through the entire manuscript and make necessary editorial changes before the final submission.

**Discussion**

The journal style research papers in life sciences are subdivided into sections like title, authors and affiliations, abstract, introduction, materials and methods, results, discussion, conclusion, references, tables and figures which parallel the research process. This article is intended to describe the style, content and format associated with each section of the research paper.

**Title**

The scientific research paper should begin with a title that succinctly describes the contents of the paper. The title is not a section but a necessary and important part of the research paper. The descriptive words in the title should be strongly associated with the content. The title is invariably short and unambiguous, yet be an adequate description of the work done. A general rule of the thumb is that the title should contain the key words describing the research work presented. A majority of readers will find the research paper via electronic database searches and those search engines key on the words found in the title. The title is neither underlined nor italicized. It

should be centered at the top of the page-1. It is necessary to avoid long titles. The usual length is 10-12 words.

The authors' names and institutional affiliation are double spaced from and centered below the title. When two or more authors are involved the name of the primary author is written first and the names are separated by commas except for the last which is separated from the previous name by the word "and". The affiliations of each and every author are also to be given appropriately.

## Abstract

The first section of any research paper is abstract. An abstract is a brief summary of the content of the manuscript. It summarizes, in one paragraph, the major aspects of the entire paper. The abstract is only text. The abstract helps readers decide whether they want to read the rest of paper or it may be the only part they can obtain via electronic literature searches. It should concisely include introduction, research methodology, results and discussion. Although it is the first section of the research paper, the abstract by definition, must be written last since it will summarize the whole research work given in the paper. To begin composing the abstract, take whole sentences or key phrases from each section and put them in a sequence which summarizes the paper. It is desirable to set about revising or adding words to make it more cohesive and clear. After composing the abstract one should check to make sure that the information in the abstract completely agrees with what is written in the paper. The length of the abstract should be kept to about 200 words which is a typical standard length for most of the scientific journals. The abstract should not contain too much background information, reference to other literature, incomplete sentences, confusing terms or abbreviations, any sort of illustrations, figures and tables. It should always be written in the past tense.

## Introduction

The second important section of a scientific research paper is the introduction. The function of the introduction is to state the purpose of work in the form of hypothesis, question or problem one has investigated and briefly explain the rationale and approach and

the possible outcomes the study can reveal. The structure of the introduction can be thought of as an inverted triangle wherein the broadest part at the top representing the most general information and focusing down to the specific problem one studied. Organize the information to present the most general aspects of the topic early in the introduction then narrow down toward the more specific topical information that provides context, finally arriving at statement of purpose and rationale. Introduction usually begins by clearly identifying the subject area of interest. This can be done by using the key words from title in the first few sentences of the introduction to get it focused directly on the topic. Another important aspect is to establish the context by providing a brief and balanced review of the pertinent published literature that is available on the subject. The key is to summarize what we knew about the specific problem before one performed the experiments or study. This is accomplished with a general review of the primary research literature but should not include very specific and lengthy explanations that one will probably discuss in greater detail in the discussion. The judgment of what is general or specific is difficult at first, but with practice and reading of the scientific literature one will develop a firm sense of audience. Moreover, one should focus efforts on the primary research journals- the journals that publish the original research articles. Although one may read some general background references (encyclopedia, text- books, lab manuals etc.) to get acquainted with the subject area, do not cite these because they contain information that is considered fundamental within the discipline. Cite articles that reported specific results relevant to the study. Learn as soon as possible how to find the primary literature (research journals) and review articles rather than depending on reference books. Most academic libraries support Citation Index which is an index useful for tracking a line of inquiry forward in time. Some of the new search engines will actually send alerts to the user regarding new papers that cite particular articles of user interest. Review articles are particularly useful because they summarize all the research done on a narrow subject area over the brief period of time. It is most usual to place the statement of purpose

near the end of the introduction, often as the topic sentence of final paragraph. It is not necessary to use the word "hypothesis" or "null-hypothesis" since these are usually implicit if one clearly states the purpose and expectations. Provide a clear statement of the rationale for approach to the problem. It will be a brief statement of how one approached the problem. This will usually follow the statement of purpose in the last paragraph of introduction.

**Materials and Methods**

Materials and methods is also an important section of a scientific research paper. Many journals require mention of relevant ethics committee approval for the study. In this section, author explains clearly as to how, when and where the research work was carried out. The main consideration is to ensure that enough detail is provided to verify the findings and to enable replication of study by an appropriately trained person. The research work in life sciences involves experimental or sampling design and it becomes imperative as to how the experiment was structured by the researcher, for example, controls, treatments, the variable measured, the number of samples collected and so on. The reason to provide enough quantitative detail like how much, how long, when etc. about the experimental protocol is that other researchers can reproduce the experiments as and when required. The experimental design and procedures are sometimes very efficiently presented as an integral unit. One should also indicate the statistical procedures used to analyze the results including the probability level at which significance was determined. In case of field study, one is required to mention the sites where the study was conducted. The description must include physical and biological characteristics of the sites pertinent to the study aims. It is also required to include the date of the study and exact location of the study area by giving latitude and longitude. It is often a good idea to include a map by labeling it as a figure so that someone else should be able to go to the exact location of research area if he or she intends to repeat or check the work of study. Materials and method section requires a passive construction with past tense throughout since the work being reported has already been

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done. One thing to remember is that this section is prone to over details.

## Results

The results section intends to objectively present key results without interpretation in an orderly and logical sequence using both text and illustrative materials like tables and figures. The results section always begins with text, reporting the key results and referring to figures and tables. The summaries of the statistical analyses may appear either in the text or in the relevant tables and figures. The results section should be organized around tables and figures that should be sequenced to present the key findings in a logical order. Prepare the tables and figures as soon as all the data are analyzed and arrange them in the sequence that best presents the findings in logical way. Tables and figures are assigned numbers separately and in the sequence like Table-1, Table-2, Figure-1 and Figure-2 etc. The body of the results section is a text-based presentation of the key findings which includes references to each of the tables and figures. One must refer to each table and figure individually and in sequence and clearly indicate for the reader the key results that each conveys. Key results depend on the questions of the researcher, they might include obvious trends, important differences, similarities, correlations, maximums, minimums etc. Always write the text of the results section concisely and objectively. It is desirable to use the passive voice with past tense. Do not try to interpret data in this section and present the same data in both table and figure. Do not report the raw data values when they can be summarized as means, percents etc. In case the results are negative they also need to be reported since they may be of importance to others even though they did not support the hypothesis. Many important discoveries can be traced to the so called "bad data".

## Discussion

Another important section of a scientific research paper is discussion. This is the main section in which the researcher can express his or her interpretations and opinions. It aims to interpret the results in the light of what was already known about the subject of

investigation, and to explain new understanding of the problem after considering the results of the study performed at hand. The discussion will always connect to the introduction by way of questions or hypothesis posed in the study and the literature cited. Organize the discussion to address each of the experiments or studies for which one has presented results. One must relate his or her work to the findings of other studies. Consider how the results of other studies may be combined with yours to derive a new or perhaps better understanding of the problem. One may also choose to briefly mention further studies one would do to clarify the working hypothesis.

**Conclusion**

The conclusion is intended to sum up the entire research work which is both intriguing and arduous. The content of conclusion presumes summary of ideas and proving the hypothesis with arguments. In writing a conclusion one must draft a final result of the research work. A well crafted conclusion can provide the final words on the value and results of the research work besides the future course of action. A conclusion can usually be in one or two paragraphs, and depending on the length of research paper it may occasionally be in many paragraphs. One must avoid begin writing conclusion with phrases like "To conclude" or "In conclusion" as their use loses readers attention. It is to be written briefly with a statement of problems with rational and solving them by following scientific methodology.

**Acknowledgement**

Acknowledgement is often included as a section in most of the scientific journals. It is the section where the author/s acknowledge the assistance and service provided by others during the course of experiment or study. One may receive any significant help in thinking up, designing, or carrying out the work, or received materials from someone who did a favour to author/s. In such case the author/s must acknowledge them. It has been seen that many authors acknowledge the outside reviewers of their draft and any

source of funding that supported their research. Acknowledgements are always brief and never decorative.

**Citation**

Another important section placed toward the end of research paper is literature citation. It gives an alphabetical listing (by first author's last name) of the references that one has actually cited in the body of research paper. Do not label this section "Bibliography". A bibliography contains references that one may have read but have not specifically cited in the text. Bibliography sections are found in books and other literary writings but not in scientific journal oriented research papers.

**Tables and Figures**

Tables and Figures are the great tools to present large and complex data in a space saving and easy to understand way. It is sort of artwork which includes tables, diagrams, graphs, bar charts, pie diagrams and like. The use of figures and tables is often integral to the format of the paper as it brings greater comprehension and interpretation of data. It is important to decide when and how to use a table, figure or graph depending on the type of data to be presented and as per the recommended guidelines of the journal. Some journals limit the number of tables and figures, and even have specific guidelines for their appropriate designing. The poorly crafted tables and figures can confuse the reader and hamper the effectiveness of the paper. It is important to ensure the image clarity, sharpness, consistency in details and complete labeling of tables and figures.

**Table-1**
**Formats of a Scientific Research Paper**

| Research Paper | MLA Guidlines | APA Guidlines |
|---|---|---|
| Paper | A4 Size | |
| Paper Margin | 1" on all sides (top, bottom, left, right) | 1" on all sides (top, bottom, left, right) |

| | | |
|---|---|---|
| Font | 12-pt. easily readable (e.g Times Roman) | 12-pt. Times Roman or courier |
| Spacing | Double-spaced | |
| Alignment of Text | Flush left (with an uneven right margin) | Flush left (with an uneven right margin) |
| Paragraph Indentation | 1/2" | 5-7 spaces |
| End of Sentence | Leave one space after a period | Leave one space after a period |
| Page Numbers | On every page, upper right margin, 1/2" from top & flush with right margin | On every page, upper right margin, 1/2" from top & flush with right margin |
| Title Page | On the upper left corner place the following on separate lines, double spaced: Author Name/s Teacher's Name College/University Date Underneath, center the title using regular title capitalization rules & no underline. | The title page is the first page. On the line below the page number, running head is typed with flush left & all upper case. Below the running head, following are centered on their own line using upper & lower case: Paper Title Author Name/s College/University |

| | | |
|---|---|---|
| Section Headings | | Top level headings should be centered on the page, using upper & lower case. Second level headings should be flush left, italicized, using upper & lower case. |
| Tables & Illustrations | Place tables close to the text. Tables are labelled as Table-1. Title or caption appears above the table, capitalized & flush left. Sources & notes appear below the table. | Tables & illustrations appear at the end of the paper. Each table begins on a separate page with label Table-1 etc. , flush left on first line below the page number. Double space & type the table title flush left, italicized |
| Order of Sections | | Each of these sections, if present Title Abstract Introduction Results Discussion Conclusion References Tables Figures |

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# Data Collection in Qualitative Research- A Conceptual Framework

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**Abstract**

Data collection is one of the most important stages in research design to be performed by the researcher while conducting research study. The success of any research study depends upon the collection of right data because the inferences and findings are drawn from such data and vice-versa. Hence, if there is deviation in the process of data collection, then the research study will of limited/no use, leading to wastage of time, cost and efforts on the part of the researcher. Qualitative research refers to the process of collecting, analyzing and interpreting data by observing what people do and say. A qualitative research is much more subjective than quantitative research. One of the biggest limitations of this research is that there is room for biasness and prejudice since the researcher collects data on the basis of observation. Hence, the data collected in qualitative research may not be accurate or reliable and therefore the analysis and interpretations drawn from such data may be misleading. Hence, the researcher must have the power of observation and good interactive skills and he also must be honest, independent and unbiased in order to collect valid data. In qualitative research, a wide

range of strategies and methods are used to find out the solution of the research problem.

**Key Words:** Data Collection, Qualitative Research, Methods of Data Collection in Qualitative Research.

**Introduction**

Data collection is one of the most important stages in research design to be performed by the researcher while conducting research study. The success of any research study depends upon the collection of right data because the inferences and findings are drawn from such data. Hence, if there is deviation in the process of data collection, then the research study will of limited/no use, leading to wastage of time, cost and efforts on the part of the researcher.

Qualitative research refers to the process of collecting, analyzing and interpreting data by observing what people do and say. A qualitative research is much more subjective than quantitative research. A qualitative research is exploratory and open-ended in nature, focusing on the people's perspectives towards specific situations, institutions, events, groups or people etc., they experience, face and study. In qualitative research, the researcher collects data in the form of words, photographs, recorded information etc.

In qualitative research, the researcher has more freedom in collecting data since he/she can go to field without any constraints and with open mindsets. He/ she is free to study the related issues in depth and in details to find out the solution of his/ her research problem.

One of the biggest limitations of this research is that there is room for biasness and prejudice since the researcher collects data on the basis of observation. Hence, the data collected in qualitative research may not be accurate or reliable and therefore the analysis and interpretations drawn from such data may be misleading. Hence, the researcher must have the power of observation and good interactive skills and he must be honest, independent and unbiased in order to collect valid data. In qualitative research, the researcher focuses mainly on the field survey to collect data, emphasizing on the personalized experience rather than structured tools. In qualitative

research, a wide range of strategies and methods are used to find out the solution of the research problem.

**Aim of the Study**

The study aims to provide an understanding about the methods used by the researchers for data collection in qualitative research.

**Data Collection in Qualitative Research**

Data collection is one of the most important stages in conducting a research. Broadly, methods of data collections in qualitative research include: observation method, in-depth open-ended unstructured interviews, and document reviews. There are discussed below:

**Observations**

It is one of the oldest methods widely used in social research to collect data from the respondents. The term observation has different meanings. In one sense, it means the action of closely observing someone or something. In another sense, it means the ability to notice important details. It is an important and a powerful tool of data collection. In observation method, the researcher collects data by observing people when they are working in the organization. Observation can be carried on by the researcher himself or a method of team observation may be used. If team observation method is to be used, the researcher has to be very careful about the right selection of the team members and arrangement for their training and their awareness about the research study. The observation method of collecting data has the following limitations-

1. One of the biggest limitations of observation method is its uncontrolled nature. Observation has to be made where it actually takes place. Most of the occurrences are quite uncertain in nature.
2. Some of the occurrences may not be open to observation.
3. Observation is affected by the lack of validity of results.
4. Although observation is a simple task, yet it is technical in nature. The senses have to be trained for the purpose of observation.

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5.  Personal biasness is another biggest limitation of observation method, due to which the data collected by the research through this method may be inaccurate and misleading.

This method needs the expertise and special skills of the researcher. In a sense, this method is tiresome, expensive and time consuming method of data collection for the purpose of research.

**Open-ended Unstructured Interviews**

Another method of collecting data in qualitative research is open-ended unstructured interview. In this method, the respondents are asked to respond to general questions and the researcher explores their responses to identify and define people's perceptions, opinions, experiences and feelings about the topic or idea being discussed. The quality of the inferences and findings drawn under this method depends mainly on the skills, capabilities and experiences etc. on the part of the researcher. The researcher must be skilled enough to influence the behavior of the respondents in order to receiving valid data. One of the advantages of this method is that the respondents are free to give any opinions or views that they feel or have experienced, which is not possible in case of close-ended interviews.

**Document Reviews**

Another important method of collecting data in qualitative research is document reviews. Document review refers to the process of systematic collection, analysis and interpretation of the existing data. In this method, the researcher reviews the existing documents as a source of data collection. The documents used for data collection may include: advertisements, agendas, attendance registers, minutes of meetings, manuals, background papers, books and brochures, diaries and journals, event programs, letters and memorandum, maps and charts, newspapers (clippings /articles), press releases, application forms and summaries, radio and television program scripts, organizational or institutional reports, survey data and various public records. Document review is less time consuming, cost effective and more efficient etc. as compared to other methods of data collection. Moreover, many documents are in the public domain

(internet), due to which data can be obtained without author's permission. However, this method has the following limitations:

1. Documents are produced for some purpose other than research; they are created independent of a research agenda. Hence, they usually do not provide sufficient details to answer a research question.

2. Secondly, sometimes access to the documents may be deliberately blocked which may again create a problem in retrieving such data. Therefore, incomplete collection of documents may also lead to biased selectivity.

**Conclusion**

From the above discussion, it can be concluded that data collection is one of the major tasks of a researcher to arrive at a right and meaningful conclusion. The research study will add value to the efforts of the researcher in particular and the society in general if right collection of data is done. Therefore, the researcher must be very careful and cautious while performing this task as many say half of the research work is done if right data is collected. However, the researcher must be honest, independent, unbiased and must apply his intelligence, skill and creativity while performing this task in order to receive valid data. Collection of valid data will provide right findings to the researcher and will also give a meaningful conclusion to the research work.

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# Data Collection in Qualitative Research

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**Abstract**

Research is the lifeblood of any institute of higher learning. Research is a way of thinking; it examines critically the various aspects of any professional work. The term research is derived from Latin word which means "to know". The term 're' in research means again and 'search' means to find out. Thus research is a scientific investigation done for finding out new knowledge or adding up to the existing knowledge. It is a systematic way of finding answers to the questions.

According to *Advance Learner's Dictionary of Current English* research is 'a careful investigation or inquiry especially through search for new facts in any branch of knowledge.

Creswell defined, "research is a process of steps used to collect data and analyze information to increase the understanding of a topic"

**Classification of Research on the basis of Process**

On the basis of Process research is classified into two parts; as discussed under:

(i) Quantitative Research

(ii) Qualitative Research

**Quantitative Reserach**

Quantitative Research is similar to deductive research. In simple terms Quantitative Research mainly involves collecting and converting data into numerical forms so that statistical calculation

becomes easier and conclusion can be drawn from it. Quantitative Research is also called as linear research since it typically follows a linear path such as:

1.  Hypothesis testing
2.  Collection of data
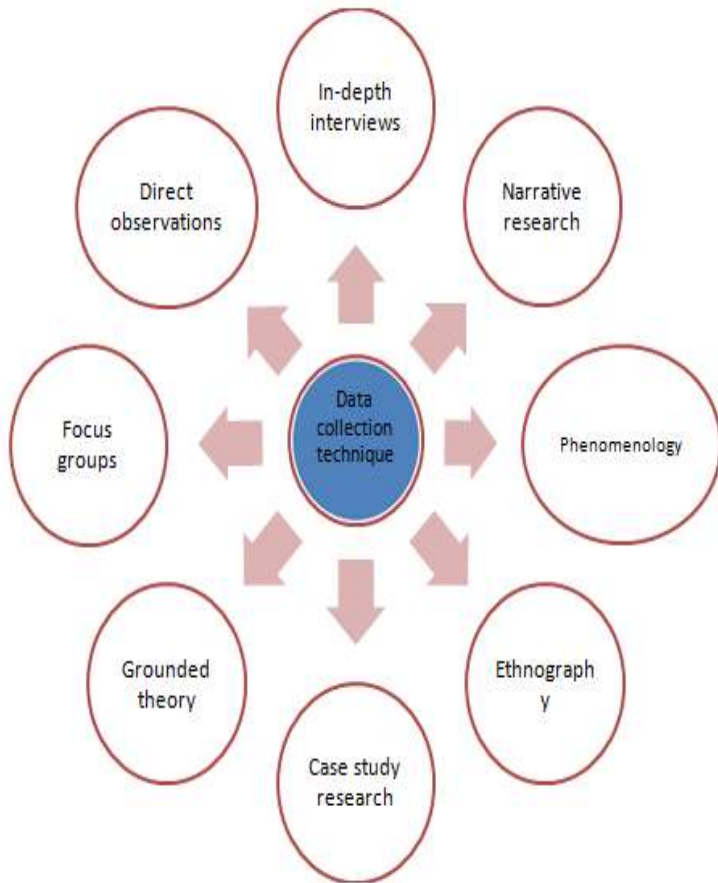3.  Analyzingthe data
4.  Accepting / Rejecting the hypothesis

**Qualitative Research**

Qualitative Research is basically an inductive research with different structure. Qualitative Research starts mainly with an observation of the researcher and it finally ends up with a theoretical position. Thus as like the inductive research it moves from specific to general.This type of research is appropriate when the area under study is not well understood or when the subject needs to be studied in-depth or also when the data collection technique such as questionnaires are considered as not suitable. The term qualitative research is confusing since it means different things to different people. Different researchers gather data by different means such as interviews and observations.

Qualitative research approaches are widely used by different researchers (political science, social work and educational researchers) over the years, focusing mainly on human elements of both the social and natural sciences. Qualitative research is primarily exploratory research; it produces explanations of the particular case studied. It provides insights into the problem and helps to develop ideas. It focuses on the "why" rather than the "what" of social phenomena and relies on the direct experiences of human beings.

**Data Collection Technique Used in Qualitative research**

Qualitative research follows following data collection techniques.

**Focus Groups**

According to focus group a research brings together a small number of subjects to discuss the topic of interest. This research method mainly brings together 6-10 people in a room and discusses on the investigated topic and there after provides feedback. It is also called as market research since it mainly discusses regarding a product, its service, concept and marketing of it. Here the group size is generally kept as small so that the members can express

themselves more openly. In terms of collecting qualitative data from multiple respondents, focus groups are popular market research tool.

**Advantages of Focus Groups Data Collection Method**

1. One of the main advantages of focus groups research method is that as compared to other methods of research it is generally a lower cost method.
2. The results of this method can be generated very quickly.
3. Focus Groups research method is easy to conduct and is a flexible method.

**Disadvantages of Focus Groups Data Collection Method**

1. In case of this method, sometimes the respondents under study can be influenced by others in the group; as a result the outcomes may not be correct.
2. Dominating participants incase of this research method can sometimes change the results of the study according to their needs.

**Direct Observations**

Direct observation method is also known as observational study, since the external observer collects data through directly observing the environment. Direct observation is a method of collecting evaluative information in which the evaluator watches the subject in his/her usual environment without any alteration. It is used when other data collection methods such as surveys, questionnaires, etc. are not effective.

**Advantages of Direct Observation Method**

1. Direct observation method isone of the simplest methods of data collection as compared to other research methods, since it does not require any technical knowledge of the investigator.
2. Data's obtain from direct observation method also attains greater accuracy as compared to other methods of data collection.
3. Direct observation method is a common method used in all the fields; and also in both physical and social sciences.

**Disadvantages of Direct Observation Method**

1. Observation method is a time taking process and requires high cost and hard effort

2.  Observation method may lead to personal bias, since the observer may have his own ideas of right or wrong or he may have different pre-conceptions regarding an event.

**In-Depth Interviews**

An in-depth interview is an unstructured research method. It is a face to face interview between the respondent and the investigator. This method is defined as a qualitative research method where an intensive individual interview is conducted by the investigator. While conducting in-depth interviews by the investigator the size of the respondents are kept small in number so that the respondent's perspectives are properly explored on a particular subject or topic.

**Advantages of in-depth Interview Method**

1.  Information's are obtained through surveys in case of in-depth research method.
2.  In-depth research method helps the interviewers to understand their respondents deeply.
3.  In depth interview method is a faster method in gathering information when compared to other research methods.
4.  Since this method is a direct face to face interview between the respondents and the investigator therefore the information obtain from this method is more accurate than others.
5.  Information received by the investigator from this method is less biased.

**Disadvantages of In-Depth Interview Method**

1.  In-depth interview method is successful only when the interview is conducted by trained interviewers with sound knowledge in interviewing.
2.  After an in-depth interview comparison of respondents is very tough.
3.  Results generalizations are also very tough in case of in-depth interviews as small samples and random sampling methods are used.

**Narrative Data Collection Method**

Narrative Research method is an approach to review the existing literature relevant to the topic under study. It aims to explore and conceptualize human experience as it is represented in textual form. This method uses field texts, such as stories, autobiography, journals, field notes, letters, conversations, interviews, family stories, photos, and life experience as the units of analysis to research and understand the way people create meaning in their lives as narratives. As a mode inquiry of narrative research is used by researchers from a wide variety of disciplines, which include anthropology, communication studies, cultural studies, economics, education, history, sociology etc. Narrative research utilizes narrative reasoning by shaping data in a narrative form and doing an in-depth analysis of each narrative on its own.Narrative research method is sometimes contrasted with systematic reviews as; it is less focused than a systematic review and seeks to arrive at a critical interpretation of the literature that it covers.

**Phenomenology**

Phenomenology is another data collection method for qualitative research. Phenomenology is used to describe how a certain phenomenon is experienced by human beings. This type of research method helps theresearcher to understand how an individual experience a certain situation or a phenomenon. In this method the investigator always attempts to set aside biasness and preconceived assumptions about the phenomenon. This type of qualitative research method makes use of variety of methods such as interviews with the respondents, conversations regarding the phenomenon, observation of the situation, action research, focus meetings on the phenomenon etc. Phenomenology aims at maximizing the depth of the information collected.

**Ethnography**

Ethnography is the process of studying and describing the people and culture.  It is mainly the study through direct observation of users rather than in lab. The main aim of ethnography is to gain insights into how users interact with things in their natural

environment. It provides an inside picture of a community under study. In this method a researcher may go and live in that specific community and study their culture and educational practices. Ethnography methods include direct observation, diary studies, video recordings, photography artifact analysis such as devices that a person uses throughout the day.

**Advantages of Ethnography Research**

1. Ethnography research identifies unexpected issues that might not have been counted in test.
2. Ethnography research provides the ability to see first-hand how users interact with technology in their natural environment.

**Disadvantages of Ethnography Research**

1. Ethnography research takes much longer to generate and analyze findings.
2. The cost of conducting Ethnography research is much higher than conducting a usability test.

**Case Study Research**

Case study research refers to an in-depth study of an individual or a small group of individuals. This method focuses on providing a detailed account of one or more cases. Case studies are commonly used in social science research and educational settings. In social sciences and life sciences a case-study is a research method involving an up-close, in-depth, and detailed examination of a subject of the case as well as its related contextual conditions. Case studies generally appear in formal research venues such as journals and professional conferences, rather than popular works. While doing case study research, the case being studied should be an individual, organization, event, or action existing in a specific time and place.For example, case studies may be used to study the performances of students studying the new curriculum of IT. Case studies may involve both qualitative and quantitative research methods.

**Grounded Theory**

Grounded theory is another qualitative research approach used to generate a theory from the data's collected by the researcher. Grounded theory is a systematic methodology used in the social

sciences for the construction of theories and analysis of data. Grounded theory was for the first time recognized by Glaser and Strauss. To them Grounded theory is not a descriptive study of a problem but it is a study of concept. A researcher using grounded theory in the study is likely to begin with a question or just with the collection of qualitative data. Grounded theory analysis involves coding, memoing, integrating, refining and writing up of theories.

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# Conducting Qualitative Research: Common Problems and Possible Solutions

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**Abstract**

Writing a research article is an easy task for some but the opposite for others. The majority of researchers in their early years of career, find it difficult to write a research paper of high quality. In the process of writing a qualitative research paper, one faces may obstacles at every step of the research and eliminating these obstacles carefully is important to maintain the quality of the study.This article is one of its kind, to discuss the most common obstacles in writing a qualitative research paperand the possible solutions to overcome them.This article is an effort to draw attention to the most important things to remember while writing a research paper with a special emphasis on writing a qualitative research paper

**Introduction**

Forming a research question and the gap in the research area which is intended to be addressed in the paper forms the first steps to decide which method of study is suitable for the research question needed to be addressed. Qualitative research is chosen when the researcher wants to provide anindepth understandingof why? What? And how/ a certain phenomenon is happing, which mostly involves human subjects.Qualitative research particularly fits

into areas like social sciences, humanities, psychology and medical sciences apart from various other disciplines.In the processes of conducting qualitative research a huge amount of detailed data is collected following different methods, most of which are semi structured using openended questions where the answers are mostly descriptive and probability of variations in the answers obtained is high. The thus obtained data is carefully analyzed and interpreted to come to a conclusion.

There are innumerable methods adopted in conducting qualitative research, few preferred over the others in the respective field of study. Some of the most commonly used methods of data collection are observation, in-depth interview, focus groups, ethnographic research, content analysis, case study research.

**Interview Method**

Interview method is the most commonly chosen method while conducting qualitative research. It is a process in which a detailed and in depth interview is carried out with each respondent. This method opens more avenues for solving the research question.

Most common obstacle in this method and how to overcome it: the data collected in this method is huge and needs to be properly arranged. For ex: the interviewer must ask questions in a sequence and the same set of questions must be followed with every respondent to come to a logical understanding of the data the later stage of analysis and interpretation of the collected data.

**Ethnographic Research**

This method is used when the researcher aims to understand the culture of a particular group or environment, or to broadly say when the aim is to understand the natural phenomenon in any setting through first hand observation.

Most common obstacle in this method and how to overcome it: in this method the researcher should stay in the natural setting to be understood, for a stipulated time period, to come to an understanding. This might turn into mighty task in few situations where the researcher would like to study a remote population, or extreme climatic conditions etc. To overcome this hurdle the

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researcher may choose the topic carefully rather than ambitiously. Ex; a person who lives in hot climatic conditions trying to study the ethnography in the Himalayan areas maybe termed as too ambitious as it may get hard on his health and sometimes may become life threatening.

**Case Study Method**

This method is adopted to study the conditions involving a single entity or a single organization etc. This method has evolved and gained popularity in past few decades and helps in the growth of the chosen organization.

Most common obstacle in this method and how to overcome it: When a single entity is being studied for any particular reason, one has to understand that the organization or the group will have so many variants affecting a problem which may easily divert the topic of research, or provoke the researcher to include too many things into the research which may finally land up in huge amounts of irrelevant data. To overcome this, it is important to focus on the core problem keeping in mind the possible diversion from the aim of the research.

**Focus Group**

In this method, a limited number of respondents are chosen in the beginning of the research and conclusions are drawn on the data obtained from this small group. This is also one of the most commonly used method especially in management.

Most common obstacle in this method and how to overcome it: The major concern in this study is that the conclusions drawn on such a small group cannot be generalized. Though this type of study may benefit the organization or a business type, the results cannot be generalized. Overcoming this problem is only possible by conducting the same research in various demographic location, on a similar problem and comparing the results which might help in generalization of the results or indicating the possible variants. The impact of the research increases if such a step could be followed.

**Observation Method**

In this method, the researcher becomes the observer and studies the research question or area by closely observing the

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problem by himself and information is gathered using subjective methodologies. This method is used to observe and study qualitative differences.

Most common obstacle in this method and how to overcome it: In this method as the solutions are drawn basing on the subjective inferences there is always an influence of the observer's prejudices on the outcome of the research which might lead to bias. To overcome this, the other methods like interview method may also be taken up in addition to the observation method, inorder to check and substantiate the results which will make the study more authentic than otherwise.

**Data Analyses from The Existing Records**

In this method the already existing reliable documents are used as the source of data. This data is analyzed in a different perspective in the new research. This method is gaining popularity in the recent years as the data collected by different researchers is pooled and stored a one place for the benefit of all researchers.

Most common obstacle in this method and how to overcome it: In this method the reliability of the data collected makes a huge impact on the research. Also, differences may arise in the answers given to a question in a different line of understanding. This method is beneficial, if the research is conducted by a researcher using the data collected by himself or herself to address a research question previously.

**Data Collection and Analyses**

While collecting the data for qualitative research purposes a very fine detailing of the opinions of all the subjects are noted which leads to enormous data but as the fine details are observed, often very impactful conclusions are drawn which may change the whole perspective of reading and application of the already available data or conclusions in the field of study.  By having proper idea of the large amount of data that is going to be collected and constructing a proper methodology to collect, store, analyze and interpret the data, for the particular area of research at the beginning of the study will take the research on a smooth road in less time.

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## Data Storage

After the process of data collection, one may find themselves ina situation which makes them feel messed up.Qualitative data has data collected in different forms such as interviews, observation, open ended questions etc. which will be maintained in different forms. They may be in the form of transcribed texts, comments, audio recordings, pictures, videos, field notes etc. Each type of collected data must be broken into smaller pieces which appear similar in all methods of data collection to finally give a shape to the collected data.Later, divide and store the data in a meaningful way which can be easily accessed when required.Certain methods like coding, can be used to store the data in small compartments for easy analysis. Following proper and traceable methods of compartmentalizing and storing the data is an important primary step to be planned well during the initial stages of data collection itself, to save time and energy in the process of data analysis.

## Data Analysis and Interpretation

Once the data collection step is completed, the next step of data analysis comes up. Analyzing such a variety of data is a herculean task to the researcher. To overcome this, a process called text analysis, which decodes the words, actions, images etc. can be used to draw inferences and conclusions. This method of analyzing the qualitative data has gained immense popularity in recent years.

After analyzing the data, a careful interpretation of each detail is important to draw a conclusion, and this is very challenging because of the variety of responses and the possibility of multiple conclusions. Another important obstacle while writing a qualitative research paper is overcoming one's own biases while analyzing and interpreting the collected data.

## Qualitative Research Paper Writing

Once all these steps are completed, the task of lacing all these into a meaningful research paper comes up. The first step is to give the study a title which reflects the work done, hinting the conclusion arrived at the end of the study. Next, the research question which was taken up should be clear and why this was taken up and

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what the study isgoing to add to the already existing knowledge should be explained. The research methods adopted while collecting the data and it's suitability over the other methods should be mentioned. The process of analyzing and interpreting the data also should be clearly mentioned, as this gives a clear understanding to the reader how the particular conclusion has been arrived at. A logical explanation of the process and a careful construction of the conclusion will complete the paper.

Proof reading of the paper is a last but not the least step needed, to refine and improve the quality of the paper interms of structuring, construction and language used. The last step is to find a suitable journal to publish the study and finally publish.

**Conclusion**

Qualitative research methodology involves collection, storage, analysis and interpretation of huge amount of detailed data. This poses many obstacles at every stage of research which can be overcome by following simple steps from the beginning to the end of the study. Following one or mixed methods in data collection, using methods such as coding to compartmentalize and store the data, careful analysis and unbiased interpretation of the collected data will lead to an excellent study. Drafting a quality research paper from the study helps in new understandings in the respective field of research, and opens up new scope for future studies.

# Ethics in Social Research

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### Meaning of Social Research

It is the nature of human beings to seek the answers to the various questions that come to their mind and to strive for the solutions to the numerous problems of the society. Social research simply means a search for the facts. The word 'research' is made up of two words 're' and 'search'. 'Re' means 'again' and 'search' means 'to find'. Thus, research means 'to find again' what has already been known.

Social Research is initiated to undertake investigation in order to discover new facts or additional information about the society. Research is investigation with a purpose in an organized and systematic manner. In social sciences, it is understood as applying scientific methods and procedures in order to drive out knowledge about the society and to find out the answers to the various questions. The scientific explanations related to various aspects of the society help us to clarify and verify the existing knowledge. This further enhances our ability to solve various problems of the society and all this is possible with the help of social research.

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In order to understand the meaning of social research, different definitions given by different thinkers should be taken into consideration. Few of those have been mentioned below.

According to P.V. Young, "Social Research is a systematic method of exploring, analyzing and conceptualizing social life in order to extend, correct, or verify knowledge, whether that knowledge aids in the construction of theory or in the practice of an art."

According to Goode and Hatt, "Social research is a systematic method of discovering new facts and verifying old ones with their sequence interrelationship and caused explanation."

According to Webster's Dictionary, "it is defined as a careful and critical investigation in light of newly discovered facts."

Social research seeks to find explanation to unexplained social phenomena of the society or to clarify the doubtful explanations. It helps us to verify or disapprove, confirm or reject, modify or re-assert the existing theories and to establish new ones. Thus, it has a very important role to play in correcting the misconceived facts of social life.

**Relevance of Social Research**

Social research is important because of various reasons:

1. It providers practical clues for better understanding of various social phenomenon.
2. It helps us to understand different measures which lead to social development and progress.
3. It helps in initiating social changes for the betterment of the society.
4. It helps us to have an insight regarding the nature of different social problems.
5. It suggests the policy makers about the magnitude, nature and facts regarding various social problems.
6. It suggests measures so that the appropriate policies, plans and programs are undertaken for the betterment of society.

Objectives of social research can be categorized under two heads—Academic and Utilitarian.

Academic objectives of social research are as following:

1.    To find new propositions
2.    To discover new facts
3.    To propose and intimate knowledge for academicians

Utilitarian objectives of social research are as following:

1.    To find various causes for problems
2.    To provide principles of problem situation
3.    To give remedies for a social problem

The social research conducted in a systematic and scientific manner results into understanding the functioning of the society. It further enhances the knowledge about individual behavior and social action. Through social research, a social scientist is able to evaluate social problems, their effects on society and to find out possible situations. Thus, resulting into formulation of theories related to society.

The social research is verifiable and accurate only when certain essential conditions are taken care of by the social scientist. There are many dimensions on which the accuracy of the research depends. One of the dimensions is the adoption of ethical approach by the researcher.

**Meaning of Ethics**

Whenever we try to do any creative work, be it social research or in any other field, inclusion of ethics enhances its validity and efficiency. Ethics is a branch of philosophy that deals with morality. Ethics are understood as moral principles that govern a person's behavior or the conducting of an activity. It is concerned with distinguishing good and evil in the world, between right and wrong human actions, and between virtuous and non virtuous characteristics of people. Ethics promoted integrity of the profession.

Self regulatory guidelines which are essential for making decisions in social research are known as ethics. Applying ethics is necessary in every step of the research process as there is extensive decision making involved. The social scientist or the researcher has to make these guidelines himself so that the procedure adopted during the process of research is based on moral principles. Ethical practices are expected conduct from every social scientist as it includes actions which are fair, clean and beneficial for the society. Ethics values show commitment to positive code of conduct and avoid any sort of moral prohibitions or disciplinary rules violations.

Various factors which explain the relevance of confirming to Ethics in our life are as under:

**Ethics is one of the Basic Human Needs**

The survival of human beings in the society depends upon fulfillment of certain basic needs. Honesty, integrity, fair conduct and ethical behavior are such basic needs of human society. Each individual in the society strive for the fulfillment of these needs while living as a member of the society. Unethical or deceitful behavior of individuals promotes disorganization, conflict and chaos in the society.

**Ethics Results into Solidarity**

Ethics contribute in uniting people. There is much diversity in the society and the solidarity amongst them is promoted through ethical behavior. The right kind of behavior and activities result into oneness and acceptability. Mutual trust is developed only when the practices are ethical in nature resulting into unity and solidarity.

**Safeguarding the Society**

The continuity and survival of the society is possible only when the members of the society confirm to the rules and regulations of the society. Thus, ethical behavior, which is understood as moral principles that govern a person's behavior or the conducting of an activity, is important for the smooth conduct of the society.

**Ethics Promote Credibility**

Any part of the society is considered to be credible only when it works on the principles of ethics. Ethical behavior promotes credibility and is thus valued in the society by everyone. People try to associate themselves with those who are considered credible and reliable.

**Ease of Decision Making**

Every day we make number of decisions related to our lives and activities. If these decisions are guided by ethics, then they are bound to produce positive results. These positive outcomes result into success and progress.

**Positive Outcomes**

Ethical practices always result into positive outcomes. Ethical behavior is profitable for the individual as well as society at large. When there is no conflict regarding what type of decisions should be made, the results are always beneficial for the individual as well as for the society.

Ethics tries to create a sense of right and wrong in the minds of people and often when the law fails, it is the ethics that may stop them from harming the society or environment.

It is not difficult to follow ethics while conducting a social research as it only involves applying rational principles and universal standards to social life. Objectivity is one of the essential conditions of doing social research and it means that the subjective feelings, personal attitudes and choices should not interfere with the research process. Thus objectivity in the research enhances ethical approach.

**Ethics in Social Research**

There are a number of ethical principles that should be taken into account when performing social research. At the core, these ethical principles stress the need to

1. Do good (known as beneficence) and

2. Do no harm (known as non-malfeasance).

The following is a summary of some ethical principles which are essential for social research in particular and in almost every human activity in general:

1. The researcher should be honest while preparing the research proposals, deciding about the methods of data collection, procedure or the design of research and finally preparation of report along with its publication. Honest attitude throughout the research process result into reliable scientific social research.

2. Social research should be open to criticism. Constructive criticism enhances productivity and results into more careful and accurate analysis. It results into more carefulness and avoidance of mistakes, errors or negligence of any sort. Ideas, research tools and resources, data and results should be shared with other researchers for improvement and suggestions.

3. Every person has certain biases and prejudices or likes and dislikes related to certain aspects of social phenomenon. Same applies for a social researcher also but he/she should try to avoid these biases and conduct the research procedure in an objective manner. Objectivity in social research is an essential condition. Social researcher should strive for objectivity in all the steps of research process i.e. from preparation of research proposal to report writing.

4. Every activity when done with integrity produces positive results. Similar is the case with social research. Social scientists/ researchers should try to keep their agreements/ promises with sincerity.

5. In many areas of social research, confidentiality is required. The researcher should try to maintain it in various levels of the research process and if the information about the respondents is required to be disclosed then proper permission should be taken

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from the respondents. For example, in case of personal details, trade, military secrets, patient records, etc.

6. Patents, copyrights, and other forms of intellectual property rights should be honored and respected. The research should be original and if any data, method, results or material is borrowed from other source then the acknowledgement or credit should be appropriately given to that particular work. Researcher should try to produce something new and original related to the field and should avoid plagiarism.

7. When the research process is complete, the researcher is in a position to publish the results. The publication of the social research should be in a responsible manner, taking into consideration all the ethical principles related to publication so that it further enhances the research process.

8. The research process should always try to strive for betterment in the society. It should promote and advocate the solutions for the development of human society. Thus, social research has a social responsibility to perform.

In practice, these ethical principles mean that a researcher, need to:

1. Minimize the risk of harm to participants;
2. Obtain informed consent from potential research participants;
3. Protect their anonymity and confidentiality;
4. Avoid using deceptive practices; and
5. Give participants the right to withdraw from the research.

Let's analyze these principles in detail:

**Minimizing the Risk of Harm**

Social research deals with human beings, their social environment and the social interactions that take place amongst them. Thus, those who do the social research are themselves the members of the society. There is a direct or indirect link between the researcher

and those who are related to the research process. Those from whom the information or data is gathered for analysis are known as participants.

The main objective of the ethical research process is to minimize the risk of harm to the participants. There are numerous types of harms that can be subjected to the participants in the research process. This may vary from physical harm to participants to psychological distress and discomfort, from social disadvantage to harm on participant's finances, privacy or anonymity.

So the researcher should try to avoid any sort of such harm to the participants. Moreover, if there is some sort of exceptions whereby, some such harm is inflicted upon the participants, then proper justification should be given for the same.

This ethical practice whereby the researcher tries to minimize the risk of harm to the participant requires additional planning, informed consent and detailed debriefing.

**Obtaining Informed Consent**

In order to minimize the risk of harm to the participants, the researcher follows the idea of informed consent. It is one of the foundations of research ethics. Through informed consent, the researcher informs the participants that they are taking part in the social research. They are also told about the type of information that was required from them for the purpose of the research.

The participant should be informed about the procedure of the research, its aims and objectives, and the possible outcomes or results of that said research. They should also be informed about what kind of information is required from them along with the discomforts, inconveniences and risks that they may face during the course of research process. The researcher should try to tell every little aspect that participant may be interested in. After providing them the information about the research and its procedure, the researcher should ask about their consent to be part of that research process.

Thus, the most important principle of informed consent is the willingness of the participant to participate without coercion or force. Many a times, consent from the participant cannot be obtained. In such cases where it is difficult for the researcher to obtain consent or the consent is not necessarily required, the researcher should clearly explain the reason for it. For example, in certain organizational researches informed consent is not necessary. The researcher should give its justification for not taking this aspect of informed consent in the research process.

The information gathered from the participants /respondents should never be misused.

**Protecting Anonymity and Confidentiality**

It is essential to practice the ethical principle of protecting the anonymity and confidentiality of the participant/respondents. The participants, who agree to give their consent of being a volunteer in the research process and to provide relevant information related to the research topic, should be provided confidentiality. The data collected should not be misused and the method of data collection should be sensitive enough to avoid any sort of harm to the participant/respondent. The condition of anonymity should be respected an all the steps of research process i.e. from collecting and storing the data to its analysis and publication. Data/information should not be used for the purpose other than the research. And for the information that is disclosed at the various stages of research process, proper permission from the concerned participants should be sought beforehand.

One very effective way of removing anonymity is to remove the identifiers such as vernacular terms, names, geographical clues, etc. Another way is to provide proxies when writing up the research findings.

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## Avoiding Deceptive Practices

Sometimes in covert research the identity of the observer and the purpose of the researcher are not disclosed to the participant. Thus, in such a situation deception is justified and is considered a necessary component of covert research.

When the researcher needs to observe a large group, it is not feasible to tell everyone involved in the research about the purpose of the research. For example, study of customers in a shopping mall or voters on the day of voting. Here it is not feasible to tell every customer in a shopping mall about the purpose of the research or every person who visit the polling booth on the day of voting about the details of the research.

Moreover, many a times when the researcher tells the respondents about the purpose of the study, there are chances that they alter their responses which in turn will influence the findings. For example, study of the work culture in a particular organization. When the workers are aware about the purpose of the research, they may alter their responses to show their dedication towards their work.

## Providing Right to Withdraw

Social research is a long term process and sometimes during the course of research, the respondent feels the need to withdraw from the research. There can be numerous reasons for their withdrawal ranging from lack of interest to fear of some harm inflicted from the information shared. The wish of the respondent should always be respected and he/she should have the right to withdraw from the research at any stage of the research process. There should be no pressure or coercion of any form, from anyone involved in the research process, to the respondents. The respondents should be informed beforehand about their right to withdraw from the research whenever they wish.

## Conclusion

In social science, ethical considerations are of particular importance because the researcher studies people and their problem. Researcher in social sciences has a responsibility to society and he/she cannot escape that responsibility. Researcher has not only to explain and clear away the misinformation in people's social thinking through scientific research but has also to provide 'right' information about many aspects of human behavior. The professional ethics in social science demands the following standards in research:

1. Accuracy in collecting and processing data,
2. Using relevant methods and techniques in research,
3. Interpreting data according to appropriate methodological and avoiding falsification of data, and
4. Reporting findings accurately and honestly.

Social research has to be value-free, objective and unbiased. For this, it should include ethical practices which are self-regulatory guidelines for making the right decisions. Ethical norms promote the objectives of research, such as knowledge and truth. From the foremost step of deciding about the topic of research to writing the report, the researcher should try to imbibe ethical norms. It is essential for the validity of the research as it contributes extensively towards providing solutions to various problems and hence in the progress and development of the human society.

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# Design of Qualitative Research in Chemistry Education Research

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**Abstract**

During the last few decades, the use of qualitative research has been increased in many institutions and for examining the research phenomenon of the studied environment, the qualitative research play important role in which researcher has been actively involved for examining the research results. For exploring the mechanisms of teaching and learning chemistry, research methodologies have its own importance. This research paper studied the research design and also provides an overview of the procedures used in qualitative research and also affords inspirations to the new researchers so they will develop their qualitative articles. The qualitative research methodology in chemistry plays an important role

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for successful achievement of the experiments performed in the laboratory. The qualitative research in the field of chemistry provides traditional methodologies. The purpose of this to understand the students' behavior, the way they cope with new concept depending on their previous knowledge, and also explain the merits and demerits of the study. This study analyzes the qualitative research methodology for the new researchers and provides a basic understanding of qualitative research and prepare with appropriateand satisfactory information to appreciate how qualitative research is undertaken in the research departments. However, this study highlights different types of qualitative research and describes in brief the characteristics, strengths and weaknesses, advantages, and importance of qualitative research.

## Introduction

In chemistry, qualitative analysis is the determination of the chemical composition of a sample. In this paper we presented an introduction to using qualitative research methods in laboratory. Qualitative work requires reflection on the part of researchers, both before and during the research process, as a way of providing context and understanding for readers. Authors who publish papers in respected science education research journals always try to make some efforts to bridge the gap between science education research results and conclusions and their applications in the educational process at all levels of education. This paper presents some methodological aspects that are important for the field of science education research. The selection of the appropriate methodological approach is always an important step in the science education planning process. The science education researcher should, before choosing the method, precisely address or identify the research problem. According to the identified research problem the researcher should ask research questions about it. The hypothesis of this paper was that students who could solve numerical problems also

understood molecular concepts. Students were asked to solve traditional, algorithmic gas law questions, as well as conceptual problems about the behavior of gases that had no mathematical content. Students were also asked to answer another pair of algorithmic and conceptual questions about limiting reagents. The results indicated that students had significantly greater success solving the traditional, algorithmic problems than they did in correctly answering the conceptual, non-mathematical questions for both the gas law and the stoichiometry problems. This paper outlines important methodological considerations for research questions in chemistry education well suited to qualitative methodologies (Iztok 2010).

## Review of Literature

This research not only concerning its ontological, epistemological and methodological aspect but it research combines with different kinds of researches. Qualitative research is an exploratory approach emphasizing words; it is a matter of the inductive, constructivist and interpretative exploratory approach (Bryman, 2004).Bogdan and Biklen (2003) use the term "qualitative research" because the superordinate thought, change of integrity completely different analysis approaches with bound common characteristics moreover.

Burns and Grove [2009] have provided their opinions that qualitative analysis may be a systematic and subjective approach to spotlight and justify way of life experiences, and to further give them proper meaning.

Alberto Crescentini and GiudittaMainardi have given some tips, and suggestions for the preparation of a good qualitative research paper (Crescentini & Mainardi, 2009). The qualitative research involving the basic empirical material, collected in the research process, which is verbally designated or narrated. Moreover, the collected material is worked on and analyzed in words without

numerical operations (Mesec, 1998, Charmaz, 2006; Bryman, 2004; Flick, 1998).

The qualitative researchers predominantly focus on the examination of characteristic qualities or properties of a certain activity, group, situation, or materials, respectively (Fraenkel and Wallen (2006).Qualitative analysis doesn't embrace applied math analysis and empirical calculation.The purpose of qualitative research is to describe and interpret issues or phenomena systematically from the point of view of the individual or population being studied, and to generate new concepts and theories.

**Qualitative Research Methods and Its Types**

According to the literature review qualitative research is difficult to define clearly and has no theory or paradigm that is distinctively its own. Nor will qualitative analysis have a definite set of ways or practices that measure entirely its own. This research is conducted within a poststructuralist paradigm. The theoretical frames consist of all the previous researches, findings or theories; existing on the topics to be studied that are mobilized by the researcher. The qualitative analysis knowledge measure descriptive, in the form of interview notes, observation records, and documents; and data are analyzed inductively. The study emphasizes on a holistic approach, and final outcomes. Many authors alleged that qualitative research is less structured in description because it formulates and builds new theories.Qualitative analysis can even be delineate as an efficient model that happens in a very natural setting that permits the man of science to develop grade of detail from being extremelyinvolved in the actual experiences (Creswell, 2003). There are different types of qualitative research: Narrative Research, Phenomenological Research, Grounded Theory, Action Research, Ethnographical Research and Historical Research

**Features and Importance of Qualitative Research**

As we know that qualitative research does not include statistical or empirical calculations. The man of science is that the primary instrument for knowledge assortment and analysis. Different types of qualitative research focuses on discovery and understanding which requires flexibility in the research design and data are used to develop concepts and theories that help us to understand research environment. This provides clear information and detail analysis of the respondents' opinions and explains the phenomena as they occur naturally. In this research a researcher is an integral part of the research process. This is flexible to follow unexpected ideas during research and explore processes effectively and raises the sensitivity to contextual factors. It is more reliable and objective. This research often reduces and restructures a complex problem to a limited number of variables. This also provides relationships between variables and can establish cause and effect in highly controlled circumstances. This research also tests theories or hypotheses.

**Data Collection**

**Sample**

Generally, chemist is familiar with random sample strategy which means sample chosen randomly is an unbiased representation of the total population. The basis of random sampling is that each population unit has equal probability of being selected. Random methods are good if the population does not have any obvious trends or patterns. The fundamental principle of random samples is to avoid researcher bias. Additionally, qualitative research designs reject the postulate that there exists a distance of objectivity between the researcher and the research subjects.

## Interviews

The qualitative analysis interview seeks to explain the meanings of central themes within the life world of the themes. The main task in interviewing is to know which means of what the interviewees say. There are three measure basic kinds of analysis interviews: structured, semi-structured and unstructured. The purpose of the analysis interview is to explore the views, experiences, beliefs and/or motivations of people on specific matters. The interviewers' questions related to the Behaviors of a person, opinions/values, feelings, knowledge, sensory and background/demographics.

## Observations

Observation is the main part of the research. Quantitative research designing regularly try to remove the confounding effect of context from the variables of interest. The results collected through questionnaires during the studied is interpreted and examined thoroughly because students in the same context have interpreted that experience differently. The interviews may not be sufficient to understand the students' experiences. Observations provide a method for collecting data about the study's context in order to interpret the data gathered through interviews. Observations are crucial to understanding and documenting the significant influence of the setting in which students interpret their thoughts, feelings, and actions to construct meaning.

## Document Analysis

The most important part of the research is the analysis of the collecting data. All the course syllabi, copies of lab experiments, copies of student evaluation forms, and copies of research proposals are the part of documents analysis in a qualitative research design.

**Qualitative Research in a Chemistry Department**

Literature survey revealed more than 310 research papers on the topic of qualitative research. Generally qualitative research is not the principal research design in chemistry departments or even in chemistry education research. Chemists who conduct qualitative research should distinguish target spectators and result. The study involves questionnaires and interview method for collecting data in the department of chemistry. All the questionnaires are related to the research problems and experimental designing.

**Conclusion**

The main aim of quantitative research is to obtain reliable, exact, precise, measurable, objective and valid results. The use of the standardized research instruments, distinction between the research subject and the research object, use of statistical methods, forming hypotheses and their reliable verification are some of the major methodological principles of the empirical-analytical methodology. In qualitative research, the collected data are more in a verbal and pictorial form than in a numerical one. There is also a tendency to incorporate an integral and in-depth comprehension of phenomena in as natural a setting as possible, as well as in the context of concrete circumstances.In qualitative research, it is incumbent upon the researcher to elicit not only the meanings that individuals hold within a given context, but also the experiences and feelings they ascribe to such constructions of meaning. Lincoln and Guba offer fourteen guidelines, which they refer to as the "characteristics of operational naturalistic inquiry": natural setting, human instrument, utilization of tacit knowledge, qualitative methods, purposeful sampling, inductive data analysis, grounded theory, emergent design, negotiated outcomes, case study reporting mode, idiographic interpretation, tentative application, focus-determined boundaries, and special criteria for trustworthiness. Each of these salient features must be carefully considered and articulated to fit with the research question of

interest in a qualitative research design. In conclusion it can be recommended that the researcher, when selecting the research approach, should always set out from the concrete research problem and research questions or hypothesis. On the basis of the research problem, the researcher should decide which research approach is going to lead him/her easily, swiftly and most efficiently to the most reliable findings that adequately answer the research questions.

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# Ethics in Social Science Research

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**Abstract**

In the present day, research in social science is growing in leaps and bounds. The focus on social issues and interventions for the same have contributed to increasing amounts of studies being done in this field. However, with the rising number of research studies it also becomes essential that these research initiatives be governed by a standard code of ethical conduct that lays out guidelines pertaining to research conduction and reporting. In this era of cut throat competition and high needs for achievement, many scholars in this field tend to ignore moral principles and adopt unfair practices in research for personal or professional gains. Also, research is this field is extremely important to alleviate the society of it's present problems and lead it towards the path of development. That is exactly where ethics become important. To get optimum benefits from a study it is crucial to ensure that it took into consideration all ethical aspects during its conduction as well as in it's reporting of results. Like almost all other fields, research in social science and specifically psychological research should be based on the basic principles of integrity, justice, beneficence and nonmaleficence; and fidelity and

responsibility.

**Keywords:** Research, Social Science, Ethics, Integrity, Justice, Beneficence, Fidelity.

**Introduction**

In simplest of words, ethics in research can be understood as moral considerations one needs to adhere to, to make research practices fair and to get maximum benefits from the research outcomes. Like in any other walk of life, ethics in research are also very crucial to ensure that there is no unfair practices or harm to any anyone associated with the research in any way. Though all the morals like honesty and goodwill among others apply to research, since research is a formal and structured activity, it becomes essential that the ethics are laid down in the form of well stated, written guidelines that researchers can refer to when in conflict.

Psychologists are continuously committed to increase scientific and professional knowledge base of behaviour and the mankind's understanding of themselves as well as others and to apply this knowledge to better the state of individuals and society. In order to do this, psychologists need to respect and seek to protect human and other civil rights and also chastise the importance of freedom of expression and inquiry in research and publication as well as teaching. They aim to facilitate the public in forming educated choices and judgements about human behaviour. In the process of that, a psychologist performs various roles, such as that of a researcher, therapist, supervisor, counsellor, educator, social interventionist, and expert witness. The ethical guidelines provide them with a set of principles and moral and ethical standards around which they build on their plethora of professional and scientific work.

In India, unfortunately, there is no solid governing body in the field of psychological research that lays out distinct guidelines or ethical codes of conduct pertaining to practice and researchin this field. This is why, it is prerogative that we rely on some structured,

detailed and well acclaimed ethical guidelines. Most of the researchers in the field of Psychology in India accept the American Psychological Association's (APA's) Ethical Principles of Psychologists and Code of Conduct as the norm (American Psychological Association, 1983). These guidelines act as a base for the psychologists delving into research and standing up to them is deemed highly important. These ethical guidelines are, however, not absolute, rather very dynamic and accommodative to match up with the tryst of time.

All the ethical guidelines are based on aspirational general principles (Smith, 2003). The intent of the is to be the guiding light for psychologists to help them to and inspire them to achieve the highest ethical ideals in the profession. They are as follows:

**Beneficence and Nonmaleficence**

Psychologists must aim to minimise harm and maximise benefits for all those they work with. They should strive to benefit the public as much as possible with their scientific knowledge and service assistance. They should not cause any harm to any of their clients, students, colleagues or research participants. They must do a cost benefit analysis before taking any research or practice related judgement and should ensure that the benefits outweigh the risks.

**Fidelity and Responsibility**

Psychologists are committed to their profession. They should remain true to themselves. As they establish relationships of trust with people they work with, they ought to maintain that trust. They must be aware of their responsibilities towards the people they work with, the field of psychology and the the society at large. They conduct themselves appropriately and responsibly. Psychologists must seek to uphold professional standards of conduct.

**Integrity**

Psychologists strive to promote honesty and accuracy in the teaching, practice and research in the field of psychology. While

participating in any activity pertaining to the field, psychologists should not engage in cheating, stealing, forgery, fraudulent behaviour, or any other misrepresentation of facts.

**Justice**

Psychologists should ensure just and and fair treatment to all despite their backgrounds or social standing. Fairness and justice in all regards should be their top most priority. They must recognize that all people are equally entitled to fairness and justice; access to and benefit from the psychological services, procedures and research. Psychologists must not let their potential biases hamper their judgement.

**Respect for People's Rights and Dignity**

Psychologists should respect worth of all people, and their right to privacy and confidentiality. They should not hurt the dignity of others. Psychologists should strive to safeguard the rights and ensure welfare of individuals or communities under their care or those who are vulnerable or unable to make autonomous decisions. Psychologists do not discriminate any person on the basis of their ethnicity, sex, religion, culture, sexual orientation, disability, language, or socioeconomic status.

**Ethical Considerations in Psychological Research and Publication**

In comparison to most other subjects of social scientific research, research in psychology is very sensitive as it exploits data from human participants, which at times comprises of their inner most feelings and attitudes. Therefore, it becomes highly important that the data obtained is in accordance with all ethical aspects and privacy and confidentiality is maintained.

Most of the institutions in India, follow the APA (American Psychological Association) ethical guidelines in conducting any psychological research. Some of the important aspects that we need to look into while conducting a research in this field are as follows

(Fisher, 2009),

**Institutional Approval**

As and when institutional approval is a requirement, psychologists must give exact and relevant details abouttheir research proposals. It is necessary to obtainapproval prior to actually conducting the research. Also, once approved, they should stick to the research protocol which got approved.

**Informed Consent to Research**

Talking of ethics in research, the informed consent is the most important ethical aspect that one needs to look into. An informed consent in research is not just a consent regarding whether a participant would want to be a part of the research process or not; but, also divulges all details the participant needs to know about the entire process.

Ideally, an informed consent form must contain the following information:

1. The aims of the research study, details of the research procedure and the expected duration of their involvement;
2. Their voluntary participation and right to withdraw their participation at any point of the study;
3. Consequences of not participating or dropping out of the study, if any;
4. Any risks involved in their participation;
5. Direct and indirect benefits from the study;
6. Details of confidentiality and circumstances in which confidentiality will be breached;
7. Incentives for being a participant; and
8. The contact person or authority in case of any questions about the research process or the rights of participants.

Rather than just handing out the informed consent forms to the participants, a researcher must an opportunity to the prospective participants to raise doubts and also it is also the researcher's

responsibility to clear them.

1.03 Informed Consent for audio recording and video recording or taking images in Research

It is necessary that social science researchers obtain the permission of participants to record their voices or video record them in the informed consent phase itself. This is extremely important that the informed consent comprising of this information is obtained unless (1) the research contains only naturalistic observations, solely in public places, (2)the recording is not misused in a personal manner or does not cause any harm to the participant, or, (3) there is deception included in the research design (However, in such a case also it is important to obtain consent to use the recorded material during the debriefing stage).

**When the Research Participants are Clients, Patients, Subordinates or Students**

1.  In case of studies where the participants are one's students, subordinates, clients or patients, the researcher should ensure that even if they decide to decline or opt out from the the study, they should not have to face any negative consequences.

2.  In cases where participating in a research is a part or requirement of a course or gives an opportunity to get extra credits, the participant should be provided with other alternatives as well.

**Informed Consent Dispensing**

Researchers may do away with informed consents only when:

1.  It is allowed by law, institutional or federal regulations.

2.  The study does not harm or threaten the participant's well being in any way and involves (a) research into normal educational practices, classroom management methods and or curricula which is conducted in an educational setup; (b) questionnaires are anonymous, design is that of naturalistic observation, or that

of archival research in which revealing responses do not put participants at risk and their safety and confidentiality is ensured; or (c) study is conducted in an organisational setting at involves studying factors related to organizational effectiveness which does not threaten the participant's employment, and confidentiality is maintained.

### Incentives for Participating in Research

Psychologists and researchers should ensure that they do not give any unreasonably lucrative incentive for research in cash and kind that compels the potential participant to participate in the process.

### Using Deception

1. Deception can only be used in studies if there is a solid justification for using it. Also, the study's benefits must outweigh the harm of using deception.It also important that deception can be used only when other alternative non deceptive techniques are not feasible.

2. Deception cannot be used in studies which involve potential harm, be it emotional or physical, to the prospective participants.

3. Even if the researcher uses deception, it is important that they reveal it to the participants before the conclusion of their participation and explain it to them why deception was used. After the revelation, they must give a choice to the participants to withdraw their data if they wish to do so.

### Debriefing

1. During this stage, psychologists should give the participants an opportunity to understand the nature of the study and know aboutthe results and conclusions obtained from the study. They must also take required steps to clear any misconceptions or doubts of the participants regarding the study or any research procedure.

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2.  The most important activity at this stage is to reveal to the participants about any deception used in the study and also to let them know why it was important to do so.

3.  If the psychologist comes to know that the research procedure has caused any kindof harm to a participant, they must take relevant steps to control and minimize the effects as well as causes of the harm.

**Using Animals in Research**

1.  If any study requires the use of animals, psychologists should acquire, use, and dispose the animals in accordance with the current law. They should take maximum care of them based on professional standards.

2.  In case of using animals, the comfort, health, treatment and safety of the animal must be ensured by having an expert supervise all the procedures involving the use of the animal.

3.  Psychologists should strive to make sure that if they are working with fellow team members or subordinates and they are using an animal for the research procedure, all of them are trained to do so and handling the animal with utmost patience and care.

4.  Psychologists should take significant steps to ensure that the animal is not facing any discomfort, infection, illness or pain.

5.  Psychologists should take relevant steps to see to it that a procedure which involves subjecting any animal to pain, privation or stress, is only used when no other alternative procedure is available to achieve the goals of the research and the outcomes from the studyhave significant benefits that outnumber the harm.

**Reporting of Research Results**

1.  Any researcher in the field of Psychology should not do forge data.

2.  In case aresearcher finds errors in their data after publication, they should take required steps to correct it.

## Plagiarism

Any researcher should not try to present or publish others work as their own and they should if they do use extracts from somebody else's work, they should give credit to the authors by making in text citations as well as citing the work in the reference section.

## Publication Credit

1. One should take credit, especially authorship credit, only pertaining to work they have done, or givensubstantial contribution to.

2. Minor contributions to the research process or to the publication aspect should not be left unacknowledged. Such contributions should reflect in introductory statements or footnotes.

3. In case of multiple authors, the publication credit as the principal author should depend on the amountof contribution to the paper and not on seniority basis or relative status.

## Publication of Previously Published Data

Any researcher should not re-publish previously published data. However, if under certain circumstances, they do so, they should give proper acknowledgement and cite reasons for the same.

## Research Data Sharing for Verification

1. Once research results are published, the researcher should be agreeing to share their data, for reanalysis and subsequent verification of claimed results, with their fellow psychologists. However, they should take all measure to ensure the safety and confidentiality of all the research participants. The receiving psychology should be ready to bear all the costs associated with sharing of the data.

2. The researchers who request data from other psychologists must give in writing the purposes for which they intend to use the data. Then they can use the data only for purposes which they had declared.

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**Review**

If a researcher sends their material for review, be it their research proposal, presentation, research grant or publication, the reviewer must not misuse the work. They ought to respect the proprietary right of such work and also maintain confidentiality.

**Conclusion**

In conclusion, it can be said that ethics in social science research is of utmost importance for a number of reasons. Firstly, because social scientific research has sensitive topics. Secondly, it involves human subjects. And lastly, research in this field is extremely important for the growth and development of individuals and also society at large. Therefore, we should all take a firm stance that research and ethics should go hand in hand. Considering all ethical aspects while conducting or even planning a research should become something that is imbibed in our value system and not seem like a compulsion or obligation.

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# शोध विधि

## मोनिका श्रीवास्तव

व्याख्याता
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### सारांश

आधुनिक युग में विज्ञान की प्रगति के साथ हमारे जीवन में अनुसंधान का विशेष महत्व है क्योंकि अनुसंधान का प्रयोग अब ज्ञान की प्रत्येक शाखा के गहन अध्ययन के लिए होने लगा है। शोध शब्द से एक प्रकार की शुद्धि या संशोधन की बोध होता है। अनुसंधान द्वारा उन मौलिक प्रश्नों के उत्तर देने का प्रयास किया जाता है जिनका उत्तर अभी तक उपलब्ध नहीं हो सका है।

**मुख्य शब्द :** अनुसंधान प्रक्रिया, शोध विधियां।

### प्रस्तावना

किसी भी ज्ञान की शाखा में नवीन तथ्यों की खोज के लिए सावधानीपूर्वक किए गए अन्वेषण को शोध की संज्ञा दी जाती है। जिस प्रकार एक व्यापारी को यह जानने की आवश्यकता होती है कि उसके अनुमान के विपरीत मूल्य क्यों गिर रहे हैं, एक पिता को यह जानने की आवश्यकता होती है कि उसका योग्य पुत्र परीक्षा में कम अंक क्यों प्राप्त करता है, उसी प्रकार किसी भी शोध को उपयुक्त विधि से करने की आवश्यकता होती है। अनुसंधान प्रक्रिया में शोध विधियां महत्वपूर्ण होती है। अनुसंधान समस्या के निराकरण के लिए अपनाए जाने वाले विभिन्न चरणों का वह विधियाँ वर्णन देती हैं।

किसी अनुसंधान समस्या के अध्ययन में उपयुक्त विधि का चयन और उसमें विशिष्ट अभिकल्प समस्या से जुड़े आंकडों की प्रकृति पर निर्भर करता है। चयनित विधि वैज्ञानिक सिद्धांतों के अनुरूप और विश्वसनीय व्यापीकरण मान्यताएं प्रदान करने में सक्षम होनी चाहिए। शोधकर्त्ता को

सभी शोध विधियों का विशेषकर उनकी शक्ति, सीमाओं, अनुप्रयोगिता व उपयुक्तता के संबंध में संपूर्ण ज्ञान होना चाहिए। इससे उसे शोध प्रक्रिया में उठाए जाने वाले चरणों के नियोजन में सहायता मिलेगी और समस्या के समाधान के लिए वास्तविक कार्य आरंभ करने से पहले वह विधि का वर्णन कर सकेगा।

प्रयोग की जा रही विशिष्ट विधि का विस्तृत वर्णन यह ज्ञात करने का अच्छा तरीका है कि क्या चयनित विधि ठीक प्रकार प्रयोग की गई है और प्रभावी सिद्ध होगी। यदि शोधार्थी चयनित विधि का विवरण नहीं दे सकता तो संतोषजनक परिणाम प्राप्त होने की संभावना कम रहती है। पूर्व नियोजित व सुवर्णित विधि शोधकर्त्ता को अध्ययन में आने वाली समस्या के समाधान के लिए वैज्ञानिक व सुसंगत योजना प्रदान करती है।

नवीन ज्ञान अर्जन के लिए प्रणालीबद्ध प्रयास ही शोध है अर्थात् अनुसंधान वह बौद्धिक प्रक्रिया है जो नवीन ज्ञान उत्पन्न करती है या पूर्वगामी त्रुटियों या अशुद्ध धारणाओं का शोधन करती है और व्यवस्थित ढंग से वर्तमान ज्ञानकोश में वृद्धि करती है। किसी समस्या के उचित समाधान के लिए क्रमबद्ध तथा शुद्ध चिंतन एवं विशिष्ट उपकरणों के प्रयोग की विधि ही शोध विधि है।

जब शोधकर्त्ता उपयुक्त डिजाइन का चयन कर लेता है तो वह एक वैज्ञानिक विधि अपनाता है जिसमें उन सभी चरणों की व्याख्या होती है जिनसे होकर शोध की समस्या का समाधान करने का प्रयास किया जाता है। किसी भी ज्ञान की शाखा में नवीन तथ्यों की खोज के लिए सावधानीपूर्वक किए गए अन्वेषण या जाँच–पड़ताल को शोध की संज्ञा दी जाती है।

शोध विधि में तीन चरण होते हैं :–

1. प्रयोज्य
2. उपकरण व अन्य वस्तुएं
3. क्रियाविधि

प्रयोज्य

प्रयोज्य वाले अनुच्छेद में शोधकर्त्ता इस बात का उल्लेख करता है कि शोध में कितने प्रयोज्य थे, उनका चयन यादृच्छिक रूप से किया गया है या स्वेच्छाचारी ढंग से। इसमें शोधकर्त्ता प्रयोज्य, जो उनके अध्ययन में

भाग ले रहे हैं, की उम्र, बुद्धिलब्धि तथा अन्य संगत सूचनाओं की सूची तैयार करता है।

## उपकरण व अन्य वस्तुएं

उपकरण के अन्तर्गत उन सभी उपकरणों या प्रश्नावली का वर्णन होता है, जिनका उपयोग शोध में किया जाता है। कभी–कभी जब किसी जटिल मशीनरी या उपकरण का उपयोग भी होता है तो उसका चित्र भी बना दिया जाता है। इस अनुच्छेद में शोधकर्त्ता उन उपकरणों जैसे स्टॉप वॉच, स्मृति पटल, स्पर्शानुभावक तथा अन्य वस्तुएं जैसे कोई मनोवैज्ञानिक परीक्षण, पर्दा, स्केल आदि प्रदर्शित करता है।

## क्रियाविधि

शोधविधि का सबसे प्रमुख चरण क्रियाविधि होती है। इस भाग में शोधकर्त्ता उन सभी प्रक्रियाओं का वर्णन करता है जिनसे होकर शोध किए गए हैं। जैसे :– शोधकर्त्ता यह प्रदर्शित करता है कि किस प्रकार से प्रयोज्यों को विभिन्न समूहों में बाँटा गया, किस समूह को कौन सा कार्य दिया गया, प्रयोज्यों को क्या निर्देश दिए गए आदि। क्रियाविधि अनुच्छेद में मूल रूप से तीन बातों पर बल दिया जाता है–

1.  शोध में किस प्रकार के डिजाइन का प्रयोग किया गया है।
2.  यदि मानव को प्रयोज्य के रूप में प्रयोग किया गया है तो उन्हें किस तरह निर्देश दिया गया है।
3.  प्रयोज्यों के व्यवहारों का किस प्रकार मापन किया गया है।

कभी–कभी शोध में एक जटिल डिजाइन का प्रयोग किया जाता है। अवलोकित सामग्री का संभावित वर्गीकरण, साधारणीकरण एवं सत्यापन करते हुए कर्म विषयक और व्यवस्थित पद्धति शोध है।

अधिकांश मनोवैज्ञानिक ने शोध विधियों को तीन भागों में विभाजित किया है–

1.  ऐतिहासिक विधि
2.  वर्णनात्मक विधि / विवरणात्मक विधि
3.  प्रयोगात्मक विधि

## ऐतिहासिक विधि

ऐतिहासिक अनुसंधान अतीत की घटनाओं, विकासों और अनुभवों की समालोचनात्मक जाँच है, जो सावधानीपूर्वक तथा वैधता के साथ प्रमाणों को महत्व देती हुई समुचित साक्ष्यों पर आधारित होती है। अन्य शोधकर्त्ताओं के समान ही आधुनिक शोधकर्त्ता भी प्रदत्त संकलित करता है, प्रदत्तों की वैधता हेतु उनकी जाँच करता है तथा प्रदत्तों की विवेचना करता है।ऐतिहासिक अनुसंधानों के साक्ष्य पुस्तकालयों, संग्रहालयों, प्राचीन ऐतिहासिक स्थलों, विशिष्ट व्यक्तियों तथा पुरातत्त्वीय उत्खनन कार्यों से प्राप्त होते हैं। *ऐतिहासिक अनुसंधानों का मुख्य उद्देश्य अतीत के वैज्ञानिक अध्ययन के आधार पर वर्तमान को समझना, वर्तमान की समस्याओं का समाधान निकालना तथा भविष्य के लिए पूर्वकथन करना है।* ऐतिहासिक शोध मूलतः 'क्या था' का वर्णन करता है।

## वर्णनात्मक शोध / विवरणात्मक विधि

वर्णनात्मक शोध वैसे शोध को कहा जाता है जिसमें वर्तमान हालातों को रिकार्ड किया जाता है, विश्लेषण किया जाता है तथा उसकी व्याख्या की जाती है। इसे अप्रयोगात्मक शोध / सहसंबंधात्मक शोध भी कहते हैं। वर्णनात्मक शोध का संबंध वर्तमान से होता है। वह वर्तमान के तत्त्वों, परिस्थितियों के संबंध में व्यक्तियों, वस्तुओं, घटनाओं आदि के विषय में प्रदत्त एकत्रित कर उनका विश्लेषण तथा विवेचन, वर्गीकरण तथा मापन आदि का कार्य करती है।   वर्णनात्मक शोध मूलतः 'क्या है' का वर्णन करता है।

वर्णनात्मक अनुसंधान अध्ययनों की अभिकल्पना, परिघटनाओं की विद्यमान स्थिति के संबंध में, संबंधित परिशुद्ध सूचना प्राप्त करने के लिए और जब भी संभव हो, खोजे हुए तथ्यों से वैध निष्कर्ष निकालने के लिए की जाती है। वर्णनात्मक अध्ययन केवल आंकड़ों का संग्रहण ही नहीं बल्कि आंकड़ों का मापन, वर्गीकरण, विश्लेषण, तुलना तथा व्याख्या भी है। *वर्णनात्मक शोध का मुख्य उद्देश्य वर्तमान परिस्थितियों तथा स्थितियों का अध्ययन करना व भविष्य के लिए नियोजन करना है।* वर्णनात्मक शोध के अन्तर्गत सर्वेक्षण अध्ययन, अन्तर्सम्बन्धों का अध्ययन तथा विकासात्मक अध्ययन आते हैं।

## प्रयोगात्मक विधि

प्रयोगात्मक शोध वह शैक्षिक शोध है जिसमें शोधकर्त्ता उन शैक्षिक घटकों को नियंत्रित करता है, जिनमें जाँच की अवधि में बच्चा या बच्चों का समूह प्रभावित किया जाता है तथा उसके परिणामस्वरूप प्राप्त निष्पत्ति का अवलोकन किया जाता है। प्रयोगात्मक शोध वैसे शोध को कहा जाता है जिसमें कुछ चरों को नियंत्रित किया जाता है, कुछ चरों को परिचालित किया जाता है एवं दूसरे चर पर उसके पड़ने वाले प्रभावों का अध्ययन किया जाता है। ऐसे शोध में मूलतः ' चरों को नियंत्रित करने एवं उनका परिचालन करने का क्या प्रभाव होगा " इसका अध्ययन किया जाता है। प्रयोगात्मक शोध के अन्तर्गत प्रयोगशाला प्रयोगात्मक शोध तथा क्षेत्र प्रयोगात्मक शोध आते हैं। प्रयोगात्मक शोध के चार आवश्यक अभिलक्षण होते हैं–

1. नियन्त्रण
2. हेर – फेर
3. प्रेक्षण
4. पुनरावृत्ति

किसी विशिष्ट अध्ययन में यद्यपि सामान्यतः उपरोक्त विधियों में से कोई एक ही विधि प्रयुक्त की जाती है तथापि यदि आवश्यक हो तो एक से अधिक विधि भी प्रयुक्त की जा सकती है। इसके अतिरिक्त शोध विधि को निम्न दो भागों में भी विभाजित किया गया है :–

1. गुणात्मक शोध
2. मात्रात्मक शोध

गुणात्मक शोध कई अलग शैक्षणिक विषयों में विनियोजित, पारंपरिक रूप से सामाजिक विज्ञान साथ ही बाजार अनुसंधान और अन्य संदर्भों में जाँच की एक विधि है। गुणात्मक शोधकर्त्ताओं का उद्देश्य मानवीय व्यवहार और ऐसे व्यवहार को शासित करने वाले कारणों को गहराई से समझना है। गुणात्मक विधि न केवल क्या, कहाँ, कब की छानबीन करती है, बल्कि क्यों और कैसे को खोजती है। गुणात्मक अनुसंधान में आगमनात्मक उपागम का प्रयोग होता है। इसमें शोधकर्ता की अहम् भूमिका होती है। गुणात्मक शोध का केन्द्र बिन्दु विशिष्ट परिस्थिति, संस्थायें, समुदाय या मानव समूह होता है।

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गुणात्मक शोध में चरों का उनके गुणों के आधार पर विश्लेषण किया जाता है। समझने योग्य सिद्धान्तों की स्थापना करने, शोधार्थियों के साथ सहयोगात्मक शोधों में संलग्नता तथा किसी उत्पाद या किसी कार्यक्रम की उपयोगिता को सामान्य रूप से आंकलित करने के स्थान पर वर्तमान के अभ्यास या प्रयासों को सुधारने की ओर अग्रसर संरचनात्मक मूल्यांकन के संचालन में गुणात्मक शोध का अत्यन्त महत्व है। गुणात्मक शोध विधियां केवल विशिष्ट अध्ययन किए गए मामलों पर जानकारी उत्पन्न करती हैं और इसके अतिरिक्त कोई भी सामान्य निष्कर्ष केवल परिकल्पनाएं हैं। इस प्रकार की परिकल्पनाओं में सटीकता के सत्यापन के लिए मात्रात्मक पद्धतियों का प्रयोग किया जाता है।

मात्रात्मक शोध में चरों की संख्या या मात्रा के आधार पर विश्लेषण किया जाता है। यह शोध आदेशात्मक होता है। इसमें अभिकल्प प्रारूप शोध के पूर्व ही निर्धारित हो जाता है तथा इसमें सिद्धान्त भी पूर्व निर्धारित रहते हैं। मात्रात्मक शोध निगमन पद्धति पर आधारित होता है। आँकड़ों के आधार पर  नए आँकड़ों को निकालना ही मात्रात्मक शोध का उद्देश्य होता है।

ऐतिहासिक अनुसंधान का शिक्षा अनुसंधान के क्षेत्र में अत्यधिक महत्व है क्योंकि वर्तमान व भविष्य की दिशाओं का संदर्श प्राप्त करने के लिए भूतकाल की शिक्षा, उपलब्धियों और प्रवृत्तियों को जानना आवश्यक है।

वर्णनात्मक शोध विधि शैक्षिक परिघटनाओं की विद्यमान स्थितियों या संबंधों के रूप में, विद्यार्थियों, शिक्षकों, माता–पिताओं व विशेषज्ञों के अभिमत के रूप में, चालू प्रक्रियाओं, प्रत्यक्ष प्रभावों व विकासशील प्रवृत्तियों के रूप में व्याख्या में सहायक होती है।

शिक्षा पद्धति में विवादों के निपटारों का एकमात्र माध्यम प्रयोग है, शिक्षा सुधारों के सत्यापन का एकमात्र उपाय और संचयी परिपाटी स्थापित करने का अकेला मार्ग जिसमें पुरानी विद्वत्ता का अधोवर्ती कौतुक के पक्ष में सनक के कारण नियोजन , के भय के बिना, सुधार लागू किए जा सकते हैं।

प्रयोगात्मक शोध का प्रयोग उन दशाओं में सफलतापूर्वक किया जाता है, जहाँ पर कुछ सीमा तक महत्त्वपूर्ण घटकों  या दशाओं को नियंत्रित किया जा सकता है।

शोध हमारी आर्थिक प्रणाली में लगभग सभी सरकारी नीतियों के लिए आधार प्रदान करता है तथा इसके माध्यम से हम वैकल्पिक नीतियों का चिंतन तथा साथ ही इन विकल्पों में से प्रत्येक के परिणामों की जाँच कर सकते हैं। शोध मानव ज्ञान को दिशा प्रदान करता है तथा विविध विषयों में गहन व सूक्ष्म ज्ञान प्रदान करता है। यह ज्ञान के भण्डार को विकसित तथा परिमार्जित करता है। यह पूर्वाग्रहों के निदान व निवारण में सहायक है। नवीन ज्ञान की प्राप्ति के व्यवस्थित प्रयत्न को शोध कहते हैं। वैश्वीकरण के वर्तमान दौर में उच्च शिक्षा की सहज उपलब्धता और उच्च शिक्षा संस्थानों को शोध से अनिवार्य रूप से जोड़ने की नीति ने शोध की महत्ता में वृद्धि कर दी है।

सन्दर्भ ग्रन्थ सूची

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# Implication of The Research in The Society

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Research is defined as a re-search of study regarding a particular objective or a problem using different types of the methodology and other scientific methods. According to the American sociologist Earl Robert Babbie, "Research is a systematic inquiry to describe, explain, predict and control the observed phenomenon. Research involves inductive and deductive methods."[1] Research shows a path to researches for generating new questions related to the research in different areas of the society. More research opportunity can also be generated from existing or already done research.

Accuracy is one of the significant highlights of research, the data that is acquired while leading the examination ought to be exact and consistent with its nature. For instance, look into directed in a controlled situation like a research facility. Here exactness is estimated of instruments utilized, adjustments, and the conclusive outcome of the experiment.

Research in the society provides accurate and timely information on the behaviour, needs, attitudes, opinions and motivations of a population. Armed with this knowledge, businesses are able to develop products and services to meet the desires of their customers and governments can tailor policies and programs to the

needs of citizens. Also, important national statistics on social issues, television ratings, tourism movements, unemployment and so on can be reliably determined.

**Modes of Conducting Research in Society**

1. Case study research
2. Survey research
3. Observational Research
4. Correlation Research
5. Experimental research
6. Cross-cultural research
7. Research with existing data, or secondary analysis.

**Case Study Research**

A case study is a research methodology that has mostly used by the researcher in the research related to the social sciences. It is research techniques and also an empirical methodology that helps in investigating a incident within its real-life context in the society.

Case Study investigations depend on a top to bottom examination of a solitary individual, gathering or occasion to investigate the reasons for basic rule. it is a graphic and exploratory examination of an individual, gathering or occasion. It very well may be single or numerous contextual investigations, incorporates quantitative proof, depends on various wellsprings of proof and advantages from the earlier improvement of hypothetical suggestions. Case study research is related with the examination of people, gatherings, occasions, choices, periods, approaches, organizations or different frameworks that are contemplated comprehensively by at least one strategy. 'Case studies are analysis of persons, groups, events, decisions, periods, policies, institutions or other systems that are studied holistically by one or more methods'[2].

**Survey Research**

Survey Research is the assortment of information achieved by asking people inquiries either face to face, on paper, by telephone or on the web. Leading overviews is one type of essential research, which is the social affair information direct from its source. The data

gathered may likewise be gotten to in this manner by different gatherings in optional research. Review investigate is utilized to accumulate the conclusions, convictions and sentiments of chose gatherings of people, regularly picked for segment inspecting. These socioeconomics incorporate age, sexual orientation, ethnicity or pay levels.

Normal sorts of reviews incorporate meetings and surveys, which are included different decision surveys, feelings and surveys. Polls are disseminated through mail studies, bunch controlled surveys or in-person drop-offs. Meetings can be held face to face or via telephone and are frequently a more close to home type of research than polls. There are a few issues to think about when making an overview, including content, wording, reaction arrangement and question situation and grouping. These decisions can influence the appropriate responses given by taking an interest people.

**Observational Research**

Observational research also known as the field research. It is a type of research which is based upon the correlation in which a researcher observes and study about the ongoing behavior in the society and the people around him. While doing observational research we have gon ethrough various types of observational research, each of observational research has both strengths and weaknesses. These types of reseach are organized below by the extent to which a person doing a research control or intrude upon the environment.

Observational research is that type of research which is mainly observed in the field of social sciences as well as in the area of marketing. It is a research related to the society based technique that involves phenomena that can be directly experiences in their natural setting in the society. This procedure makes it different from experimental research in which a researcher has to create a quasi-artificial environment in order to control for spurious factors, and where as a part of the experiment at least one of the variable is manipulated. This reseach is typically divided into naturalistic (or "non-participant") observation, and participant observation. The

special types of observational research that can be observed by the researcher are the case study based upon the society and an archival research.. Naturalistic (or nonparticipant) observation is that type of research in which there is no intervention by a researcher. It is basically deals with the  studying behaviors in the society that occur naturally in natural contexts in day to day life, unlike the artificial environment which is created to a controlled laboratory setting. Importantly, in naturalistic observation of the observational research, there is no attempt to manipulate variables performed by the research. It permits various tools helpful for measuring what behavior is really like. However, its capabilities mainly consist the limitations and in its incapability exploring the actual causes of behaviors of the people in the society, and it is quite impossible to detremine that the observation made by the researcher is truly comply the situation what normally happens in the society.

**Correlational Study**

To understand the various types of the relationships which is basically occurs between variables have with one another in the society a correaltional study is being conducted by the reseacher.

 In simple terminology, correlational research basically deals with to figure out if two or more variables are inter related with each other and, if they are related that, in what way.

Mainly, it would help the researcher to understand what a variable is, right. Variables can be taken as a subject of interest that can take on different values. A naturally occurring variable is that variable in which the researcher has need not to undergone any kind of manipulation.

While conducted the research the main type of examples of variables basically include:

**Weight of the People**

Some people weigh 100 pounds and others weigh 267. Weight of the people clearly varies from one another.

**Wine Drinking Status of the People**

Some people drinks and some don't drink, again this clearly varies from one anothre.

**Status of Life**

Some of people are very happy with status, some are moderately happy, and others think their status of life is very pathetic. All of these things can vary from one another and are, thus, known as the variables.

**Experimental Research**

While conducted the experimental research, the researcher bascially classified into two-

1. Experimental Research
2. Experimental Design

**Experimental Research**

A researcher has to look after and control all the variables and factors which may affect the result of an experiment performed by the researecher. In performing this, the researcher determine or predict what may occur during the research. All possible attempts has been performed by the researcher.

**Experimental Design**

It is a blueprint of the procedure that pave the path to the researcher to test his hypothesis to reach at a valid conclusions about relationships between independent and dependent variables. It is basically refers to the conceptual framework within which the experiment is held by the researcher.

To conduct the Experimental research following steps are involved like -

1. To Identify the problem of the research.
2. To define the problem of the research.
3. Formulate hypotheses of the research and deduce their possible consequences.
4. To represents all the elements, conditions, and relations of the consequences an experimental design has to be constructed.
5. Choose the object for the research.
6. Make a Group or pair subjects for the experiment.

7. Identification and to control non experimental factors of the research.

8. Construct and acknowledge and validate instruments to measure the outcomes of the research.

9. Determinination of place, time, and duration of the experiment used by the research.

**Cross-Cultural Research**

Cross Cultural research is that scientific method of research which is used by the researcher to conduct the comparative research which basically focuses on systematic comparison of the available data that compares cultural of the various groups and explicitly requires to answer the questions about the incidence, distribution of the variations and deals with the causes of cultural variation and complex problems faced by across a wide domain, mainly around the world, it is mainly deals with the variety of patterns of coherence and sources of coherence in the practices, belief, societial roles, norms, expression and forms of the organization and conflict mainly observed and happnes in human communities and other forms of the groups in the society. It is basically deals with the cross cultural research in the society.

**Research with Existing Data, or Secondary Analysis**

Already existing data is being utilized in order to conduct the Secondary analysis, it is collected and performed in order to know the purposes of a prior study, in order to pursue a research interest which is quite different from that of the original work of a researcher; This type of research approach has not been widely used while conducting the research in relation to qualitative data.

Various methodological and ethical issues need to be considered and are more problematic if the secondary analyst was not part of the original research team; Further work to develop the approach is required in order to see if the potential benefits can actually be realized in practice.

Despite growing interest in the re-use of qualitative data, secondary analysis remains an under-developed and ill-defined approach. Various methodological and ethical considerations pose a

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challenge for the would-be secondary analyst, particularly those who were not part of the primary research team. Further work to develop this approach is required to see if the potential benefits can actually be realized in practice[3].

**Importance of Research in The Society**

Research plays a very wide role in order to find out any change, differences and problems etc in the society. Through conducting various researches we can came to the conclusion about the actual position of any problem or differences in the society. Research is basically conducted to resolves the various questions related to actual happening and non happening of any event in the society. Well conducted research is a vital to the success of global endeavors related to the society.

A critical thinking expertise can be enhanced in the society by the detail research of the data, as well as for an effective method of analytical research and communication skills that are worldwide demanded and incredibly beneficial for the research. Finally, a research is important to monetary as well as social development of our globalised society, to form the basic foundations for the formulation of the governmental policies and rules around the world.

One of the foremost aim of the research is to enhance our understanding of human consciousness and behaviour, as well as it also includes all types of study methods that may lead to increase human wellbeing in the society. In order to upgrade any system in the society research plays a very vital role. Research in the society seeks to increase knowledge and understanding of human abilities, reflected in the form of cerebral activity in day to day life of the individual in the society. It helps to inquire about the right information.

Research in the society evolves to mark out the thin line between truth and lie. To make informed decisions research plays an important role. To investigate and provide insights into how human societies function. Through data collection, the researcher comes in a one-on-one contact with his research population through the use of surveys, interviews, observations, experiments and participatory observations. A researcher gets his answers directly from the horse's

mouth only if he or she possesses personal features such as having a good human relationship, being friendly, bold, and polite and possessing the ability to speak audibly and confidently in order to get more detailed information[4]. To know the exact condition of any society as how it functions, its merits and demerits about its actual implementation of any guidelines and rules or laws framed for the betterment of the society, to conduct the time to time research is very important.

**Conclusion**

At last we came to the conclusion that research is a systematic process Research is a systematic process of examining and investigating a specific subject. Research refers to the endeavours made in order to realize and unravel new information or invent new methods in solving a problem. Research methods therefore refer to the methods and means through which researches are conducted by researchers. There are the ways which a researcher chooses to carry out his research. A researcher conducts the research in the society in order to know the exact position of the condition of the society. Individual's way of living, problems faced by the citizens, about their health and mental conditions and all the facilities provided by the government inorder to make our state a welfare state. Many researches are conducted by the various commissions and departments of the government related to the collection of the data of the cases related to the child abuse, forced prostitution, forced and illegal child labour, child marriages, dowry harassment cases, and other offences related to the human body in the society.

So in order to know the exact development and progress of any society research should be conducted.

**Endnotes**

1. *https://www.questionpro.com/blog/what-is-research/*
2. *https://www.pressacademia.org/definition-of-case-study/*
3. *http://sru.soc.surrey.ac.uk/SRU22.html*
4. *https://www.uniassignment.com/*

# Considering Ethical Issues for Conducting a Qualitative Research in Social Sciences

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**Abstract**

Ethics is code of moral principles which drives the people to be perfect in behavior and character in the learned society. Research is the process of investigation of some existing knowledge and journey to establish some new knowledge or idea. Ethics and research are correlated, as a faithful research will be considered when it is filtered with ethical issues. Conducting academic research and publishing the research report following ethical principles of research implies the moral values. In this article, ethical issues related to the different stages of research have been worked out. A Number of universities and research organizations worldwide have drafted set of ethical principles to guide their researchers, but the issues are common. Researchers are guided to conduct a research considering the ethical issues associated with research process and writing a research report of international standard.

**Keywords:** Ethics, Ethical Issues, Code of Conducts, Research Writing, Qualitative Research, Social Science

## Introduction: Ethics and Research Ethics

Ethics, in one side, are the moral issues that help us to take decisions and guide us for better behavior. Ethics is a branch of philosophy that deals with the conduct of people and guides the norms or standards of behavior of people and relationships with each other. On the other hand, research is a matter of conducting study to focus on the specific field of knowledge or subject. Research ethics is important in our daily life research endeavors and requires that researchers should protect the dignity of their subjects and publish the well information that is researched. In a research process, researchers are inquisitive to analyze the behavior or some specific characteristics by using suitable method. Researchers follow certain code of conducts or ethics to get the faithful result on focus group. Research is a process of cultivating new knowledge in the modern knowledge society whereas ethics is linked to the cultural values of society and help the researchers to be a responsible person in research field. In every stage of research work, from selecting a topic to publishing the research work, research ethics are involved. So, it is important that the researchers have to be honest and competent and strictly follow the code of conducts in respect to the research.

## Objectives of the Study

The objectives of the study on research ethics are as follows-

1. To investigate the historical background of the ethics in research field;
2. To understand the importance of ethics in research;
3. To understand the role of ethics in qualitative research;
4. To identify the code of ethics related to the research;
5. To identify some ethical issues surrounding the research process;
6. To describe the ethical issues considering in research report writing;

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7. To mention the ethical issues related to the research report publication and propagation.;and

8. To indicate the importance of ethical values of research work.

**Review of Literature**

"Research should follow a code of ethics in research. We need not overemphasis that it is important in research as any activity. Following ethics in work implies doing the work in the right way. Right way implies that it is done in a way acceptable to the society" (Sharma, 2005). "To promote the integrity of research, guard against misconduct and impropriety that might reflect on the organizations, institutions and to cope with new emerging problems, ethical issues in conducting social science research should not be thrown into the dust bin. Ethical issues need to be identified along the value chain of research procedure" (Agwor, 2018). "All academic institutions are particular about any ethical issues that research may have. To deal with them, all institutions have some form of policy on ethics. You need to be acquainted with your in institution's policy. It is imperative that in your proposal you identify any ethical issues and describe how propose to deal with them" (Kumar, 2011). "Research ethics focuses on values which are societal in nature. Hence, researchers should enhance social responsibility, maintain the integrity of human values, and protect the welfare of the research subjects and animals in compliance with the international law and safety standards" (Akaranga, 2016). "The ethical understanding thus gained is then applied to the component elements of the research process" (Scott, 2013). "To promote the integrity of research, guard against misconduct and impropriety that might reflect on the organizations, institutions and to cope with new emerging problems, ethical issues in conducting social science research should not be thrown into the dust bin" (Agwor, 2018). "Our findings may help in developing instructional design for ethics education in qualitative research and stimulate the generation of separate guidelines for the conduct of qualitative

research in the future, in our country" (Dongre, 2015). "Professional codes, laws, regulations, and ethics committees can provide some guidance but the final determinant of how research is performed, rests with the researcher's value system and moral code" (Fouka, 2011). "There does not exist a code of conduct for researchers and inter-university and inter departmental rivalries are also quite common. Hence, there is need for developing a code of conduct for researcher which, if adhered sincerely, can win over this problem" (Kothari, 2004). "Indian universities lack research ethics committees. Researchers have no other option but to rely on their own common sense to eliminate and minimize various crucial ethical issues. Therefore, need for a common policy or a common framework both at domestic as well as national level assisting Indian researcher in addressing the ethical issues is cardinal" (Parveen, 2017).

**Problems**

Conducting a quantitative or qualitative research in social sciences is the critical and simple task at the same time. It is critical task when following the international standard and ethical issues. But it is simple, when conducting the research violating the codes of ethics and somehow managing to compile the data and copy some ideas from other sources. A number of study reports are publishing throughout year in India and abroad in the journals on 'pay and publish' basis. So the quantity of new knowledge is increasing but quality of knowledge is dropping down. To increase the amount of quality knowledge, the research works should be conducted following the codes of ethics. From this point of view, it has been tried to focus the ethical issues concerned with the qualitative research.

**Methodology**

This descriptive type of research has been conducted to highlight the key issues on ethics. The ethical connectivity with the research work from all respects is investigated by scanning some

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related documents and guidelines. Related studies, guidelines, book and online resources have analyzed to show the ethical principles in various stages of research work.

**Scope**

Study on ethical issues related to the qualitative research has broader scope for discussion. There is no such renowned organization in national and international level for controlling the research activity and drafting standard ethical guidelines and principles. Different universities and institutions of higher education are involved in research and development and they have drafted the ethical policies as their own. A number of qualitative research works have been conducted in last half century. But this the time to assess the research works in the light of ethics.

**Limitations**

This descriptive study is limited to the period covered and document covered. Due to constrain of time and space, related literatures published in last two decades, was selected to review for this study. Only the research reports available online and some other printed documents related to the ethical issues are considered for analyzing and citing in this research work.

**Ethical Considerations in Qualitative Research**

According to Chris Hart as mentioned by Sharma (2005), ethical issues in research divided into four concerns-(A) Research (B) Researcher (C) Subjects and (D) Sponsoring Body/ University. Ranjit Kumar (2011) divided the stakeholders in the research activities related to ethical issues into three important parts – (A) Research participant/ Subject (B) Researcher and (C) Funding Body.

The entire research work is divided into three major steps and the ethical issues have to be considered in every stages of the research work. The three major stages of the research work are-

1.  Research process
2.  Research writing

3.    Research publication and propagation

**Ethical Issues Related to Research Process**

In the first stage of conducting the research work, the important tasks are selecting the research topic, forming the research problem, sending the research proposal, approval of research, approval of fund from the concerned agency, taking the consent of participants and collection of data. It is very important to look at the ethical issues in every step of the research.

**Selection of Research Topic/ Subject**

At the time of selecting the research topic, it is expected that topic has to state in an unambiguous way. The topic must not be same with some other studies. In most cases, human beings and other animals are selected as the subject of research. The privacy of the subject must be maintained in research. When the plant or animal is selected as the subject, their treatment should be ethical.

**Formulating the Research Problem**

In the stage of identification of research problem, it is expected to select the significant problem or the issue for investigation and justifies the reason for its importance. During this stage, it has to be seen that the issues for investigation are very imperative and equally very crucial. The problems identified for investigation must be benefited for the respondents or the individuals being studied. The research problem should be meaningful for the researcher as well as the participants or respondents.

**Review of Related Literature**

In the literature review section, researchers cite or recognize ideas of other studies related to his subject. Researchers should thoroughly consider the ethical issues for reviewing the literature.

1.    Coping the text or idea without mentioning suitable reference, is an unethical in research.

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2. Presenting a written piece that contains significant portions of text from a single source without alterations is unethical and should avoid it.

3. Changing key words and phrases of some article but using the same context without referencing the source is unethical.

4. Researchers quote some important information word to word or phrase to phrase and these should be done using suitable punctuation marks.

5. Sometimes author use text of some other article written by the same author without mentioning sources is unethical and such type of malpractice should avoid.

**Research Proposal**

After identifying the problems and issues to be studied, researcher should observe the study group honesty and repeated testing can be made for drafting research proposal. In this stage the participants can make positive suggestions to improve on the quality of the work. The researchers then makes necessary corrections and improves the quality of the proposal. Repeated satisfactory testing, corrections and amendments make the research proposal ready for sending to the concerned authority for approval. Ethics related to research proposal are follow the steps of preparing the proposal and repeated testing is required.

**Research Approval**

After receiving the research proposal from the researcher, the concerned authority justifies the subject area and what kind of outcome will be received from the study. Here the ethical issues are related to the research approving authority. The research approving authority should check whether the research subject is the topic of any other study or it is overlapping with the some other studies. The university or institution as the approval authority of the research work provides its own code of ethics for good research work.

## Grants Approval

Most research projects are funded by the research organizations and institutions involved in higher education. These organizations and institutions are run by the public money. So, before funding any such research project, the funding agency should justify the research topic and its impact or benefit in the society. Waste of public money is unethical and should avoid it. Researchers should be accountable to the public and must seek for financial support and sponsorship because a research study should be thoroughly undertaken. Research findings must not compromise with the funding agency because it drops the quality of research work.

## Seeking Consent of Participants

Participants or responders should be adequately informed about the research project. Respect for persons also requires that participants are assured of confidentiality or anonymity and that their privacy is protected. They must be known about the effect or benefit of the study. The researcher must ensure the protection of the participant and should avoid exposing the participants for unnecessary investigation and uncomforted. All sorts of research participants should be treated fairly in respect of caste, religion, gender and economic and social status.

Any kind of mental and physical harassment must be avoided at the time of collection of data.

## Data Collection

In the stage of data collection, the researcher needs to have complete interface of the participants. The researchers need to respect the participants and at the time of investigation, following ethical issues should be considered-

1. Suitable data collection tool like questionnaire should be use properly to get the better data from the participants. Sometimes data are manufactured by dishonest researchers without using the properly designed questionnaires. So, it is very unethical to

manufacture data in representative of a target population of study.

2. Researcher should not use data of some other studies or data use by previous researchers. It is very unethical.

3. The researcher should as much as possible secure the anonymity and the confidentiality of the study participants and never put them at risk.

4. During the data collection for survey research, investigators require to gather data from all population, not only from main study group.

5. When interview method is following for data collection, interviewers should think about the human circumstances and communication language that the interviewee understand better.

**Ethical Issues Related to Research Report Writing**

The most important part of a research work is writing a research report to make it public. It can only be submitted for publishing if it is well researched, written and adheres to the necessary research ethical guidelines. Research can be conducted by a group of researchers and the report can be written by one or more authors. In case of more than one author, equal responsibility should be carried out for the same research report. All the authors have to make a joint agreement to publish the research work. Before final submission, authors should follow the ethical issues in different parts of the research report.

**Research Topic/ Title**

Research title must be related to the central issues of the subject that has been studies. Most research works are related to the human subjects and this must be considered that the research title is cleared to all and it is not the same with some other titles.

**Acknowledgement**

In respect of all contributors i.e. participants, funding agency, approval authority, information providers, other supportive efforts, etc.

must be acknowledged in the initial part of the report. It is expected from the researcher to report and disseminate the findings of the particular study in most effective way.

**Tabulation of Raw Data**

From the ethical perspective, collected data should be presented using various tables and charts without tempering these. All the responses, positive or negative, have to be considered to list in. Otherwise actual result could not be reached.

**Data Analysis**

In the data analysis and interpretation stage, related ethical issues are-

1. Currency of data, facts, information is most ethical issue at the time of analysis. Suitable analytical method should follow for analyzing the data.

2. Researchers should keep the data in their custody for a period of 5-10 years as other researcher cannot use the same data for their study.

3. Researchers should preserve the right of ownership of data and never tempered any data under any circumstances.

4. During data analysis, researchers are advised to precise account of the information.

5. In qualitative study this may comprise of using one or more of the approach to check the preciseness of the data with contributors or transverse unlike source of data.

**Presentation of Result**

Graphic presentation of analyzed data or outcomes of the study make the research work attractive and effective. So, researchers should keep in mind use only the suitable graphs and charts while presenting them in the research report. Tempering of data and wrenching of result is unethical.

**Quoting Text from Other Sources**

The researchers purposefully quote point or statement from other sources to support his/her idea while writing a report. Quoting of text, formula, idea of some other sources is permissible, but the quotation must be kept short and as far as possible be marched into the text. Use of quotation marks and mentioning the source reference is not unethical.

**Writing of Reference**

The most important ethical side of the research report is citing the references of the documents and other information sources that were used for the study. From the perspective of the ethical issues related to the writing of references of all used documents and follow the standard reference style manual.

**Plagiarism**

Plagiarism is the practice to ensure the authors or the researchers that his/her work is original in the context of subject, research process and compiled text. By declaration, author or the researcher announce that the idea is not borrowed, data are not manipulated and the result is not overlapped with some other studies. Sometimes authors reuse his other work without using proper references. In the advanced age of Information Communication Technology (ICT), it is not hard to check the plagiarised research report. So such type of malpractices should not expect in this knowledge society.

**Ethical Issues Related to Research Publication and Propagation**

The research findings need to be published in a professional scholarly journal to bring it in the focus of public. While publishing an article or research report certain ethical issues should be considered.

1. Research papers should publish in a scholarly journal peer reviewed by board of reviewers. It is expected that the journal publishes good quality of research papers and its impact factor is quite better.

2. Researcher should Use the right methodology for their study and include the valid result of the research that is not comprised with the findings.

3. It should avoid publish the duplicate study report and before publishing, the whole content must be checked.

4. Before sending an article for publishing, it should check the grammar and spelling. Proof reading of unpublished manuscript is also the ethical issue related to publishing.

5. Authorship should be given to the individuals who contributed to the study. Persons involved in research design, data collection and analysis, manuscript drafting and proof reading, introduction writer, reviewer are also being considered for authorship.

6. The principal author is responsible for the publication and copyright responsibility must be shared with subsequent authors.

**Importance of Ethics in Research**

There is no doubt about the importance of ethical value of the research work. Ethical principles guide the researchers to help to do right things in right way and make the research work morally correct. So, all the stages of research process can be considered in the light of ethical issues.

1. Ethical issues related to the research work increase the moral values of researchers in different ways and function for social experience.

2. Ethical issues promote the main aims of the research for acquisition of knowledge and prevent the malpractice in research with incorrect information.

3. Ethical issues help to communicate among the researchers and institutions to conduct a responsible research work.

4. The research work published in a scholarly journal must be read by the public and appreciate the efforts of the researcher.

5. Research ethics help to develop the values, sense of responsibility and moral integrity in researcher's own personality.

6. Research ethics implies the responsible conduct of research process.

7.  It helps to expose the code of conduct related to organise a research project under the supervision of research institution, organization, government body.

**Conclusion**

While researchers are conducting a research, lot of matters associated with the whole process. Researcher's effort and cooperation from all sides make the research success and a faithful result comes into the public. Research conducted with the use of ethics gain more trust and respect from the public or future researchers. So, approval authority who is governing the research must look into the matter whether the ethical policies and guidelines are followed in whole research process. If the research is being sponsored by any agency, it should be assess the impact or outcome from the research on the society.

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# शोध विधियाँ

## प्रमोद आमेटा

व्याख्याता
अर्थशास्त्र विभाग
वी.बी.जी.एस.टी.टी. कॉलेज
उदयपुर, राजस्थान, भारत

## सारांश

मानव प्रगति में अनुसन्धान का सर्वाधिक महत्व रहा है। अनुसन्धान का समप्रत्यय नवीन वस्तु या ज्ञान या कुछ नवीन सिद्धान्तों के आधार पर अन्वेषण करना है। अनुसंधान के अन्तर्गत शोध विधियों का महत्वपूर्ण योगदान है। शोध विधि ही एक ऐसा माध्यम है जो क्षेत्र प्रमुख की समस्या का अध्ययन कर उसी के अनुरूप–प्रयोग के रूप में काम ली जाती है। ज्ञान के विकास हेतु अनुसंधान अति आवश्यक है, साथ ही अनुसंधान में किन विधियों को प्रयुक्त किया जाना है, यह अति महत्वपूर्ण है। प्रस्तुत शोध के माध्यम से यह स्पष्ट करने का प्रयास किया गया है। अनुसंधान प्रक्रिया में अनुसंधान विधियाँ बहुत महत्वपूर्ण होती है।

## प्रस्तावना

अनुसन्धान तथा विभिन्न शैक्षिक क्रियाओं के माध्यम से हम लक्ष्य प्राप्त करने का प्रयास करते हैं। शिक्षण समस्या, विद्यार्थियों के व्यवहार के विकास से संबंधित समस्या एवं अन्य समस्याओं का अध्ययन हम अनुसन्धान प्रक्रिया के माध्यम से ही करते हैं। ''अनुसंधान क्या है'' अनुसंधान का सामान्य समप्रत्यय खोजना होता हैं सामान्य रूप से अनुसंधान उपलब्ध संमकों की तरह में पहुंचकर निष्कर्ष निकालना, नये नये

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सिद्धान्तों की खोज करना तथा प्राप्त समंकों का विश्लेषण करना ही अनुसंधान के अन्तर्गत आता है।

अनुसंधान में भी समंको का संग्रहण अनुसंधान समस्या पर आधारित होता है। समस्या के अनुसार उपयुक्त शोध विधि हमारे अनुसंधान में उपयोगी साबित होती हैं, साथ ही हम यह जान पाते हैं कि समस्या किस प्रकार की है। एवं हमे किस विधि का चयन करना है। वर्तमान में अनुसंधान में शोध विधि की आवश्यकता महत्वपूर्ण है।
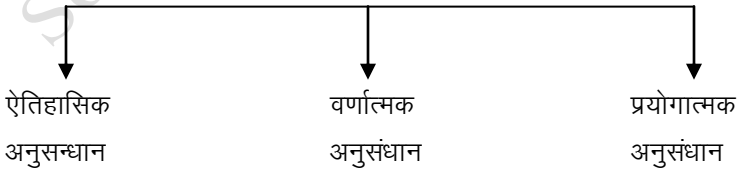
**मुख्य शब्द** – अनुसन्धान, शोध विधियाँ।

## विधि का अर्थ
## परिभाषा

प्रत्येक अनुसंधान एक विशेष प्रकृति की समस्या का वैज्ञानिक समाधान प्रस्तुत करता हैं। हैनरी लेस्टर स्मिथ ने 131 शब्दावलियों की सूची प्रस्तुत की है जिसमें शिक्षा संबंधी अनुसंधानो के विभिन्न प्रसंगों व विभिन्न रूपों का प्रयोग किया है। वास्तव में हम विधियां न कहकर अनुसंधान के प्रकार कहे तो यह तर्क संगत ही होगा।

विधि कार्यो के अनुक्रम की नियमित संख्या को निर्देशित करता है जो साधारणतः दिशा के द्वारा निर्दिष्ट होता है (1973 एच.एस.ब्राउडी) विधि वास्तव में एक क्रमिक अवशेष है जिसमें विशेष विधि को उसी प्रकार निर्धारित करते है जैसे उद्देश्य साधन और अन्तर्वस्तु को निर्धारित करता है तथा शुद्ध साहित्य में लेखन शैली एवं व्यवहार को निर्धारित करता है। अनुसंधान की विधियों को निम्नलिखित रूप में समझ सकते है।

अनुसंधान विधियों को निम्नलिखित रूप से समझ सकते है।

| ऐतिहासिक अनुसन्धान | वर्णात्मक अनुसंधान | प्रयोगात्मक अनुसंधान |

## ऐतिहासिक अनुसंधान

ऐतिहासिक अनुसंधान का संबंध अतीत की घटनाओं विकास क्रमों तथा विगत अनुमतियों का तर्क संगत अन्वेषण से है। ऐतिहासिक घटनाओं उनके कारणों और उनसे उत्पन्न समस्याओं तथा परिणामों का बारीक निरूपण विश्लेषण करना ही ऐतिहासिक अनुसंधान कहलाता है। जॉन डब्लू वेस्ट ने कहा है कि ''ऐतिहासिक अनुसंधान का सम्बन्ध ऐतिहासिक समस्याओं के वैज्ञानिक विश्लेषण से है इसके विभिन्न भूत के संबंध में एक नई सूझ पैदा करते है। जिसका संबंध वर्तमान एवं भविष्य से होता है।''

इसके क्रमिक चरण में समस्या को समझना, सुसीमितीकरण, अनुमान का स्पष्ट व्यक्तिकरण, उसके पश्चात समंक का एकत्रीकरण व्यवस्थीकरण, परीक्षण, मान्यीकरण, विश्लेषण, अनुमान की तथ्यात्मक जांच परख, ऐतिहासिक विवरणों का आलेखन प्रमुख है।

ऐतिहासिक अनुसंधान की दत्त सामग्री को प्राप्त करने के लिये जो ऐतिहासिक स्रोत काम में लिये जाते हैं उनमें ऐसी लिखित सामग्री जैसे राज पत्र, राज्यादेश शिलालेख, चरित्र, लोक कथाएं, रीति–रिवाज, व्यक्तिगत डायरियां, एवं प्रकाशित पुस्तकें प्रमुख हैं।

वही ऐतिहासिक अवशेष– पुरानी इमारतों के खण्डहर, इमारतों में काम ली गई ईंटें, बर्तन, डाक टिकट, मुद्राएं, मानव एवं पशुओं के शारीरिक अवशेष, प्रतिमाएं चित्र आदि अतीत की भौतिक वस्तुएं जो उस समय के जन जीवन पर प्रकाश डालती हैं।

## वर्णात्मक अनुसंधान

वर्णात्मक अनुसंधान का सम्बन्ध किसी व्यक्ति विशेष से न होकर सम्पूर्ण समस्या जनसंख्या अथवा न्यादर्श से होता है। वर्णात्मक अनुसंधान ''क्या है'' इसका वर्णन एवं विश्लेषण करता है। यह अनुसंधान वर्तमान स्थिति के स्पष्टीकरण, भावी नियोजन तथा परिवर्तन में सहायक है। साथ ही समस्या के समाधान हेतु उपयोगी सूचना प्रदान करती है। वर्णात्मक अनुसंधान में निम्नलिखित पद प्रमुख होते है। सर्वप्रथम अनुसंधान समस्या

के कथन को स्पष्ट किया जाता है साथ ही यह निश्चित किया जाता है समस्या सर्वेक्षण अनुसंधान के लियें उपयुक्त है उसके पश्चात उपयुक्त सर्वेक्षण विधि का चयन किया जाता है। साथ ही सर्वेक्षण उद्देश्यों का निर्धारण किया जाता है साथ ही सर्वेक्षण की सफलता का निर्धारण करना एवं आंकड़ें प्राप्त करने का अभिकल्प निर्मित कर आंकड़ों का संग्रह, आंकड़ों का विश्लेषण कर प्रतिवेदन तैयार किया जाता है।

यह विधि सरल है अतः इसके द्वारा शिक्षण स्तर में सुधार में सुझाव, विचार, मत आदि या आकड़े सरलता से प्राप्त किये जा सकते है। वर्णात्मक शोध छात्रों, विद्यालय, संगठन, निरीक्षण प्रशासन, पाठयक्रम, शिक्षण विधि और मूल्यांकन से संबंधित समस्याओं के समाधान में अत्यधिक सहायक है।

## प्रयोगात्मक अनुसंधान

प्रयोगात्मक अनुसंधान एक प्रयोग है जिससे यह निष्कर्ष निकाला जाता है कि विशेष परिस्थिति में यदि कोई विधि से कोई एक क्रिया की जाये तो क्या परिणाम होगा। प्रयोगात्मक अनुसंधान इस तथ्य का स्पष्टीकरण करता है कि जब सम्बन्धित चरों अथवा परिस्थितियों पर सावधानीपूर्वक नियंत्रण करके प्रयोगात्मक चर में परिवर्तन किया जाये तो क्या निष्कर्ष प्राप्त होगा। चर की मापन प्रक्रिया को प्रायोगिक इकाई के रूप में जाना जाता है।

प्रयोगात्मक अनुसंधान में विशेष शब्दों का प्रयोग होता है जिसका ज्ञान प्रयोगात्मक अनुसंधान को समझने में सहायक है

## व्यवहार

वह प्रायोगिक दशा से है जो प्रयोगात्मक अध्ययन के लिये प्रस्तुत की जाती है।

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## व्यवहार चर

उस चर को कहा जाता है जिसका प्रयोगकर्ता परिवर्तन करता है। व्यवहार चर स्वतन्त्र चर है जिसका परिवर्तन अनुसंधानकर्ता द्वारा किय जा रहा है। प्रयोग में व्यवहार चर के रूप में पढ़ाने की विधि, पाठ्यपुस्तक के अनुसार पाठ्यपुस्तक में स्याही का रंग, छापे का आकार कुछ भी हो सकता है।

## परतन्त्र चर

वह चर जो स्वतन्त्र चर अथवा व्यवहार चर के परिवर्तन से प्रभावित होता है। स्वतन्त्र चर भी एक से अधिक हो सकते है। उसी प्रकार परतन्त्र चर भी एक या एक से अधिक हो सकते है।

## ब्राहा चर

यह चर या तो विषयी वातावरण में स्थित होते है या उसके व्यक्तित्व के कुछ गुण हो। उदाहरणार्थ, उसकी क्षमता, बुद्धि, लिंग, आयु परतन्त्र चर में होने वाले परिवर्तन को प्रभावित करते है। इन चरों के लिये इन्टर वीनिंग तथा कनफाउण्डिंग शब्दों का प्रयोग किया जाता है।

प्रयोगात्मक अनुसंधान के प्रारूप में व्यक्ति, समुदाय, या दो अथवा समान, अनुरूप दलों का निर्माण कर किया जाता है। समान समुदाय का निर्माण स्वविवेक से या परीक्षण के द्वारा, औसत प्राप्तांक के आधार पर किया जा सकता है। प्रयोग बारी–बारी से दोनों समुदाय के साथ, एक बार एक समुदाय को प्रयोगात्मक, और, उसकी बार दुसरे समुदाय को प्रयोगात्मक समूह बनाकर दुहराया जा सकता है। और परिणाम प्राप्त कर अध्ययन किया जा सकता है। ऐसे परिणाम जो पारी के अदल–बदल से प्राप्त होगें जो अपेक्षाकृत अत्यधिक विश्वसनीय होगें। इसमें निरिक्षित व्यवहार के प्रभावों को सत्य प्रभाव माना जाता है। आधुनिक रूप में यह शोध विधि अति महत्वपूर्ण है।

## निष्कर्ष

वास्तव में अनुसंधान के अन्तर्गत कई समस्याऐं उत्पन्न होती है। समस्या उचित निराकरण एवं समाधान अनुसंधानकर्ता को स्वयं चिन्तन के अनुसार करना होता है। अनुसंधानकर्ता अनुसंधान के लिये जिस समस्या का चयन करता हैं वास्तविक रूप में उस समस्या के कारणों को जानने के लिये किस विधि का उपयोग करना चाहिये, वह समस्या के अनुरूप निर्धारित की जाती है। प्रत्येक शोध विधि का अपना स्वयं का महत्व है। इसके माध्यम से अनुसंधानकर्ता यह जान पायेंगे कि वास्तविक रूप से अनुसंधान हमारे जीवन का महत्वपूर्ण पहलू है। अनुसंधान, शिक्षा के स्वस्थ दर्शन पर आधारित है। अनुसंधान कार्य–कारण संबंधों पर आधारित है। अनुसंधान के अन्तर्गत शोध विधि अपनी महत्वपूर्ण भूमिका निर्वाह करती है। अनुसंधान की समस्या के अनुरूप शोध विधि के चयन से न केवल निष्कर्ष विश्वसनीय एवं शुद्ध प्राप्त होंगें अपितु अनुसंधान में और क्या नवीन अनुप्रयोग किये जा सकते हैं उसके बारे में हमें जानकारी प्राप्त होती है। अनुसंधान में शोध विधि की अपनी उपयोगिता है। शोध विधि, अनुसंधान उद्देश्य प्राप्ति हेतु सर्वोत्तम साधन प्रदान करती है।

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# शोध विधि

शिप्रा सिंह

प्रवक्ता

शिक्षा शास्त्र विभाग

अभिनव सेवा संस्थान महाविद्यालय

कानपुर, उत्तर प्रदेश, भारत

## सारांश

आज समाज का रूप अत्यधिक जटिल होता जा रहा है। इस जटिलता के कारण जीवन के रूप में भी अनेक परिवर्तन हो रहे हैं। इन जटिलताओं के कारण अनेक समस्यायें जन्म लेती हैं। इन समस्याओं के समाधान के लिये शिक्षा शास्त्रियों के द्वारा अपनाई जाने वाली वैज्ञानिक विधियों को शैक्षिक अनुसन्धान कहा जाता है।

आधुनिक युग में अनुसंधान का विशेष महत्व है

अनुसंधान किसी राष्ट्र की प्रगति के पहिचान चिन्ह है। अनुसंधान ज्ञान वृद्धि के साथ साथ मानव विकास को अत्यधिक महत्व प्रदान करता है।

अनुसंधान का शाब्दिक अर्थ है लक्ष्य का अनुगामी होना या उसके पीछे–पीछे चलना जब तक कि अभीष्ट उत्तर न मिल सके।

ऐसा ही अर्थ इसके अंग्रेजी शब्द के समकक्ष होता है– RESEARCH, (RE = Again, Search= Explore) अतः इसका अर्थ है– बार–बार खोजना।

अब बात अगर शोध की करते हैं तो, जीवन के विभिन्न क्षेत्र में की गयी खोज को अनुसंधान का नाम दिया जाता है किन्तु शिक्षण के क्षेत्र में की गयी खोज को केवल और केवल शोध का नाम दिया जाता है।

वास्तव में अनुसंधान शब्द एक प्रक्रिया है जिसमें शोध तथा गवेषणा की उपक्रियायें भी सम्मिलित हैं, जिसमें अनेक प्रकार के तथ्यों को एकत्रीकरण तथा उनके विश्लेषण के आधार पर किसी समस्या का विश्वसनीय समाधान किया जाता है।

'अनुसंधान' शब्द में प्रकृति के अनुसार पूछताछ जाँच, गहन निरीक्षण, व्यापक परीक्षण योजनाबद्ध अध्ययन, सोद्देश्य एवं तत्परतायुक्त सामान्य निर्धारण आदि प्रक्रियायें महत्वपूर्ण हैं अर्थात् 'अनुसंधान' एक व्यवस्थित तथा सुनियोजित प्रक्रिया है जिसके द्वारा मानवी ज्ञान में वृद्धि की जाती है।

शोध कार्यों से मानवी तनावों को भी कम किया जाता है। वैज्ञानिक समस्याओं के समाधान की यह एक प्रभावशाली विधि है, क्योंकि अनुसंधान में किसी समस्या का वैज्ञानिक अन्वेषण सम्मिलित है। अन्वेषण की क्रिया इस बात का घोतक है कि समस्या की अति निकट से देखा जाये, उसकी जाँच पड़ताल की जाये और उसका ज्ञान प्राप्त किया जाये।

जिस प्रकार एक अच्छा शिक्षण अपने छात्र को निरन्तर जिज्ञासाओं को शान्त करने तथा उसका समुचित मार्ग दर्शन करने के लिये नये–नये प्रयोग रूपी प्रयास करता है। जिन्हें हम नयी खोज का नाम दे सकते हैं। ठीक उसी प्रकार किसी भी शोध को उपयुक्त विधि से करने की आवश्यकता होती है। अनुसंधान प्रक्रिया में शोध विधियाँ महत्वपूर्ण होती है।

अनुसंधान की विधियों का वर्गीकरण विद्वानों ने अनेक प्रकार से किया है। किसी ने क्षेत्र के अनुसार वर्गीकरण करते हुए शिक्षा सम्बन्धी, मनोविज्ञान सम्बन्धी तथा इतिहास सम्बन्धी, अनुसंधान के रूप में वर्गीकरण

किया है तो किसी ने उसके उद्देश्य अथवा आँकड़े प्राप्त करने की विधि के आधार पर वर्गीकरण किया है।

सामान्य तौर पर अनुसंधान विधियों को निम्नलिखित रूप से वर्गीकृत किया जा सकता है :–

## ऐतिहासिक अनुसंधान

इसका सम्बन्ध भूत से है तथा यह भविष्य को समझाने के लिये भूत का विश्लेषण करता है।

## वर्णनात्मक अनुसंधान

इसका सम्बन्ध वर्तमान से होता है तथा इसके अन्तर्गत अनुसंधान के विषय का स्तर निर्धारित करने का प्रयास करते हैं।

## प्रयोगात्मक अनुसंधान

इसका उद्देश्य वैज्ञानिक रूप में दो या दो से अधिक तत्वों के सम्बन्ध की व्याख्या करना होता है।

## ऐतिहासिक अनुसंधान

ऐतिहासिक अनुसंधान अतीत की घटनाओं, विकासों तथा अनुभवों की समालोचनात्मक जाँच है जो सावधानीपूर्वक तथा वैधता के साथ प्रमाणों को महत्व देती हुई समुचित साक्ष्यों पर आधारित होती है। इसके बाद, अन्य शोधकर्ताओं के समान ही ऐतिहासिक शोधकर्ता भी प्रदत्त संकलित करता है, प्रदत्तों की वैधता हेतु उनकी जाँच करता है तथा प्रदत्तों की विवेचना करता है।

## ऐतिहासिक अनुसंधान के उद्देश्य

1. ऐतिहासिक अनुसंधान का प्रमुख उद्देश्य अतीत की घटनाओं का वैज्ञानिक रूप से अध्ययन करना है।

2. ऐतिहासिक अनुसंधान अतीत के अध्ययन से वर्तमान का अध्ययन तथा भविष्य के लिये पूर्वकथन करना है।

3. ऐतिहासिक अनुसंधान के उद्देश्य अतीत के सम्बन्ध में वर्तमान की जिज्ञासा को शान्त करना है।

4. ऐतिहासिक अनुसंधान का उद्देश्य हमारे गौरवमयी अतीत का ज्ञान कराकर आत्म गौरव प्रदान करता है।

## वर्णनात्मक अनुसंधान

वर्णनात्मक अनुसंधान विधि उन परिस्थितियों तथा सम्बन्धों से सम्बन्ध है जो वर्तमान में है, अभ्यास जो लागू है, वे दृष्टिकोण या अभिवृत्तियाँ जिनको वर्तमान में माना जा रहा है, प्रक्रियायें जो चल रही है, प्रभाव जिनकी अनुभूति हो रही है तथा वे परम्परायें या दशायें जो विकसित हो रही हैं।

## वर्णनात्मक अनुसंधान के उद्देश्य

1. भावी अनुसंधान के प्राथमिक अध्ययन में सहायता करना जिससे अनुसंधान को अधिक नियंत्रित एवं वस्तुनिष्ठ बनाया जा सके।

2. मनोवैज्ञानिक विशेषताओं से परिचय प्राप्त करना तथा शैक्षिक नियोजन में सहायता करना।

3. वर्तमान स्थिति का स्पष्टीकरण, भावी नियोजन तथा परिवर्तन में सहायता करना।

## प्रयोगात्मक अनुसंधान

यह एक उन्नत विधि है जिसके अन्तर्गत हम किसी सूक्ष्म समस्या का सूक्ष्म समाधान प्रस्तुत कर सकते हैं। प्रयोगात्मक विधि अर्थ उपयोगिता की दृष्टि से अत्यन्त व्यावहारिक है क्योंकि इसमें अध्ययन नियंत्रित परिस्थितियों में किया जाता है।

प्रयोग में बहुधा किसी घटना को ज्ञात दशाओं में कराया जाता है तथा बाह्य प्रभावों को यथासम्भव दूर करते हुये निरीक्षण किया जाता है। जिससे प्रपंचे के सम्बन्ध को भली प्रकार प्रदर्शित किया जा सके।

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## प्रयोग विधि

1. चर एक ऐसा गुण है, जिसके विभिन्न मूल्य हो सकते हैं।

2. चर किसी घटना या प्रक्रिया का वह स्वरूप है जो अपनी उपस्थिति से किसी दूसरी घटना या प्रक्रिया को जिसका अध्ययन किया जा रहा है, प्रभावित करता है।

## प्रयोगात्मक विधि के पद

1. समस्या चयन एवं उसका परिभाषीकरण।

2. सम्बन्धित साहित्य की खोज।

3. प्रयोग प्रारूप तैयार करना।

4. प्रदत्त संकलन।

5. प्रदत्त विश्लेषण एवं विवेचन।

6. निष्कर्ष प्राप्त करना।

7. परिणामों का लिखना।

## गुणात्मक अनुसंधान

गुणात्मक अनुसंधान को प्रायः निषेधात्मक रूप में वर्णित किया जाता है, अर्थात् यह शोध अमात्रात्मक है। यह समस्या दो कारणों से है, प्रथम कुछ गुणात्मक अनुसंधान का परिणाम मात्रात्मक होता है।

द्वितीय यह निषेधात्मक अनुमान का प्रतिनिधित्व करता है। गुणात्मक अनुसंधान रूपावली पर आधारित है।

## मात्रात्मक अनुसंधान

मात्रात्मक शोध से भाषा संकेत और तात्पर्य पर संकेन्द्रण तथा साथ ही, अतिसरल और अलगाव के बजाय समग्र और प्रासंगिक विश्लेषणात्मक दृष्टिकोण से भिन्न हो जाता है।

फिर भी विश्लेषण के व्यवस्थित और पारदर्शी दृष्टिकोण को लगभग हमेशा ही यथातथ्यता के लिये आवश्यक माना जाता है।

मात्रात्मक पद्धतियों को संकेद्रित परिकल्पनाओं माप, उपकरणों और प्रायोगिक गणित के माध्यम से अधिक निरूपक विश्वसनीय और सटीक माप प्रदान करने वाले के रूप में देखा गया है।

### संदर्भ ग्रन्थ सूची

1. *शैक्षिक अनुसंधान एवं सांख्यिकी, अस्थाना डॉ0 विपिन श्रीवास्तव डॉ0 विजया अस्थाना कु0 निधि, अग्रवाल पब्लिकेशन्स आगरा—2*

2. *शैक्षिक अनुसंधान एवं साख्यिकी, सिंह डॉ0, रामपाल शर्मा, डॉ0 ओ0पी0, विनोद पुस्तक मन्दिर, आगरा—2*

3. *शैक्षिक अनुसंधान विधियाँ, सरीन एवं सरीन, विनोद पुस्तक मन्दिर, आगरा—2*

# Observation as a Tool for Data Collection in Behavioural Research

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**Abstract**

A researcher is required to gather data from various sources in order to get answers to his research problem. For this , he may utilise a variety of research techniques and tools of data collection in order to carry out both qualitative and quantitative analysis. Observation is one of the most effective technique of data collection and is widely used among researchers. In this chapter we will discuss this technique in detail, outlining its definitions, features, types, procedures, merits and demerits.

**Observation— Definition**

Numerous scholars and authors have described and defined the technique of observation in their own unique styles. Some of the definitions are discussed below-

**Young (1956:154)**

Observation is a systematic and deliberate study through the eyes of spontaneous occurrences at the time they occur. The purpose of the observation is to perceive the nature and extent of significant

interrelated elements within complex social phenomena, cultural patterns or human conduct.

### Sukhia et al. (1966:126)

Observation as a tool of research deals with the external behaviour of persons in appropriate situations, controlled or uncontrolled. It is concerned, as a rule, with neither what a respondent places on paper, nor what he says in an interview (but invariably with what is actually observed and noted by the researcher himself).

### Patton (1990:203–05)

Observational data are sensitive to contexts. This enables researchers to understand the context of programmes, to be open ended and inductive, to see things that might otherwise be unconsciously missed, to discover things that participants might not freely talk about in interview situations, to move beyond perception-based data (e.g. opinions in interviews), and to access personal knowledge. Because observed incidents are less predictable, there is certain freshness to this form of data collection that is often denied in other forms, e.g. a questionnaire or a test.

### Kumar (2005:119)

Observation is one way to collect primary data. It is a purposeful, systematic and selective way of watching and listening to an interaction or phenomenon as its takes place.

### Best and Kahn (2006:305)

From the earliest history of scientific activity, observation has been the prevailing method of inquiry. Observation of natural phenomena, aided by systematic classification and measurement, led to the development of theories and laws of nature's forces. Observation continues to characterize all research: experimental, descriptive, and qualitative.

**Cohen et al. (2007:396)**

The distinctive feature of observation as a research process is that it offers an investigator the opportunity to gather 'live' data from naturally occurring social situations. In this way, the researcher can look directly at what is taking place *in situ* rather than relying on second hand accounts.

**Features and Functions of The Observation Technique**

From the above definitions, the following characteristics and functions of the observation technique can be understood:

1. Observation may be considered as one of the most natural methods used in scientific inquiry.

2. Observation technique provides the researcher with a valuable and unique opportunity to get first hand information from the sample under study.

3. Observation technique has a wide applicability and can be used in a variety of researches like descriptive and normative survey, experimental and quasi-experimental studies, quantitative and qualitative researches and so on.

4. observation method provides a rare opportunity to the investigator to collect live or ongoing information by observing the events occurring in the natural environment.

5. Observation allows for both the freedom to observe behaviour in natural setting as well as in controlled conditions.

6. Observation is concerned with what is actually observed and recorded by the researcher through rating Performa, the marking schedules, recording devices or observation notes .

7. Observation is especially advantageous in conditions where the subjects are unable or unwilling to provide data required by the researcher.

**Types or Kinds of Observation**

Observation as a tool of data collection may be classified in various ways. Some of them are mentioned below.

1.  Participant and Non Participant Observation
2.  Structured and Non- Structured Observation.
3.  Controlled and Uncontrolled Observation.
4.  Individual and Group Observation

**Participant and Non- Participant Observation**

In a participant observation, the researcher attempts to fuse his identity with the participants identity. He does everything that is required of him to be regarded as one of the members of the group, so as to win their trust and find out all the things he needs to know about them for the purpose of his research. Thus, the researcher plays both the role of the participant as well as that of an observer.

In the non-participant observation, the researcher or observer does not act as a participant in any manner. He is only the observer, noting and recording the events for his study. It is essential to note that the researcher may either act overtly or covertly depending upon the needs of the research.

**Structured and Non- Structured Observation**

Structured observations are those observations which are organized and systematic in their processing. Here the activity of observation as well as recording of the data is standardized or structured. Here the observer makes use of some well-planned devices or instruments like observation schedule, rating scales, checklists etc.

Non-structured observations are those in which the researcher does not follow a fixed set of rules or a systematic procedure for recording the things and events. Here the researcher does not try to interfere in the situation, rather he simply observes and records in the natural settings. This is the reason why the non-structured observation is often regarded as the naturalistic

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observation. It is most often used in explorative research as well as in descriptive and normative survey.

**Controlled and Uncontrolled Observation**

On the basis of the presence or absence of efforts made by the researcher in exercising control over the observed situations and factors of the investigation, observation may also be categorised as controlled and uncontrolled.

Controlled observations are those observations which resemble structured observations in their principle and procedure. Yet, in their practical application, they are more planned, systematic, rigid and methodological as compared to structured observations. These are mainly applied in experimental and quantitative studies rather than in non-experimental and qualitative ones. Uncontrolled observations on the other hand may be more likely to take the shape and form of naturalistic observation, discussed above.

**Individual and Group Observation**

On the basis of the number of subjects who are observed at a given time, observation may further be classified as individual or group observation.

The single-subject research designs, case study procedures, and behaviour modification specially present opportunities for organizing observation specifically on individual basis. Depending on the availability of resources and the requirements of the study, in the individualized observation, the researcher may adopt a structured or an unstructured (Naturalistic) procedure.

Group observations allow the researcher to effectively study the behaviour of a group, their style of living, behaving, social interactions and so on.

**Procedure for Carrying Out Observation**

Observation as a technique of research must be employed in a scientific manner. In general the following 3 steps are followed by the researchers/observers for data collection:.

**Step**

1- Planning for observation *step*
2- Execution and Recording of observation *step*
3- Interprettation of the observed results

**Examples of The Use of Observation As A Tool In Behavioural Science Research**

1. The observation of an individual's (sample) behaviour when he is in a group or crowded situation v/s his behaviour in isolation.
2. The observation of children's behaviour while participating in a group activity or game.
3. The observation of child rearing practices of a given social or cultural environment.
4. The observation of various patterns and styles of classroom interactions.
5. The observation of the strategies employed to market or advertise a product.

**Merits of Employing Observation Technique**

There are many advantages of using observation as a tool of data collection in behavioural research. Some of them are listed below:

1. Observation technique helps the researcher to analyse behaviour and to understand the nature of a situation or event in its purely natural form.
2. It is essentially useful in studying group interactions like those occurring in classrooms, teams etc.
3. Observation as a tool of data collection is greatly useful in situations where interviews and questionnaires do not yield necessary data. This could be in situations where the sample is

uncomfortable, unable or unwilling to provide information to the researcher. For instance, a person may not feel at ease in voicing his various prejudices in the course of an interview.

4. The observation technique is helpful in cases where there are barriers of language.

5. It is an economical tool with respect to money, time and labour.

6. it can be used in collecting data for both qualitative and quantitative analysis.

**Demerits of Employing Observation Technique**

There are some limitations of observation technique. They are as follows:

1. The observation technique can prove beneficial only when the observer or researcher is well trained. If the researcher lacks the adequate skill for observation, the method does not yield reliable data.

2. When the subjects become conscious or notice that they are being observed by a researcher, they may begin to behave in ways that is not purely natural. This defeats the entire purpose of observation as observation aims to gather authentic data in natural setting.

3. Subjectivity and biases on the part of the observer or researcher can severely hamper the reliability and validity of the technique of observation.

4. The observation method is unable to establish a cause and effect relationship.

5. The observation technique does not take into account the internal aspects of an individual's personality, like his unconscious thoughts, desires, fears etc. It only focuses on observing the overt behaviour. Thus, a complete picture of a person's personality cannot be reached through this tool.

6. It is difficult to draw inferences, conclusions and reach specific decisions on the basis of the observed phenomenon.

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7. In the observation technique, the researcher has to simultaneously observe the subjects as well as has to record or note the observed behaviour. This becomes a challenging task for the researcher.

8. It is a time taking and an expensive activity.

Thus we can see from the aforesaid discussion that observation is a very popular tool of data collection in behavioural science. Even though it has some limitations, they are not those which certain skill, sensitivity and sincerity on the part of the researcher cannot fix. The merits of the technique are immense as it aids in providing useful data to the researcher, under natural setting. A technique of data collection, observation has a wide applicability in qualitative as well as quantitative research.

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# Interview As A Method of Data Collection In Behavioural Research

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**Introduction**

The term 'interview' is borrowed from the Latin language which means "see each other". It is a formal meeting between an Interviewer and Interviewee where questions and answers takes place. It is one of the most ubiquitous method of obtainingdata from individuals in Behavioural research. It is mainly done to get to know each other and also to select and recruit right candidate for a job.

It is a conversation in which questions are asked and answers are given. In common, the term 'interview' refers to a one- to-one conversation with one person acting in the role of the interviewer and the other in the role of the interviewee. In this chapter, we will discuss the various definitions of Interview, their characteristics, types, functions, and the steps which are to be followed by an Interviewer while conducting an interview. After that, we will be getting on the various types of interview and their advantages as well as disadvantages.

**Definitions**

Various Scholars have defined interview in different ways. Some of them are as follows:

According to Kerlinger (1985), "The interview is face- to- face interpersonal role situation in which one person, the Interviewer, asks a person being interviewed, the respondent questions designed to obtain answers pertinent to research problem."

Dyer (1995: 56): An interview is constructed rather than naturally occurring situation and this renders it different from an ordinary everyday conversation."

Kothari (1990): Expressed academically, interviews provide a method of data collection that involves presenting the oral- verbal stimuli and collecting the oral- verbal response.

Thus, it is a social process which involves at least two persons, the Interviewer and the Respondent.

An interview is probably man's oldest and most often used device for obtaining information. An interview is flexible as well as adaptable to individual situations, and can often be used when no other method is possible or adequate.

The Interviewers are needed to be trained; questions must be pre-tested and revised in order to eliminate ambiguities and inadequate wording. It reveals both the direct and indirect data. Direct data are responses that respondents provide to direct questions, they are spoken or verbal responses Whereas, the indirect data is less obvious or involves hidden information conveyed by gestures, body language, or a lack of eye contact.

**Characteristics/ features of Interview Method**

Interviews can give us both qualitative as well as quantitative data about participants' thoughts, feelings and behaviours. This is because of standardization and/ or free ranging nature of questions involved in interview. Some of the characteristics or features of interview are mentioned below. These are as follows:

**Face-to- Face Situation**

Interview is a face- to- face situation in which both the Interviewer and the Interviewee are involved. But, some psychologists have argued that, it is not always a face- to- face situation. Researchers suggest that, interviews can also be conducted or controlled through telephones.

**Questions are asked and answers are givenverbally**

An Interviewer asks the questions from the Respondent verbally and the latter is required to give responses in the same manner.

**Information is Recorded by The Interviewer and Not By Therespondent**

The information in an interview process is recorded by an Interviewer rather than the Respondent. This feature of an interview is equal to the characteristic of experiment and observation methods because, in these methods, observer records the information.

**Flexibility in the format of the Interview**

In this method, Interviewer is free to ask as many questions as he wants. This provides the flexibility to this method.

**Higher Reliability and Validity of the Data**

The reliability and validity of the data collection through interview method is higher than the other usual methods of data collection such as questionnaire, observation schedules, or rating scales.

**Procedure and Steps of Conducting Interview**

For conducting an interview, there are some of the steps which an Interviewer is required to follow. These steps are as under:

### Table 1: Steps for Conducting an Interview

| |
|---|
| **Step- 1:** Planning and preparation for the interview. |
| **Step- 2:** Execution or Taking or the interview. |
| **Step-3:** Closure and follow- up of the interview. |

**Step-1**

Firstly, the researcher is needed to have an insightful appropriate pre- planning and preparation for the smooth conduct of the interview. He/ she must be definite about the objectives of the interview. The type and format of interview must be decided. The physical and psychological conditions in which interview is to be held should be checked properly so that, both the interviewer and the interviewee should not feel uncomfortable. Apart from this, the Interviewer should make the choice regarding the types of items (questions) to be framed for the interview process. Generally, there are two types of questions i.e., Open- Ended questions and Closed-Ended questions.

**Step-2**

What is planned at the first step here, it is translated into action on the part of the interviewer.

**Step-3**

The researcher is supposed to look at the objectives of the interview are realized at the most as decided before. The data collected should be as complete as possible. The interviewer must try to analyse and draw necessary conclusion from the recorded information and responses of the interview for realizing the objectives of the study.

**Functions of Interview**

Interview is selected as a research tool basically because it serves two functions which mark it out with positive advantages from the rest of the methods of data collection. The two major functions of Interview are:

**Description**

Interview method has been found to be particularly useful in providing insight into the interactive quality of social life. In this, people spend most of the time with one another in some form of verbal interaction. This interaction enables the Interviewer in understanding how people view the subject under investigation. This understanding helps him know his social life which is otherwise abstract and merely a statistical phenomenon.

**Exploration**

Second purpose of an interview is to provide insight into the unexplored dimensions of a topic or subject. The work done in this area reveals that an interview helps a lot in exploring some new variables for study as it also helps sharpen the conceptual clarity. Talking with respondents and thereby gaining insight into their conduct from inquiries about their behavioural dimensions provides adequate stimulation for development of various hypotheses for subsequent testing and research.

**Types of Interview Method**

The Interviewer typically has only a list of topics or issues, often called an interview guide or aide mèmoire; that are typically covered. The style of questioning is usually informal. The phrasing and sequencing of questions varies from interview to interview.

The Interviews are classified in a number of ways, depending upon the mode of classification adopted for same. Lets have a glimpse on them.

**Table 2: Different types of Interviews**

| On the basis of number of Interviewers and Subjects- | On the basis of nature of interaction between Interviewer and Interviewee- |
|---|---|
| 1. Individual/ personal Interviews<br>2. Group Interviews<br>3. Single- Interviewer Interviews<br>4. Panel Interviews | 1. Face- to- face traditional Interviews<br>2. Telephonic Interviews<br>3. Computer Assisted Interviews |
| **On the basis of direction or focus of Interview-** | **On the basis of nature of the structuring of Interview** |
| 1. Non- directed Interviews<br>2. In- depth Interviews<br>3. Directed or Focussed Interviews | 1. Structured and Standardized Interviews<br>2. Semi- Structured Interviews<br>3. Unstructured and Non- Standardized Interviews |

Now, let's read these types of Interviews in detail.

**Classification on the basis of Interviewers and Subjects involved**

It consists of four types of Interviews. These are as follows:

1.  Individual or personal Interviews- In this, only one person is interviewed by the Interviewer in order to get answers of research questions. There is a close face- to- face interaction between both the involved persons. This type of interview is quite helpful in collecting information from the Subject. These types of Interviews are quite valuable, especially in studies, educational remedial treatments, behaviour modification programmes, and prescription of the needed psychological and therapeutic measures for welfare of individuals.

2.  Group Interviews-The main purpose of group interview is to see how the Interviewee interacts with others and how he/ she influences others with knowledge and reason. This is one of the

best way to discover any leadership potential among the Respondents. As a result of such interviews, the researcher is able to collect valuable information from number of individuals comprising the group at one time at one place in a convenient manner.

3. Single- Interviewer Interviews- In these, there is only one Interviewer who is responsible for conducting individual or group interviews with the subjects of the study.

4. Panel Interviews- A Panel Interview involves more than two members interviewing a person. It is the most common mode of interview when hiring a person for senior level. In this interview, the Interviewer tries to gauge the group management and group presentation skills of the Interviewee.

**Classification of Nature of Interaction between Interviewer and Interviewee**

It includes three types of Interviews:

1. Face- to- face traditional Interviews- This is the most common and traditional type. In this interview, the Respondent and the Interviewer meets face- to- face. The main concept of this interview is to build rapport with the Interviewee.

2. Telephonic Interviews- These are conducted completely over the phone and is very effective in eliminating any bias that may arise from the appearance and manner of the Respondent. It is used to narrow the field of respondent. These interviews are increasingly used in mass hiring.

3. Computer Assisted Interviews- In such Interviews, the Respondent or the Interviewer uses an electronic device to answer the questions.

**Classification on The Basis of Direction of Focus of Interview**

According to this, there are three types of Interviews. These are:

1. Non- directed Interviews- It is not directed or rigidly controlled by researcher according to his/ her own whims and planning but provides a direction – free environment to the interviewees for their free expression.

2. In- depth Interviews-These are more focussed and directed in their nature and composition than the non- directed and focussed interviews. Researcher tries to focus on a single aspect of problem or information area and then try to penetrate deeply into it.

3. Directed Interviews- It includes a clear- cut direction and focus for its planning and processing. Researcher decides the way in which the interview has to proceed along with the sole purpose of the organization.

**Classification on The Basis of Nature of Structuring of Interview**

There are three types of Interviews on the same basis. These are as follows:

1. Structured and Standardized Interviews- The format of such interviews is structured and standardized leaving no scope for flexibility on part of Interviewer during the interview. Itinvolves interview schedules that have been carefully prepared to obtain information pertinent to research problem. Questions are generally very specific and very often offer the Interviewee a fixed range of answers.

2. Unstructured and Non- Standardized Interviews- This provides greater flexibility, open situation and freedom to both the Interviewer and the Interviewee for playing their respective roles in the task of interview. In other words, the Unstandardized interview is an open situation in contrast to the Standardized, which is a closed situation.

3. Semi- Structured Interviews- It refers to a context in which the Interviewer has a series of questions that are in the general form of an interview schedule but is able to vary the sequence of

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questions.The Interviewer also has some latitude to ask further questions in response to what are seen as significant replies. It uses open ended questions to encourage respondents to think, express values and provide answers in their words.

**Factors affecting the Uses of Interviews**

Social scientists have found various factors that influence the usefulness of interviews. These factors can be grouped into three major factors:

**Characteristics of Interviewers**

The work done in this area reveals that both the Subjective and Objective characteristics of the interviewers influence the usefulness of the interview. Subjective characteristics are those characteristics which are peculiar to the individual and are extremely important where the major function of the research is exploratory. For the interview to be effective, it is essential that the interviewers must have inquisitive minds so that they are capable of readily attuning themselves to the newly emerging facets of a problem. If the Interviewer possesses this quality, then he/ she can readily sharpen the questions, redirect and concentrate on other matters if needed during the time of interview. The Interviewer must have the ability of drawing together the scattered pieces of information into a uniform and integrated whole, which helps him/ her to conduct the interview in a smooth manner.

Apart from these Subjective characteristics, Objective characteristics of the Interviewer are also important from the point of view of the effectiveness of the interview. The main Objective characteristics of the interviewers like sex, age, race, manners, clothing, culture, education, social class, speech, etc., are important in determining the effectiveness of the interview because they interfere with, rather than influence the verbal dialogue that takes place between the interviewers and the interviewees (Gorden, 1969).

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**Characteristics of Interviewees**

As an interview is a special form of conversation, So, it is expected that the characteristics possessed by the interviewees can also affect the effectiveness of the interview. The two basic characteristics of the interviewees that tend to influence the effectiveness of the interview are as follows:

1. The first is the capacity of the interviewees to verbalize. Thus, the very young and the mentally retarded or ill and others with extremely limited communication skills are not considered as effective interviewee.
2. The second is the willingness of the interviewees, i.e., the interviewees must be willing to verbalize their viewpoints regarding the research problems.

**Nature of the Problem under Study**

This also influences the effectiveness of interviewing. In general, it is believed that when the research problems are such that touch the segments of the person's private lives and/ or when the problem are such that they create special difficulties in verbalization, they tend to have an impact upon the scientific quality of interviewing.

Thus, the effectiveness of interviewing is determined not only by the qualities of the interviewees and interviewers but also by the nature of the research problem.

**Advantages**

Gorden (1969) has mentioned some of the merits of the interview method. These are as follows:

1. An Interviewer gets desired information from the Respondent in a very less time.
2. This is a good technique for getting information about the complex, emotionally laden subjects.
3. It can be easily adapted to the ability of the person being interviewed.

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4. Data collected through this method is likely to be more correct compared to the other methods that are used for data collection.

5. Any misunderstanding and mistake can be rectified easily in an interview because the interviewer and interviewee are physically present.

6. It increases mutual understanding and cooperation between the Researcher and the Subject.

7. This is less costly than other processes of communication. It is simple, prompt and low cost method.

8. Because of flexibility in question, researcher can obtain an in-depth information from the subject.

9. This method makes it easy for the researcher to observe or analyse the non- verbal cues of the Respondent.

**Disadvantages**

Apart from merits, interview method has some demerits also. Some of them are as under:

1. Interview is a systematic process of data collection. The success of an interview depends on the efficiency of the Interviewer. This inefficiency of an Interviewer can lead to misleading results.

2. Most of the time, there is a possibility that the interview process can be influenced by the biases of the Interviewer.

3. Time constraint is one of the major limitations of the interview process. Preparation for the interview, taking interviews and interpretation of the responses requires much time, which makes this method time- consuming.

4. This is more confusing and very complicated method in comparison to other methods.

5. It requires highly skilled Interviewer for the observation, evaluation or analysis of the obtained data.

6. The quality of data received depends on the ability of the Interviewer. Some people have the natural capability to conduct an interview and gather data well. Some Interviewers may also

have their own biases that could affect the way they input responses.

7. Structured interviews are not flexible. It means thatnew questions cannot be asked impromptu (i.e; during the interview) as an interview schedule must be followed.

8. Employing and training Interviewers is an expensive process and not as cheap as collecting data via questionnaires. For example, certain are needed by the Interviewer. These include the ability to establish rapport and knowing when to probe.

9. The researcher must ensure that they will keep all the details of the Interviewee confidential and respect their privacy. This is difficult when using a group interview. For example, the researcher cannot guarantee that the other people in the group will keep the information confidential and respect privacy.

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# Research in Rural Development

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**Abstract**

The conceptual definition of rural development as, "It is utilization, protection and enhancement of the natural, physical and human resources needed to make long term improvements in rural living conditions. It involves provision of jobs and income opportunities while maintaining and protecting the environment of rural areas". The areas namely agriculture, energy, water, housing, biotechnology, space technology, information technology, technology transfer, women empowerment and employment are presented in which the application of Science and technology could help in developing the rural areas. Though the importance of technical education for the development of India was appreciated in 1930 by Gandhi Ji giving rise to the work of the centre of science for villages, advanced institution of education & science and technology turned their attention to this area, only about 40 years later in the 1970s. The nation of rural development has been conceived in diverse ways by researches, ranging from

thinking of it as a set of goals and programs to a well knit strategy. Rural development become a planning concern as it become clear that strategies adopted in developing countries. It is a topic of research for improving the life in rural areas and rural development is in main focus in different planning's.

**Keywords**

Rural Development, Science and Technical Education.

**Introduction**

Science and technical education is the door way to the wider world and we should open this door for the development of India. The Prime Minister Shri Narendra Modi in science congress has called for efforts to ensure that Science, technology and innovation reach the poorest, the remotest and most vulnerable person. He said that for a prosperous future for India, we need to put science, technology and innovation at the top of national priorities. In his address he said more resilient agriculture, appropriate and affordable technologies, for rural areas, improving health care, making clean technology affordable and making India a leading manufacturing nation and a hub for knowledge and technology."

**Rural Development in Indian Context**

'India lives in its villages'- Mahatma Gandhi.

Literally and from the social, economic and political perspectives the statement is valid even today. Around 65% of the state's population is living in rural areas. People in rural areas should have the same quantity of life as enjoyed by people living in suburban and urban areas. Further there are cascading effects of poverty, unemployment, poor and inadequate infrastructure in

rural areas on urban centers causing slums and consequential social and economic tensions manifesting in economic deprivation and urban poverty. The present strategy of rural development mainly focuses on poverty alleviation, better livelihood opportunities, provision of basic amenities and infrastructure facilities through innovative programmes of wage and self-employment. The above goals will be achieved by various programme support being implemented creating partnership with communities, non-governmental organization community based organizations, institutions, PRIs and industrial establishments, while department of Rural Development provide logistic support both on technical, and administrative side for programme implementation. Other aspects that will ultimately lead to transformation of rural life are also being emphasized simultaneously.

**Dimensions of Rural Development**

1. Human Development
2. Natural Resources & Environment
3. Economic growth
4. Infrastructure
5. Science & Technology
6. Policy and Administration

**Human Development**

The basis of all rural development is people. If a rural area has massive out-migration of young people. It will be very difficult to initiate endogenous economic growth. The human dimension also include the educational level of the population, their cultural identity and their social structure.

## Natural Resources & Environment

Rural areas that are rich in natural resource, such as oil, coal, natural gas, forests, fertile soils or rivers that can be used for hydropower, have always attracted human population. In the long run, rural development based on natural resources is only possible if it does not over exploit these resources; if it preserves the cultural landscape, if it avoids pollution of soils, water and air and if it safeguards the biological diversity of plants and animals. Other than in cities where we can live and work in a highly artificial environment, the rural areas depend to a much greater extent on natural resources and a healthy natural environment for many of their economic activities, such as for tourism, food production or forestry. Every new policy measure for the promotion of rural development has to be evaluated in its impact on the natural environment.

## Economic Growth

In recent years there have also been economic developments in rural areas that could be summarized under the term 'new economy'. These include not only facilities and services of IT Industry, but also technology firms. The 'new economy is sometimes combined with traditional production and tourism, such as in the direct marketing projects on the internet for organically produced agriculture products.

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## Infrastructure

Infrastructure has a great impact on rural development. A road or highway may transform a sleepy country district into a vibrant tourist resort, a simple power line may propel a remote village into a vibrant rural community and a wireless transmitter many link, the most isolated place with the world wide web. Political leaders, at all times, used the construction of infrastructure to expand their sphere of influence into for away rural parts of their country.

## Science & Technology

Today, every sector in a modern society is affected by the breath taking development in science and technology. The rural areas are no exception. For instance, we must certainly study the impact of modern bio-technology on agriculture, livestock production and in the food industry. Important questions in this study will be which new technologies can be expected, and how they might impact on rural development.

## Policy and Administration

The public opinion and the participation of various social and economic groups in the political debate about development priorities probably one of the most important dimensions of rural change. Rural development scenarios therefore cannot be based solely on objective bio-physical condition or economic rationality they must also take into account political pressures; and this clearly requires analyses of the power balance between various political actors of rural development.

**Some Rural Development Agencies**

1.  USDA, Rural development, an agency of the United States Department of Agriculture.

2.  European Network for Rural development.

3.  England Rural development programme

4.  Agriculture developments & Training society, India.

5.  Nimbkar Agricultural Research Institute, India.

6.  District-Rural Development Agencies, India

**Conclusion**

The future of India belongs to the younger generation. All of us have to do our bit to get them involved in improving the lives of rural poor. This is a great challenge for all youngesters that they will take it up so as to make better life in rural areas.

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# अन्तर्राष्ट्रीय स्तर का गुणात्मक शोध पत्र लेखन :
# उद्देश्य एवं परिकल्पना

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## सारांश

सामान्य अर्थों में अनुसंधान वह प्रक्रिया है, जिसमें प्रदत्तों के माध्यम से मानवीय ज्ञान में वृद्धि की जाती है, तथा मानव जीवन को सुखमय और प्रभावी बनाया जाता है, अनुसंधान के माध्यम से नवीन तथ्यों की खोज की जाती है, तथा नवीन आंकडों का प्रतिपादन किया जाता है, ऐसी परिस्थितियों की जानकारी प्राप्त की जाती है, जिनमें कोई चर क्रियाशील या निष्क्रिय होता है।

अंग्रेजी में अनुसंधान को Research कहते है, यह दो शब्दों के योग से बना है। Re +Search, Re का अर्थ होता है, बार–बार या पुनः पुनः तथा Search का अर्थ होता है, खोजना। इस प्रक्रिया के दौरान एक शोधकर्ता किसी प्रयास को बार–बार करके उसका समाधान खोजने का प्रयत्न करता है। शोध कार्यों के सहायक घटक

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चरों के सह–सम्बन्ध का विश्लेषण किया जाता है, तथा इनमें सह–सम्बन्ध ज्ञात किया जाता है, यह शोधकार्य की विशिष्ट परिस्थितियों तथा शोध की अवधारणाओं पर आधारित होता है।

## प्रस्तावना

वर्तमान समय में अनुसंधान का विशेष महत्व है, समाज और राष्ट्र की प्रगति को हम शोध परिणामों से समझ सकते है। शोध कार्यों में मानवीय विकास तथा कल्याण को महत्वपूर्ण समझा जाता है। समान्यतः अनुसंधान में भौतिक विषयों (विज्ञान) के प्रयोगों को विशेष महत्व दिया जाता है, और ऐसे प्रयोगों को ही अनुसंधान की श्रेणी में रखा जाता है,

यह अनुसंधान का व्यापक अर्थ नहीं है, क्योंकि वास्तव में अनुसंधान के माध्यम से हम उन प्रश्नों के उत्तरों को खोजने का प्रयास करते है, जो अब तक अस्तित्व में नहीं है, अर्थात उनका उत्तर प्राप्त नहीं हो सका हैं। यह अनुसंधान मानवीय प्रयासों पर आधारित होता है। जो कि पूर्णतः सत्यता के निकट नहीं समझा जा सकता है।

''वैज्ञानिक शोध प्राकृतिक घटनाओं के बीच अनुमानित सम्बन्धों की खोज हेतु निर्मित परिकल्पनाओं का व्यवस्थित नियंत्रित अनुभाविक तथा आलोचनात्मक अनुसंधान है।''

## उद्देश्य एवं परिकल्पना

शैक्षिक अनुसंधान अन्य सामाजिक विषयों के अनुसंधानों से भिन्न है, शैक्षिक अनुसंधान से नवीन ज्ञान की वृद्धि के साथ व्यवहारिक उपयोगिता भी होनी चाहिए।

## शैक्षिक अनुसंधान के उद्देश्य

1. सैद्धान्तिक उद्देश्य
2. तथ्यात्मक उद्देश्य
3. सत्यात्मक उद्देश्य
4. व्यवहारिक उद्देश्य

## सैद्धान्तिक उद्देश्य

शिक्षा अनुसंधान में वैज्ञानिक शोधकर्ता द्वारा नये सिद्धान्तों तथा नियमों का प्रतिपादन किया जाता है, इस प्रकार के शोध कार्य व्याख्यात्मक होते है, इसमें चरों के सह–सम्बन्धों की व्याख्या की जाती है, जिसका शिक्षा को प्रभावशाली बनाने में किया जाता है।

## तथ्यात्मक उद्देश्य

शिक्षा के अन्तर्गत ऐतिहासिक शोधकार्य द्वारा नये तथ्यों की खोज की जाती है। इनसे वर्तमान परिदृश्य को समझने में सहायता मिलती है, इन उद्देश्यों की प्रकृति वर्णनात्मक होती है। क्योंकि तथ्यों की खोज करके उनका अथवा घटनाओं का वर्णन किया जाता है, नवीन अर्थों की खोज शिक्षा प्रक्रिया के विकास तथा सुधार में सहायक होती हैं।

## सत्यात्मक उद्देश्य

दार्शनिक शोध प्रदत्तों द्वारा नवीन परिणामों का प्रतिस्थापन किया जाता है, इनकी प्राप्ति से परिणाम तक पहुँचा जा सकता है, दार्शनिक शोध कार्यो द्वारा शिक्षा के उद्देश्यों सिद्धान्तों, शिक्षण विधियों तथा पाठ्यक्रम की रचना की जाती है, शिक्षा के प्राप्त अनुभवों का चिन्तन, बौद्धिक स्तर पर किया जाता हैं। जिससे नवीन सत्यों तथा मूल्यों का प्रतिस्थापन किया जाता है।

## व्यवहारिक उद्देश्य

शिक्षा अनुसंधान के निष्कर्षों का व्यवहारिक प्रयोग होना चाहिए। परन्तु कुछ शोध कार्यों में केवल उपयोगिता को ही महत्व दिया जाता है। ज्ञान के क्षेत्र में इसका उपयोग नहीं होता है, इन्हें क्रियात्मक अनुसंधान से शिक्षा की प्रक्रिया अर्थात इनका समस्या के समाधान से भी इस उद्देश्य की प्राप्ति होती है।

''शिक्षा अनुसंधान का अन्तिम उद्देश्य शिक्षा के क्षेत्र में निश्चित सिद्धान्तों और प्रक्रिया का विकास करना है।''

## अनुसंधान अध्ययन के उद्देश्यों के आधार पर

इन्हें चार भागों में विभक्त किया जाता है।

1.  विशुद्ध अनुसंधान (Pure Research) .
2.  व्यवहारिक अनुसंधान (Applied Research) .
3.  क्रियात्मक अनुसंधान (Action Research) .
4.  मूल्यांकन अनुसंधान (Evaluation Research) .

## परिकल्पना

परिकल्पना शब्द का अर्थ एक उपकथन से होता है, जो कि समस्या का समाधान की अवधारणा होती है। शोधकर्ता उसकी पुष्टि करने का प्रयास करता है।

परिकल्पना के कथन का स्वरूप एक व्याख्या के रूप में होता है, जो अवलोकन के परिणामों या सिद्धान्तों पर पुष्टि की जाती है,तब ही उसे परिकल्पना की संज्ञा दी जाती है, शोध की समस्त क्रियायें परिकल्पना पर ही केन्द्रित होती हैं। एक अच्छी परिकल्पना शोधकर्ता को उत्तेजना या कार्य करने को प्रेरित करती है। परिकल्पना की पुष्टि से शोध के निष्कर्ष निकाले जाते है। परिकल्पना को अंग्रेजी में Hypothesis कहते है।

यह दो शब्दों के संयोग या मिलकर बना है। हाइपो (Hypo) + थीसिस (Thesis) = Hypothesis हाइपोथीसिस, जिसमें हाइपो (Hypo) का अर्थ होता है, सम्भावित या जिसकी पुष्टि की जा सके, थीसिस का अर्थ होता है, समस्या के समाधान का कथन। हाइपोथीसिस का शाब्दिक अर्थ है, उस सम्भावित कथन से है, जो समस्या का समाधान प्रस्तुत करता है, परिकल्पना ऐसे समाधान को प्रस्तुत करती है, जिसकी पुष्टि प्रदत्तों के आधार पर की जा सके।

परिकल्पना को सम्भावित समाधान या सिद्धान्त भी कहा जाता है, इस कथन को अस्थाई रूप से सही मानकर इसकी पुष्टि का प्रयास किया जाता है, किसी शोध प्रक्रिया के नियोजन के लिए दिशा तथा आधार प्रदान करती है।

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## जॉन डब्लू बेस्ट के अनुसार

''परिकल्पना एक विचार युक्त कथन है, जिसका प्रतिपादन किया जाता है, और अस्थायी रूप से सही मान लिया जाता है, और निरीक्षण व प्रदत्तों के आधार पर, तथ्यों पर तथा परिस्थितियों के आधार पर व्याख्या की जाती है, जो आगे शोध कार्यों को निर्देशन देता है।''

## गुड तथा हैट के अनुसार

''एक परिकल्पना वह बात कहती है, जिसे हम आगे सोचते है, परिकल्पना सदैव आगे को देखती है, यह एक साध्य होती है, जिसकी वैधता हेतु परीक्षण किया जाता है, यह सत्य सिद्ध हो सकती है, और नहीं भी हो सकती हैं।''

## परिकल्पनाओं के प्रकार

परिकल्पनाओं रूप तथा सन्दर्भ के आधर पर कई तरह की होती है, परिकल्पना का रूप उसके कार्य के अनुसार पर निर्धारित किया जाता है, व्यावहारिक परिकल्पना एक ऐसे सम्भावित हल को प्रकट करती है, इसके अतिरिक्त सांख्यिकीय विश्लेषण अन्य प्रकार की परिकल्पना की जरूरत होती है, रूप तथा संदर्भ के आधार पर साधारणतः परिकल्पनायें चार प्रकार की होती है।

1. प्रश्न के रूप में (Question Form) .
2. घोषित कथन (Declarative) .
3. दिशायुक्त कथन (Direction Statement) .
4. दिशाविहीन कथन (Non- directional) .

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## प्रश्न के रूप में परिकल्पना

एक अच्छी परिकल्पना सरलतापूर्वक प्रदत्त संकलन को प्रदर्शित करना चाहिए। प्रश्न रूपी परिकल्पना में विशिष्टीकरण होता है, और नही भी होता है, इस प्रकार की परिकल्पनाओं का प्रयोग सरल शोधकर्यों में प्रयुक्त किया जाता है इसका रूप इस प्रकार होता है, कि उन्हें निरस्त भी किया जा सकता है, तथा स्वीकृति भी दी जा सकती हैं।

**उदाहरण–** क्या पुनर्बलन के प्रारूप और बहिमुखी व्यक्तिगत का अधिगत उपलब्धि पर सार्थक प्रभाव पड़ता है।

## घोषित परिकल्पना

घोषित परिकल्पना में चरों के सह–सम्बन्धों की घोषणा की जाती है। पूर्व अपेक्षित सह–सम्बन्ध तथा चरों के उत्तर को परिकल्पना घोषित कथन के रूप में विकसित की जाती है, पहले अपेक्षित अन्तर का विश्वास उपलब्ध प्रमाणों तथा अनुभवों के आधार पर किया जाता है।

**उदा0–** पुनर्बलन के प्रारूप और बहिमुखी के व्यक्तित्व का अधिगत उपलब्धि पर सार्थक प्रभाव होता है।

## प्रश्न के रूप में परिकल्पना

जब किसी सम्भावित समाधान को अपेक्षित दिशा में लिखा जाता है। तब उसे दिशायुक्त परिकल्पना कहा जाता है। इसमें चरों के सह–सम्बन्ध को अपेक्षित रूप में प्रकट किया जाता है। इसी प्रकार चरों के अन्तर को विशिष्ट रूप में लिखते है, इस प्रकार की

परिकल्पना का विकसित करना मुश्किल समझा जाता है, क्योंकि अपेक्षित दिशा को प्रकट करने का पर्याप्त सैद्धान्तिक आधार होना जरूरी होता है, इसके सम्बन्धित साहित्य की समीक्षा की सहायता ली जाती है, दिशायुक्त परिकल्पना को बिना सैद्धान्तिक आधार अथवा औचित्य के बैध नहीं माना जाता है।

**उदा0—** अन्तर्मुखी व्यक्तित्व के छात्र पुनर्बलन के लगातार प्रक्रिया से ज्यादा सीखते है, और बहिर्मुखी व्यक्तित्व के छात्र पुनर्बलन के अन्तरिय प्रक्रिया के उत्तर प्रकार सीखते है।

इस प्रकार की परिकल्पना का रूप मुश्किल है, क्योंकि शोधकत्र को कुछ परिस्थितियों पैदा करनी होती है, कुछ शोधकर्त इस प्रकार की परिकल्पना को दोषपूर्ण बतलाते हैं, कि वह शोध कार्य में वस्तुनिष्ठ नहीं कर पाता है, जो दिशा प्रकट की है, उसकी किसी न किसी प्रकार की पुष्टि करना चाहता हैं। इसलिए आज दिशाविहीन परिकल्पना का प्रतिपादन ज्यादा किया जाता है।

## दिशाविहीन परिकल्पना

इन्हें भ्रम वश शून्य परिकल्पना (Null Hypothesis) भी कहते है, इसका प्रयोग केवल सांख्यिकी की सार्थकता के परिक्षण के लिए किया जाता है, इस प्रकार की परिकल्पना को नकारात्मक रूप में विकसित किया जाता है, चरों के सह—सम्बन्ध को नकारात्मक कथन लिखा जाता है, इसी प्रकार के चरों के अन्तर को भी नकारात्मक रूप में प्रकट करते है, इस प्रकार की परिकल्पना की विशेषता यह है कि इनके लिए कोई सौद्धान्तिक आधार या औचित्य

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प्रस्तुत नहीं करना होता है, शोधकर्ता को वस्तुनिष्ट भी रखती है, इनको विकसित करना अपेक्षाकृत सरल होता है, सम्बन्धित साहित्य समीक्षा की भी जरूरत नहीं होती है।

### उदाहरण

बहिर्मुखी व्यक्तित्व तथा पुर्नबलन के प्रक्रिया का अधिगम उपलब्धि पर सार्थक प्रभाव नहीं होता है।

### निष्कर्ष

प्रायः हम किसी अनुसंधान कार्य करने का तात्पर्य होता है कि किसी नये सिद्धान्त या नियम को प्रतिपादित करें। या किसी किये गये शोध कार्य का वर्तमान परिस्थितियों तथा समस्याओं के निवारण हेतु उसका पुष्टिकरण पुनः किया जाये। जिससे देश व समाज के साथ–साथ बालकों के विकास को गति प्रदान की जा सके।

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# Linear Regression Analysis Using R for Research and Development

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**Abstract**

The future forecasting opportunities and risks estimation are the most prominent prerequisite for a successful business. Regression analysis can go far beyond forecasting. The linear regression analysis technique is a statistical method that allows examining the linear relationship between two or more quantitative variables of interest. The rationale of the linear regression analysis technique is to predict an outcome based on historical data and finding a linear relationship. The present chapter, we discuss the implementation of linear regression using a statistical computing language R and consider that the suggested approach provides an adequate interpretation of research and business data.

## Introduction

### Software R

R is a software environment with a programming language. It is developed for statistical computing, data analysis, and visualization supported by the R Foundation. In 1993, R was developed by Ross

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Ihaka and Robert Gentleman at the University of Auckland, New Zealand. R is named of its first two authors. Now R is available as open-source software. R possesses an extensive catalog of statistical and graphical methods. It also has available data mining and machine learning algorithm. R is not only entrusted by academic even some reputed business organization including Uber, Google, Airbnb, Facebook also use. The scientific community has recognized computation using R. The enormous resources of R available on the internet.

Detail of some R function used to build and analyzed regression analysis.

1. The vector is a basic data structure that contains the element of the same type. Generally function c ( ) is used to create a vector, e.g., X is a vector that contains all inters from 1 to 10.

    X = c (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)

2. The lm( ), or  linear model  function be used to create a simple regression model. General form of linear model as under.

    model=lm ( Y~X1+X2+X3, data=data_frame)

3. The summary ( ) function return Residual Standard error, Significance test,  R2, Adjusted R2 , F Statistics.

    summary (linear_model)

4. The residual vector to be created using function resid( ).

    res=resid(linear_model)

5. The plot ( ) function use to plot scatter plot.

6. The abline ( ) function used to draw a straight line

7. The boxplot ( ) is used to plot a univariate graph of a quantitative vector.

## Regression Analysis

A coefficient of correlation is used to measure the relationship between two variables. It is given about the strength and direction of the relationship between two variables. It is also noted the coefficient of correlation between two variables measures only linear relationship. Regression analysis is a mathematical function or technique which investigates the relationship between a target (dependent) and predictors (independent variable**)**. In the study of regression analysis, variables can be categorized into two types dependent variable and independent variables. The values of the dependent variable have resulted from the changes in the values of dependent variables. Dependent variables, also known as target variable, regressed variable, or study variable,  while the independent variables are called repressor variable or explanatory variables. An example rainfall and yield of the crop in an instance, yield depends upon the amount of rainfall so that here yield is dependent variable and rainfall is the independent variable. According to the number of available impendent variable, regression analysis divided into two categories, e.g., simple linear regression and multiple linear regression. A simple linear regression model describes the linear relationship between two variables; however, the multiple linear regression model describes the linear relationship between one dependent variable with multiple independent variables.

The term regression was suggested by Sir Francis Galton (16 February 1822– 17 January 1911) in the nineteenth century to explained a biological phenomenon. Regression analysis plays a vital role in the field of forecasting and investigation based on chronicle datasets. David W. Letcher et al. (2010), used regression analysis to find the relationship between some education parameters, e.g., expectations met, the value of the educational investment and recommend the program to a friend. Juan-Carlos Ayala and Guadalupe Manzano (2014), developed some linear regression

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models to find the relationship between resilience factors and objective growth, resilience factors and different measures of objective growth, and resilience factors and subjective growth. Joshi, Seema, and Shukla, A.K. (2015), described some multiple linear regression model for yield forecasting of agricultural commodities. R.S. Rajput et al. (2018), developed a forecasting model of sugarcane productivity using multiple linear regression and improve that model using genetic algorithms.

### Simple Linear Regression

A simple linear regression model describes the linear relationship between two variables, and the model equation can express as per equation, x is an independent variable, and y is the dependent variable. The constant numbers $α$ and $β$ are called parameters, and $ε$ is the error term.

$$y = α + βx + ε \tag{1}$$

### Significance Test for Linear Regression

The significance test of linear regression focuses on the coefficient $β$ of the regression model in equation 1. Where $α$ is a constant and $β$ is the slope. If the $β$ is significantly different from zero then concluded, there is a significant relationship between the independent and dependent variables. Hypothesis for testing significance for linear regression as $H_o$: $β = 0$, $H_a$: $β ≠ 0$.

The null hypothesis states that the coefficient $β$ is equal to zero; the alternative hypothesis states the coefficient $β$ is not zero. It is a point of consideration when the value of $β$ in equation 1 is zero; then equation 1 represents constant value for all independent values.

### *Residual*

*Residual (e) is a measure that obtained as a difference between the actual value of the dependent (target) variable (y) and the predicted value (ŷ) using model. Each data point has one residual.*
Residual = Observed value - Predicted value

$$e = y - ŷ \tag{2}$$

Sum and the mean of the residuals in a regression model are equal to zero.

**Coefficient of determination**

The coefficient of determination (denoted by $R^2$ and ranges from 0 to 1) is a crucial measure of regression analysis. $R^2$ is described as the proportion of the variance in the dependent variable that is predictable from the independent variable. $R^2$ equal to 0, means that the dependent variable cannot be predicted and $R^2$ equal to 1, indicate the dependent variable can be predicted from the independent variables without error.

**Example 1**

In the following table are recoded data showing the test score made by salesmen on an intelligence test and their weekly sales

**Table-1: Sales and Test Score**

| Salesmen | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Score | 40 | 70 | 50 | 60 | 80 | 50 | 90 | 40 | 60 | 60 |
| Sales in 000 Rs | 2.5 | 6.0 | 4.0 | 5.0 | 4.0 | 2.5 | 5.5 | 3.0 | 4.5 | 3.0 |

**Solution**

Data table 1 has two quantitative variables, test score, and sales value. The variable sales value depends upon variable test score so that sales variable treated as a dependent variable and test score variable treated as the independent variable.

Create vectors for the variable as per example 1.

**Figure-1: Creating vectors in R**

```
> score=c(40,70,50,60,80,50,90,40,60,60)
> sales=c(2.5,6.0,4.0,5.0,4.0,2.5,5.5,3.0,4.5,3.0)
```

The lm( ) function is used to develop a linear model.

**Figure-2: Development of a linear model using R**

```
> model=lm(sales~score)
```

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Estimate model Equation, type model name on the R prompt.

**Figure-3: Parameter of model**

```
> model

Call:
lm(formula = sales ~ score)

Coefficients:
(Intercept)          score
    0.75000        0.05417
```

As per the output from the developed model The model equation is as under

Sales =0.75+0.05417*Test Score +Error

(3)

**Figure-4: Regression table in R**

```
> summary(model)

Call:
lm(formula = sales ~ score)

Residuals:
    Min      1Q   Median      3Q      Max
-1.08333 -0.82292 -0.02083  0.53125  1.45833

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.75000    1.17969   0.636   0.5427
score        0.05417    0.01904   2.845   0.0216 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.9326 on 8 degrees of freedom
Multiple R-squared:  0.503,     Adjusted R-squared:  0.4408
F-statistic: 8.096 on 1 and 8 DF,  p-value: 0.02163
```

The $p$-value of the score is 0.0216, which is less than 0.05, so that is evidence of alternation hypothesis. so that it is proof there is

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a significant relationship between sales and score. **Coefficient of determination** $R^2$ is 0.503.
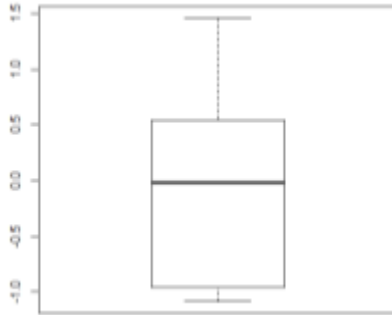
**Figure-5: Box Plot of residual**



Figure 5 shows residuals vary from -1.083 to 1.45, and median of residual is -0.02. Figure 6 is a plot between actual sales values with residuals, and points show the residual model is good if point near to the middle line.
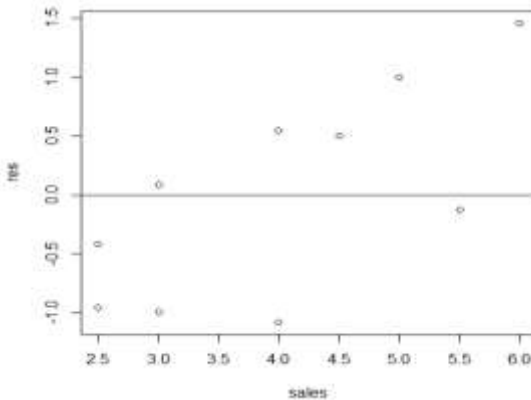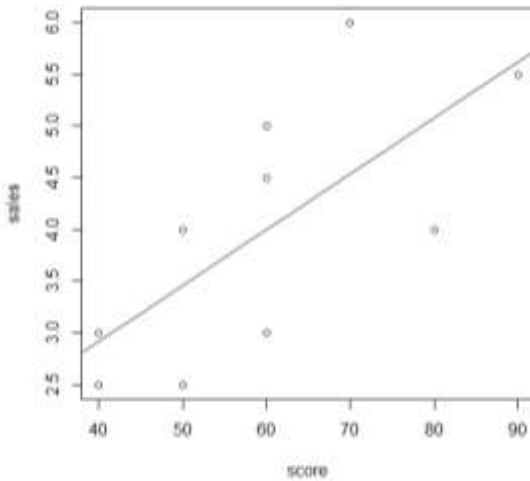
**Figure-6: Plot of residual**



Figure 7 shows a scatter plot with a simple linear regression equation.

**Figure-7: Plot model equation**



Findings from the model: after analyzed figure 4-7, it is concluded that *p*-value of the score variable is 0.0216, which is less than 0.05 so that conf. level 95% it has evidence for alternation hypothesis; hence, there is a significant relation with test score with sales. **Coefficient of determination** $R^2$ is 0.503; it is not very good, but it is considerable. Scatter plot also shows a positive correlation. Model equation is Sales =0.75+0.05417*Test Score +Error.

**Multiple Linear Regressions**

A multiple linear regression model is advance regression model of simple linear regression model that describes a dependent variable *y* by many independent variables $x_1$, $x_2$, ..., $x_p$ ($p > 1$) is expressed by the equation as follows.

$$y = \alpha + \beta_k x_k + \epsilon \qquad (4)$$

Where the numbers $\alpha$ and $\beta_k$ ($k = 1, 2, ..., p$) are the parameters, and $\epsilon$ is the error term.

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**Example 2**

An analyst was studying a chemical process expects the yield to be affected by the levels of two factors, $x_1$ and $x_2$. Observations recorded for various levels of the two factors are shown in the following table. The analyst wants to fit a regression model to the data interaction between $x_1$ and $x_2$.

**Table-2: Observations for Various Levels of The Two Factors And Yield**

| Observation Number | Factor 1 $(x_{i1})$ | Factor 2 $(x_{i2})$ | Yield $(y_i)$ |
|---|---|---|---|
| 1 | 41.9 | 29.1 | 251.3 |
| 2 | 43.4 | 29.3 | 251.3 |
| 3 | 43.9 | 29.5 | 248.3 |
| 4 | 44.5 | 29.7 | 267.5 |
| 5 | 47.3 | 29.9 | 273.0 |
| 6 | 47.5 | 30.3 | 276.5 |
| 7 | 47.9 | 30.5 | 270.3 |
| 8 | 50.2 | 30.7 | 274.9 |
| 9 | 52.8 | 30.8 | 285.0 |
| 10 | 53.2 | 30.9 | 290.0 |
| 11 | 56.7 | 31.5 | 297.0 |
| 12 | 57.0 | 31.7 | 302.5 |
| 13 | 63.5 | 31.9 | 304.5 |
| 14 | 65.3 | 32.0 | 309.3 |
| 15 | 71.1 | 32.1 | 321.7 |
| 16 | 77.0 | 32.5 | 330.7 |
| 17 | 77.8 | 32.9 | 349.0 |

**Solution**

Data table 2 has three quantitative variables, yield, factor1, and factor2. The variable yield depends upon variables factor1, and factor 2, so that the yield variable treated as a dependent variable and factor1, factor 2 variables are treated as the independent variables. Create vectors for the variable as per example 2.

**Figure-8: Creating vectors in R**

```
> x1=c(41.9,43.4,43.9,44.5,47.3,47.5,47.9,50.2,52.8,53.2,56.7,57,63.5,65.3,71.1,77.0,77.8)
> x2=c(29.1,29.3,29.5,29.7,29.9,30.3,30.5,30.7,30.8,30.9,31.5,31.7,31.9,32.0,32.1,32.5,32.9)
> y=c(251.3,251.3,248.3,267.5,273,276.5,270.3,274.9,285,290,297,302.5,304.5,309.3,321.7,330.7,349)
```

The lm( ) function is used to develop multiple linear model.

**Figure-9: Development of a linear model using R**

```
> model=lm(y~x1+x2)
```

Estimate model Equation

**Figure-10: Parameter of model**

```
> model

Call:
lm(formula = y ~ x1 + x2)

Coefficients:
(Intercept)            x1            x2
   -153.512         1.239        12.082
```

Model equation is

y = -153.512+1.233*x1+12.082*x2+ Error

(5)

Here x1 is factor1, x2 is factor2 and y is yield.

### Figure-11: Regression table in R

```
> summary(model)

Call:
lm(formula = y ~ x1 + x2)

Residuals:
   Min    1Q Median    3Q    Max
-8.998 -4.035 -0.318  4.267  8.630

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) -153.5117   100.8799  -1.522  0.15034
x1             1.2387     0.3946   3.139  0.00724 **
x2            12.0824     3.9323   3.073  0.00827 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 5.499 on 14 degrees of freedom
Multiple R-squared:  0.968,     Adjusted R-squared:  0.9635
F-statistic: 211.9 on 2 and 14 DF,  p-value: 3.419e-11
```

The $p$-value of the $x_1$ is 0.00724, which is less than 0.05, so there is evidence of alternation hypothesis. so that it is proof there is a significant relationship between y and $x_1$. The $p$-value of the $x_2$ is 0.00827, which is less than 0.05, so there is evidence of alternation hypothesis. so that it is proof there is a significant relationship between y and $x_2$. **Coefficient of determination** $R^2$ is 0.968.

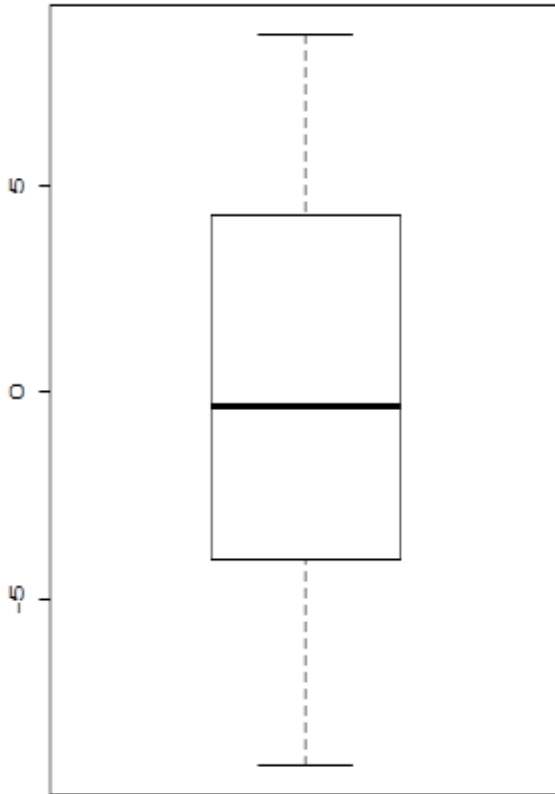**Figure-12: Box Plot of residual**



Figure 12 shows residuals ranged from -8.998 to 8.630, and median of residual is -0.318. Figure 13 is a plot between actual sales values with residuals, and points show the residual model is good if point near to the middle line.
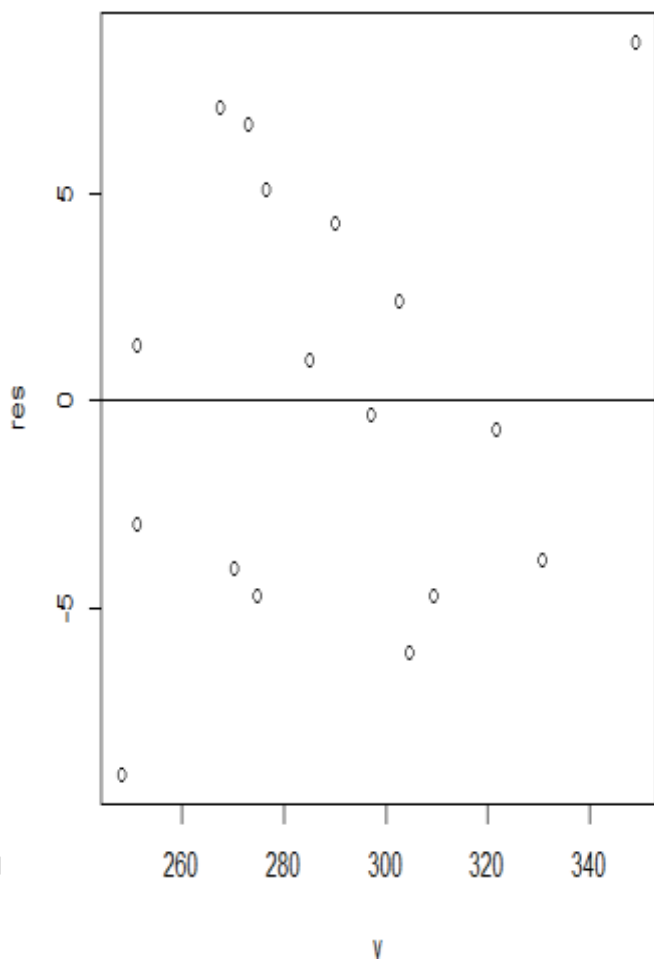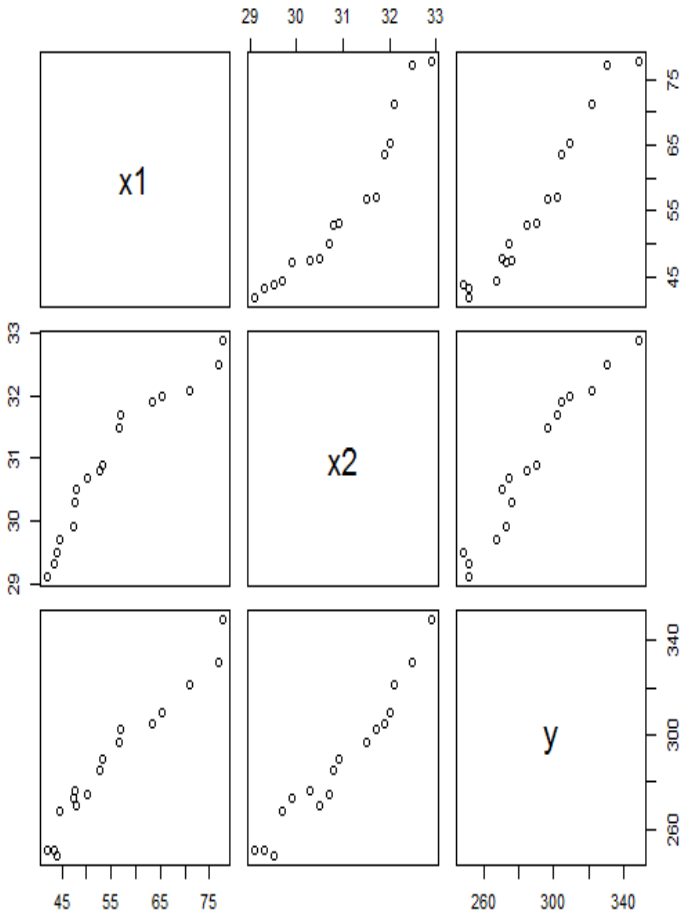
## Figure-13: Plot of residual

**Figure-14: Scatter plots between x1, x2, and y**



There are strong positive correlations exist between $x_1$ and $x_2$, $x_1$ and y, $x_2$ and y it is cleared by scatter plot in figure 14.

Findings from the model: after analyzed figure 10-14, it is concluded that $p$-value of the $x_1$ is 0.00724, which is less than 0.05, so there is evidence of alternation hypothesis. so that it is proof there is a significant relationship between y and $x_1$. The $p$-value of the $x_2$ is

0.00827 which is less than 0.05, so there is evidence of alternation hypothesis. so that it is proof there is a significant relationship between y and $x_2$. There are positive, and strong correlations exist between $x_1$ and $x_2$, $x_1$ and y, $x_2$ and y. Coefficient of determination $R^2$ is 0.968; that is an indication of an excellent model. The proposed multiple linear model equation is y = -153.512+1.233*x1+12.082*x2+ Error.

**Conclusion**

In the present chapter, we discussed simple linear regression and multiple linear regression. The chapter covers the fundamentals of linear regression, regression model equation, the test of significance, coefficient of determination, and residual with residual analysis. R is a potent statistical computation tool, all the computation of chapter conducted by using R. We also explain R computations for the regression model with the help of two examples. Regression model also visualized with the help of some plots that are created with the help of R.

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# अंतर्राष्ट्रीय स्तर का शोध पत्र : महत्व, उद्देश्य, साहित्य चोरी से बचाव एवं चुनौतियाँ

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## सारांश

इस लघु शोध–पत्र में अर्न्राष्ट्रीय स्तर के शोध पत्रों का महत्व, उद्देश्य, साहित्य चोरी की सम्भावनायें एवं इससे बचाव के उपाय व शोध लेखन में आने वाली चुनौतियाँ आदि का अध्ययन इस शोध पत्र के अंर्तगत किया गया है, जिसे विस्तृत रुप में आगे प्रस्तुत किया जा रहा है।

**मुख्य शब्द** : शोध, वैज्ञानिक, प्रारुप, पत्र लेखन, अर्न्राष्ट्रीय, साहित्य, चुनौतियाँ, अनुसंधान आदि।

## प्रस्तावना

संसार में अनेक प्राणी हैं। परन्तु मानव ही एक ऐसा प्राणी है, जो प्रारम्भ से ही अपने पर्यावरण के प्रति जागरुक एवं जिज्ञासु रहा है। उसने अपने तर्क, बुद्धि, चिन्तन, मनन आदि के द्वारा प्राकृतिक एवं सामाजिक पर्यावरण का अवलोकन किया। वह निरन्तर खोज करता रहा कि किन परिस्थितियों में, किन–किन कारणों से कौन से परिणाम निकलते हैं। मानव

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की जिज्ञासा की प्रवृति का ही परिणाम है वह अपने चारों ओर की दुनियाँ को देखने व समझने का अनवरत प्रयास करता है।

जो जिज्ञासु व्यक्ति इन अनेक प्रकार के समस्याओं के उत्तरों को जानने का प्रयास करता है उसे शोधकर्त्ता कहा जाता है। शोध पत्र लेखन का प्रमुख उद्देश्य सामाजिक व व्यवहारिक व्यवस्था के उन नियमों की खोज करना है जिनके द्वारा यह व्यवस्था नियंत्रित, निर्देशित और संचालित होती है। इस प्रकार शोध क्षेत्र के क्रम में प्रश्नों के उत्तर खोजने का क्रम जब अनवरत चलता रहता है, तो वह शोध–पत्र लेखन का रुप ग्रहण कर लेता है।

व्यापक अर्थ में अनुसंधान (Research) किसी भी क्षेत्र में '**ज्ञान की खोज करना**' या '**विधिवत गवेषणा**' करना होता है। वैज्ञानिक अनुसंधान में वैज्ञानिक विधि का सहारा लेते हुए जिज्ञासा का समाधान करने की कोशिश की जाती है। नवीन वस्तुओं की खोज और पुराने वस्तुओं एवं सिद्धांतों का पुनः परीक्षण करना, जिससे की नए तथ्य प्राप्त हो सके, उसे शोध कहते है। सामान्यतः अनुसंधान अंग्रेजी के 'Research' शब्द से बना है, जो मुख्यतः दो शब्दों के संयोजन Re + Search क्रमशः दोबारा, पुनः खोज या नया कर अनुसंधान करने से है अर्थात् जिसकी पूर्व में खोज हो चुकी है, उसे आगे संशोधित कर तथ्यात्मक एवं वैज्ञानिक बनाकर और आगे बढ़ाना एवं लोगों के समक्ष प्रस्तुत करना शोध (Research) कहलाता है।

## परिभाषा

1. स्माल के अनुसार, ''इसके निम्नतम स्तर पर सरल अंग्रेजी में (अनुसंधान) केवल वस्तुओं की खोज निकालने का एक प्रयास है।''

2. स्पार एवं स्वेन्सन के अनुसार, ''कोई भी विद्वत्तापूर्ण अनुसंधान ही सत्य के लिए, तथ्यों के लिए, निश्चितताओं के लिए अन्तेषण है।''

### शोध का उद्देश्य

इस लघु शोध–पत्र के मुख्य उद्देश्य निम्न हैं–

1. शोध पत्र लेखन में आने वाली चुनौतियों को जानना एवं समाधान के उपाय सुझाना।
2. शोध पत्र व शोध लेखन में साहित्य चोरी के बचाव के उपाय सुझाना।
3. शोध पत्र की महत्वत्ता को विश्व समाज के समक्ष प्रस्तुत करना।
4. शोध पत्र को अर्न्राष्ट्रीय स्तर पर बल मिलने के उपाय सुझाना।
5. शोध पत्र को अर्न्राष्ट्रीय स्तर पर स्टेज मिलने के उपाय सुझाना।
6. शोध पत्र में आने वाली समस्याओं व चुनौतियों का समाधान सुझाना।

### शोध विधि

प्रस्तुत शोध पत्र के द्वारा शोध की महत्ता प्रस्तुत कर भारतीय समाज ही नहीं बल्कि अन्तर्राष्ट्रीय स्तर पर पूरे विश्व के प्रत्येक देश के समाज में इसकी आवश्यकता को बताना है, किन्तु किसी शोध पत्र के लेखन कार्य में कई समस्याएं बीच में आती है, जिसे एक शोधकर्त्ता को इसका मुकाबला करना पड़ता है। यह एक चुनौतीपूर्ण कार्य है, की कहीं उसका शोध कार्य किसी अन्य साहित्य का कॉपीराईट तो नहीं हैं। अतः इस शोध पत्र को प्रस्तुत करने से पूर्व शोध पत्र लेखन में मेरे द्वारा विभिन्न सर्वेक्षण पद्धतियों का प्रयोग कर अध्ययन को अधिक विश्लेषणात्मक एवं वैज्ञानिक बनाया गया है। शोध पत्र हेतु प्राथमिक व द्वितीयक स्त्रोतों, विभिन्न पत्र–पत्रिकाओं की सहायता से आँकड़े एकत्रित कर उनका विश्लेषण कर निष्कर्ष पर पहुँचा गया हैं। द्वितीय आँकड़ों को लघु शोध में प्रकाशित एवं अप्रकाशित स्त्रोतों से एकत्रित किये गये एवं उनका विस्तृत अध्ययन कर संश्लेषित किया गया। जिसे अध्ययन करते समय विभिन्न समस्यायें सामने देखने को मिली जो एक अर्न्राष्ट्रीय स्तर के शोध पत्र लेखन में अवधारणा के रुप में एक रुकावट बन सकती है। ये प्रमुख चुनौतियाँ है, जिसका सामना करना जरुरी हैं।

अन्तर्राष्ट्रीय स्तर के शोध पत्र की महत्त्ता

शोध पत्र से शोध प्रारूप के महत्व का स्पष्ट अनुमान हो जाता है, ब्लैक और चैम्पियक (1976–77) के शब्दों में कहां जाये तो– ''शोध प्रारूप से शोध कार्य को चलाने के लिए एक रेखा तैयार हो जाती है, शोध प्रारूप से शोध सीमा और कार्य क्षेत्र परिभाषित होता है। शोधकर्त्ता को शोध को आगे बढ़ाने वाली प्रकिया में आने वाली समस्याओं का पूर्वानुमान लगाने का अवसर प्राप्त होता है।''

अध्यापन के अलावा दूसरे क्षेत्रों में विशेषज्ञों की बढ़ती मांग ने शोध के प्रति रुझान बढ़ाया है। आज विश्वविद्यालयी शोध के गिरते स्तर और शोधार्थियों को ऊपर आ रही मुश्किलों को ध्यान में रखते हुए शोध के बारे में एक बुनियादी समझ बनाना जरूरी हो गया है। शोध उपाधियों हेतु बढ़ते रुझान के दो प्रमुख कारण हैं– रोजगार के लिए शोध की बढ़ती अनिवार्यता और पिछले वर्षों में शुरु हुई विभिन्न शोधवृत्तियां। अच्छे उच्च शिक्षण संस्थानों में अध्यापन के लिए तो शोध अनिवार्य हो गया है।

इसके अतिरिक्त शोध पत्र की आवश्यकता व महत्व अनेक प्रकार से हैं। यह मानव समाज का वैज्ञानिक पद्धति से अध्ययन करके हमें अनेक प्रकार से सहायता पहुँचाता है। समाज की संरचना कार्यो, संगठनों, उनकी समस्याओं आदि का हमें ज्ञान प्रदान करता है। इस ज्ञान का उपयोग समाज में विकास की योजनाओं को बनाने में किया जाता हैं। समाज की क्या–क्या समस्याऍ है ? इन सबका ज्ञान अंतर्राष्ट्रीय स्तर के अनुसंधान हमें समय–समय पर प्रदान करता हैं, जिसकी सहायता से समाज के विकास की योजनाएं अच्छी बनाई जा सकती हैं और लक्ष्यों को सरलता से प्राप्त किया जा सकता है। एक अच्छे अंतर्राष्ट्रीय स्तर के शोध व शोध पत्रों की पूरे विश्व में महत्त्ता रहती है। पूरे विश्व के प्रत्येक देश अपने नियम–कानून, नीतियां चाहे वह अंतर्राष्ट्रीय स्तर के हो या किसी सामाजिक, सांस्कृतिक, आर्थिक, राजनीतिक या भौगोलिक ही क्यों ना हो अपनी नीतियां बनाने से पूर्व इन शोध पत्रों का अध्ययन जरुर करते हैं,

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जिससे एक अच्छी योजना बन सके एवं जिससे एक राष्ट्र को सभी पहलुओं से लाभ प्राप्त हो और अच्छे समाज का निर्माण हो सके। वर्तमान में शोध पत्र का महत्व वैश्वीकरण से और अधिक बढ़ने लगा है। कोई भी राष्ट्र अपनी नीतियां व योजनायें बनाने के लिए दूसरे देशों के 'शोध पत्रों का अध्ययन जरुर करते है, जिससे इसकी महत्त्वता और अधिक बढ़ जाती है। वर्तमान में भारतीय शोध पत्रों की बात करे तो यहां के शोध पत्रों ने विश्व स्तर पर अपना प्रभाव बनाये रखा है। कोई भी देश अपनी नीति–कानून व योजना बनाने से पूर्व भारतीय शोध पत्रों का अध्ययन जरुर करता है। अतः हमें और चाहिए की अपने राष्ट्र के शोध पत्रों की गुणवत्ता में और अधिक वृद्धि करने का प्रयत्न कर इसे और सुधारा जा सकता है। फिर भी वर्तमान में भारतीय शोध पत्र की महत्त्वता अपने आप में पूरे विश्व में गुंज रही है। शोध पत्र की महत्त्वता को कुछ बिन्दुओं के माध्यम से और अच्छे से समझा जा सकता है, जो निम्न है–

1. अनुसंधान के माध्यम से हम वैज्ञानिक नीतियों चिंतन करना और साथ ही साथ इन विकल्पो में से प्रत्येक के परिणामों की जाँच कर सकते हैं।

2. अनुसंधान हमारी आर्थिक प्रणाली में लगभग सभी सरकारी नीतियों के लिए आधार प्रदान करता हैं।

3. यह बौद्धिक संतुष्टि प्रदान करता हैं।

4. रिसर्च सामाजिक रिश्तों का अध्ययन करने में सामाजिक वैज्ञानिकों के लिए भी उतना ही महत्वपूर्ण हैं।

5. अनुसंधान ज्ञान की खातिर के लिए ज्ञान का फव्वारा हैं।

6. यह एक बेहतर तरीकों से एवं क्षेत्र में नए घटनाक्रम को समझने के लिए सक्षम बनाता हैं।

7. यह एक तरह का औपचारिक प्रशिक्षण हैं।

8. शोध पत्र नए सिद्धांतो का सामान्यीकरण मतलब हो सकता हैं।

9. अज्ञानता का निवारण।

10. शोध पत्र नई शैली और रचनात्मक के विकास का मतलब हो सकता हैं।

11. ज्ञान में वृद्धि।

12. समस्याओं का समाधान ।

13. समाज सुधार।

14. सामाजिक नियंत्रण।

15. भविष्यवाणी।

16. विज्ञानों का विकास।

17. प्रशासन मे उपयोगी।

18. सैद्धांतिक और व्यावहारिक महत्व।

19. शोध सामाजिक विकास का सहायक है।

20. शोध से व्यक्तित्व का बोद्धिक विकास होता है।

21. शोध से व्यवहारिक समस्याओं का समाधान होता है।

22. शोध मानव ज्ञान को दिशा प्रदान करता है तथा ज्ञान भण्डार को विकसित एवं परिमार्जित करना है।

23. शोध जिज्ञासा मूल प्रवृत्ति की सतुष्टि करना हैं।

24. शोध अनेक नवीन कार्य विधियों व उत्पादों को विकसित करता है।

25. शोध ज्ञान के विविध पक्षों में गहनता और सूक्ष्मता प्रदान करना है।

26. शोध पूर्वाग्रहों के निदान और निवारण में सहायक हैं।

शोध पत्र का विज्ञान में बहुमुखी विकास के लिए अत्यंत महत्व हैं। इन विज्ञानों के तथ्यों, सिद्धांतों तथा ज्ञान के विकास में शोध पत्र लेखन अनेक प्रकार से महत्वपूर्ण तथा उपयोगी हैं।

## शोध पत्र का उद्देश्य

अध्ययन के उद्देश्य का निर्धारण शोध पत्र का महत्वपूर्ण अंग हैं। एक उन्हें अन्तर्राष्ट्रीय स्तर पर शोध पत्र के अध्ययन की प्रकृति और प्राप्त किये जाने वाले लक्ष्यों के अनुसार उद्देश्य भिन्न–भिन्न होते है। कुछ शोध पत्रों का उद्देश्य विवरणात्मक तथ्य या व्याख्यात्मक तथ्य या तथ्य जिनसे

सैद्वांतिक रचना कि व्युत्पति हो या तथ्य जो प्रशासनिक परिवर्तन या तुलना को बढ़ावा दे, को इकड्ढा करना होता है। अध्ययन का जो भी उद्देश्य हो अपने शोध की प्रकृति के अनुरुप शोध कार्य की तैयारी आवश्यक है। अतः एक अच्छे शोध पत्र के अनुरुप शोध कार्य की तैयारी आवश्यक है। अतः एक अच्छे शोध पत्र के निम्न उद्देश्य हो सकते है –

1. एक ऐसा शोध करना जिसे शोध की विषय वस्तु और शोध कार्यविधि कि दृष्टि से दोराहाया जा सके।

2. अपनी उपकल्पना का समर्थन करने और वैकल्पिक उपकल्पनाओं का खण्डन करने हेतु प्रर्याप्त साक्ष्य इकड्ढा करना।

3. एक पूर्ण विकसित शोध परियोजना कि भावी योजनाओ को चलाने के लिए मार्ग दर्शन शोध पत्र के अध्ययन कि आवश्यकता को दिखाना।

4. परिवर्तनों के मध्य सम्बंधों को इस तरह से जाँच ने में सक्षम होना जिससे सहसम्बंध ज्ञात हो सके।

5. शोध सामग्रीयों के चयन की उचित तकनीको के चूनाव द्वारा समय और साधनों के अपव्यय को रोकने में सक्षम होना।

6. शोध के परिपूर्ण परिदृश्य को प्रदान करना।

7. शोध की सीमा एवं परिधि प्रदान करना।

8. शोध विषय को परिभाषित, स्पष्ट एवं व्याख्या करना।

9. तरीको एवं परिणामों को बतलाना।

10. समय और संसाधनों की सुनिश्चितता।

11. दूसरों को शोध क्षेत्र स्पष्ट करना।

## साहित्य की चोरी से अभिप्राय

किसी दूसरे कि भाषा, विचार, उपाय, शैली आदि का अधिकांशतः नकल करते हुये अपने मौलिक कृति के रूप में प्रकाशन करना साहित्यिक चोरी (Plagiarism) कहलाता है। यूरोप में 18वीं शताब्दी के बाद ही इस तरह का व्यवहार अनैतिक व्यवहार माना जाने लगा। इसके पूर्व की शताब्दीयों में लेखक एवं कलाकार अपने क्षेत्र के महारथियों की हूबहू नकल

करने के लिए प्रोत्साहित किये जाते थे। साहित्यिक चोरी तब मानी जाती है जब हम किसी के द्वारा लिखे गए साहित्य को बिना उसका सन्दर्भ दिए अपने नाम से प्रकाशित कर लेते है, इस प्रकार से लिया गया साहित्य अनैतिक बन जाता है और इसे साहित्यिक चोरी कहा जाता है, आज जब सूचना प्रोद्योगिकी का विस्तार तेजी से हुआ है ऐसे अनैतिक कार्य आसानी से पकड़ में आ जाते है, वर्तमान में 'प्लेगारिज्म' अकादमिक बेइमानी समझी जाती है। प्लेगरिज्म कोई अपराध नही है बल्कि नैतिक आधार पर अमान्य है।

साहित्य चोरी या किसी और के शब्दो अथवा विचारो को अपना कहने से व्यक्तियों के लिए जीवन की किसी भी स्थिति में समस्या उठ खड़ी हो सकती है। 1988 में संयुक्त राष्ट्र अमेरिका के राष्ट्रपति पद की उम्मीदवारी बिडेन को तो साहित्य चोरी की कीमत देनी पडी थी। अमेरिकन हेरिटेज डिक्शनरी में साहित्यिक चोरी को ऐसे परिभाषित किया है – किसी अन्य लेखक के विचारों तथा भाषा का अनाधिकृत उपयोग या नकल करके उसको अपनी मूल कृति के रूप में प्रस्तुत करना। इस प्रकार साहित्यिक चोरी का अर्थ शब्द दर शब्द दूसरे के काम की पूरी नकल करना ही नहीं है, बल्कि उसकी करीबी नकल भी है। समानार्थक शब्दों या अन्य चुनिन्दा शब्दों का प्रयोग आपको साहित्यिक चोरी से छुटकारा नहीं दिला देता है। आप जो भी लिखे वह अपने ही शब्दों में और उसके स्रोत भी साथ में दीजिये। आप उसकी एक ऐसी संक्षिप्त व्याख्या अपने शब्दों में लिख सकते हैं जो कि मूल पाठ को ही दूसरे शब्दों मे लिखने जैसा ना लगे। साहित्यिक चोरी इस पर भी लागू होती है– इंटरनेट से कोई लेख डाउनलोड कर लेना, किसी और को अपने लेखन के लिए काम पर रख लेना, दूसरे के विचार को अपने विचार दिखाने का प्रयास करना।

## साहित्य की चोरी से बचने के उपाय

एक अच्छे शोध पत्र जो एक अंतर्राष्ट्रीय स्तर का तब होता है, जिसका निर्माण स्वयं शोधकर्ता ने अपने आत्मचिन्तन, आत्मबल व अपने

विचार, भावनाओं को अपने शोध पत्र में उतारा है। वही शोध पत्र अपने आप में गुणवत्तापूर्ण कहलायेगा। इसके लिए शोधकर्ता को चाहिए की वह कॉपी राईट या साहित्य चोरी से बचे रहे। अगर जरूरत पड़ी तो वह किसी के कहे गये शब्दो को संदर्भ सहित बता सकता है। अतः इससे बचने के लिये कुछ उपायों को अपनाकर बचा जा सकता है।

## शोध पत्र को उद्धरण विधियों में ढालें

सभी शोध प्रबंधों को किसी न किसी विधि में दस्तावेजीकरण किया जाता है ताकि शैक्षिक चोरी से बचा जा सके। अपने शोध विषय और अध्ययन क्षेत्र के आधार पर आपको अलग–अलग प्रकार कि फोर्मेटिंग विधियों को चुनना होगा। MLA, APA और शिकांगो (Chicaogo) विधियाँ, यह तीनों विधियां सबसे अधिक उपयोग में लाई जाती है।

## प्रथम विधि (MLA)

MLA फोर्मेट को विशेष रूप से साहित्यक शोध–पत्रों के लिए इस्तेमाल किया जाता है और इसमें 'उद्धत सामग्री' की एक सूची अंत में जोड़नी होती है, इस विधि में अंतरपाठीय उद्धरण प्रयोग किये जाते है।

## द्वितीय विधि (APA)

APA फोर्मेट का इस्तेमाल सामाजिक विज्ञान के क्षेत्र में शोध पत्रों के लिये शोधकर्ताओं द्वारा किया जाता है और इसमें भी अंतरपाठीय उद्धरण देने होते है। इसमें निबंध का अंत 'संदर्भ' पृष्ठ के साथ होता हैं और इसमें मुख्य भाग के पेराग्राफों के बीच में अनुच्छेद शीर्षक का प्रयोग भी किया जा सकता है।

## तृतीय विधि (शिकांगो)

शिकांगो फोर्मेटिंग को प्रमुखतः ऐतिहासिक शोधपत्रों के लिये इस्तेमाल किया जाता है और इसमें अंतरपाठीय उद्धरण के स्थान पर पृष्ठ के नीचे फुटनोट का प्रयोग होता है और साथ में 'उद्धत सामग्री' और संदर्भों का पृष्ठ जुड़ता हैं।

## जिस विषय में बात कर रहे हों उससे परिचित हो जाइये

विषय को समझ जाने से, किसी और के द्वारा दी गई परिभाषा के पुनः कथन के स्थान पर आपके द्वारा उसे अपने शब्दों में लिखे जाने की सम्भावना बढ़ जाती हैं। आप जिस विषय पर लिखना चाहते हैं, उसकी जानकारी प्राप्त करिये। यह इंटरनेट पर भी मिल सकती है और किताबों में भी, हालांकि किताबें लगभग सदैव ही इंटरनेट से अधिक प्रमाणित होती है।

## स्वंय को विषय कई बार बताईये

असल बात है सामग्री को समझा पाना तथा उसका अर्थ अपने शब्दों में बताने की योग्यता। दूसरे लेखक की सामग्री बहुत ध्यान देकर मत पढ़िये अन्यथा झुकाव लेखक के व्यक्तव्य को ही फिर से कह देने का हो जायेगा।

## अपने उद्वरणों और स्रोतों का संदर्भ

आपको अपने लेख में संदर्भ सूची या उद्वत कार्यों का विवरण अवश्य सम्मिलित करना चाहिए। बताये जाने की स्थिति में अधिकांश अध्यापक स्टैंडर्ड एम. एल. ए. प्रारुप स्वीकार कर लेते है।

## जब संदेह हो, तब आभार मान लिजिये

साहित्यिक चोरी से बचने के लिये यह करने के अनेक तरीके हैं उनमें से कुछ यहां दिये गये है। अपनी व्याख्या के अंदर ही स्रोत का विवरण दें।

## कॉपी राइट के सम्बंध में कुछ आधारभूत बाते समझ लिजिये

साहित्यिक चोरी न केवल अकादमिक दृष्टि से बुरी है, बल्कि यदि आप कॉपी राइट भंग करते है, तो वैधानिक अपराध भी। सामान्य नियम यह है कि तथ्यों को कॉपी राइट नहीं किया जा सकता है। इसका अर्थ यह है कि आप अपने लेखन का समर्थन करने के लिये जो भी तथ्य खोज सकें उसका उपयोग कर सकते हैं।

उद्धत ''नहीं'' किया जाना चाहिए

अकादमिक शोध में प्रत्येक चीज उद्धत नहीं होनी चाहिए अन्यथा शोध करने वालो के लिये वह बहुत कष्टदायी हो जायेगा। इन चीजों को अपने शोध या निर्णायक लेख में उद्धत मत करिये।

साहित्यिक सामग्रियों की चोरी कर अपने लिट्रेचर में शामिल कर लेना, कोई नई बात नहीं है। जब से इंटरनेट आया है, ऐसी घटनायें आये दिन की बात हो चुकीं हैं। साहित्यिक चोरी कि बेशर्मी तो इस हद तक बढ़ गई है कि दूसरे की कविता वे सरे आम मंचों से सुनाने लगे हैं। ऐसे कई वाक्य मेरी स्वयं की जानकारी में है, मेरी आंखों के सामने हुए हैं, जब बढ़े कवियों की रचनायें उनके सामने ही, उनके कविता पढ़ने से श्रोताओं को सुना दी गई।

वर्तमान में 'प्लेगरिज्म' अकादमिक बैइमानी समझी जाती है। प्लेगरिज्म कोई अपराध नहीं हैं बल्कि नैतिक आधार पर अमान्य हैं। इंटरनेट से कोई लेख डाउनलोड कर लेना, किसी और को अपने लेखन के लिये काम पर रख लेना, दूसरे के विचारों को अपने विचार दिखाने का प्रयास करना भी साहित्यिक चोरी मानी जाती हैं। आज सब सूचना प्राद्योगिकी का विस्तार तेजी से हुआ है। ऐसे में पूरा विश्व एक ग्लोबल विलेज में तब्दील हो गया हैं और ऐसे अनैतिक कार्य आसानी से पकड़ में आ जाते है।

## शोध पत्र लेखन में चुनौतियाँ

शोध पत्र की कार्यप्रणाली मे एक वैज्ञानिक प्रशिक्षण की कमी के कारण महान बाधा हमारे देश के शोधकर्ताओं के लिए उत्पन्न हो गयी हैं। कई शोधकर्ता शोध पत्र लेखन की विधियों को जाने बिना ही अंधेरे में एक छलांग लगाने लगते हैं। शोध पद्धति एक व्यवस्थित अध्ययन है जो एक तात्कालिक आवश्यकता हैं। इसको पूरा करने के लिए गहन पाठ्यक्रम प्रयासों को कम अवधि में प्रदान करने के लिए बनाया जाना चाहिए। शोध पत्र की प्रकृति तथा उद्देश्य वैज्ञानिक हैं। परन्तु कुछ चुनौतियाँ है, जो

उसे पूर्ण रूप से वैज्ञानिक नहीं बनने देती हैं। शोध पत्र लेखन के अनेक महत्व और उपयोगिताएँ हैं लेकिन उसकी कुछ विशिष्ट समस्याएँ भी है, जैसे –

1. घटनाओं की जटीलता
2. प्रकाशित आंकड़ों की समय पर उपलब्धता की कठिनाई।
3. अच्छे स्तर की पुस्तकालयों की उपलब्धता न होना।
4. उच्च स्तर की गुणवत्ता पूर्ण पुस्तक व विषय सामग्री उपलब्ध न होना।
5. अवधारणा की समस्या।
6. एक अच्छा गाइडेन्स ना मिलना।
7. वस्तुनिष्ठता में कठिनाई।
8. प्रयोगशाला का अभाव।
9. मापन की समस्या
10. प्रमाणिकता व विश्वसनीयता की समस्या।
11. उपलब्ध विषय की जटिलता।
12. शोध सामग्री की प्राप्ति की समस्या।
13. शोध विषय लेने में जटिलता।
14. शोध गुणवत्ता में कमी।

आदि चुनौतियों का सामना एक शोधकर्ता को करना पड़ता हैं। जिससे उसका शोध लेख अंतर्राष्ट्रीय स्तर का होते हुए भी उस स्तर पर नहीं पहुँच पाता हैं।

## निष्कर्ष

एक अंतर्राष्ट्रीय स्तर का शोध पत्र लेखन के लिए पूर्व में शोध रणनीति का चयन एवं अनुसंधान डिजाइन बना कर उसके अनुरूप अपना कार्य सम्पादन करना चाहिए। जिससे एक अच्छे गुणवत्तापूर्ण वैज्ञानिक शोध पत्र का निर्माण हो सके। यह तभी संभव है, जब एक शोधकर्ता अपने आप को इस विषय के इर्द–गिर्द अपने आप को ढ़ालकर आत्मबल, आत्मचिंतन एवं स्वयं के विचारों अनुभवों लोगों से प्राप्त ज्ञान के आधार पर अपना लेख लिखे तो वह उसका शोध पत्र अवश्य ही एक अंतर्राष्ट्रीय स्तर पर जरुर

पहुँचेगा। वैश्वीकरण के वर्तमान दौर में उच्च शिक्षा की सहज उपलब्धता और उच्च शिक्षण संस्थाओं को इसकी महत्वता को बढ़ावा मिले और शोध का क्षेत्र ओर विस्तृत हो सके एवं समाज के सामने नई–नई जानकारी प्राप्त हो और एक सुव्यवस्थित विकसित समाज का विकास हो।

## सन्दर्भ ग्रंथ सूची

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# विशिष्ट विषयों के अध्ययन के प्रकटीकरण का माध्यम है – गुणात्मक अनुसंधान

**मंजुला जैन**
लाइब्रेरियन
नालंदा परिसर
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## सारांश

घटनाओं, अतिश्योक्तियों, अचरजों से प्रतिपल घटित होते इस संसार में अबूझ और गूढ़ प्रश्नों का हल प्राप्त करने का एकमात्र माध्यम गुणात्मक अनुसंधान है जो हमारे समस्त विचारों का एकीकृत कर, सरलीकृत कर, रहस्यों का उदघाटन करती है। सामाजिक विज्ञान के विषयों के साथ मानवीय व्यवहारों को समझने और विशिष्ट तरीके से प्रकटीकरण का साधन गुणात्मक अनुसंधान है जिसमें लक्ष्य, अवधारणा की पूर्ति के लिए छोटे प्रतिरूपों का चयन किया जाता है। सांख्यिकीय, तार्किक और गणितीय तकनीक को नियोजित करके खोजपूर्ण अनुसंधान की प्राप्ति की जाती है।

## प्रस्तावना

वर्ष 1970 के दशक तक गुणात्मक अनुसंधान का प्रयोग समाज शास्त्र के विषय अथवा मानव विज्ञान का उल्लेख करने के लिए किया जाता था। इसके बाद के दशक में शैक्षिक अध्ययन, सामाजिक कार्य अध्ययन, महिला अध्ययन, विकलांगता अध्ययन, सूचना अध्ययन, प्रबंधन

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अध्ययन, नर्सिंग सेवा अध्ययन, राजनैतिक विज्ञान, मनोविज्ञान, संचार अध्ययन सहित कई तरह के क्षेत्रों में अनुसंधान का एक महत्वपूर्ण प्रकार बनकर उभरा है। इसके बाद 90 के दशक में मात्रात्मक पक्ष की ओर से आलोचनाओं की वृद्धि होने से डेटा विश्लेषण की विश्वसनीयता और अनिश्चित विधियों के संबंध में परिकल्पित समस्याओं से निपटने के लिए गुणात्मक अनुसंधान की नई पद्धतियां विकसित हुईं।

सामान्य अर्थों में – गुणात्मक शोध से आशय गैर संख्यात्मक डेटा एकत्रीकरण, डेटा का संकलन, संग्रहण, ग्राफ, डेटा स्रोत का अवलोकन, मूल्यांकन आधारित निष्कर्ष। वस्तुतः गुणात्मक अनुसंधान सत्यता प्रमाणित करने का एक तरीका है जो मानव और उससे संबंधित सन्निहित समस्त विषयों की समझ को विकसित करता है और उस पथ का निर्माण करता है जिसके तहत उक्त निष्कर्षों का प्राप्त किया जा सकता है।

मानवीय जीवन, मानवीय व्यवहारों को शासित करने वाले कारकों को गहराई से तथ्यात्मकता के साथ समझना किसी भी गुणात्मक शोध एवं गुणात्मक शोधकर्ता का मूलभूत उद्देश्य होता है। इस हेतु सामान्य कारक क्या, कहां और कब की परख की जाती है वरन् उसके पीछे निहित क्यों और कैसे विशिष्ट कारकों की भी जांच की जाती है। इसके लिए बड़े प्रादर्शों के बजाय छोटे एवं संकेंद्रित प्रादर्शों की आवश्यकता होती है। यही कारण है कि गुणात्मक शोध विधियां केवल विशिष्ट अध्ययन किए जा रहे विषयों पर जानकारी उद्घाटित करती है, इसके अतिरिक्त किसी भी प्रकार का सामान्य निष्कर्ष परिकल्पनाओं के सदृश हैं। इन परिकल्पनाओं के सत्यापन के लिए मात्रात्मक पद्धतियों का प्रयोग किया जा सकता है।

गुणात्मक अनुसंधान और परिमाणात्मक अनुसंधान में विभेद

## गुणात्मक अनुसंधान

गुणात्मक अनुसंधान वह है जो सामाजिक विज्ञान के संपूर्ण समस्या विषय के पक्ष को विशिष्ट अंतर्दृष्टि और समझ प्रदान कर उसके वास्तविक स्वरूप को प्रकट करता है। यह एक असंगठित, असंरचित विशिष्ट मार्गी खोजपूर्ण शोध पद्धति है जो अत्यधिक जटिल घटनाओं का अध्ययन करती है। ऐसी घटनायें व विषय जिसे परिमाणात्मक अनुसंधान से स्पष्ट करना असंभव है उसके लिए परिकल्पना की उत्पत्ति करती है।

## परिमाणात्मक अनुसंधान

परिमाणात्मक अनुसंधान एक प्रकार का शोध है जो प्राकृतिक विज्ञान के तरीकों पर आश्रित रहता है एवं संख्यात्मक, परिमाणात्मक आंकड़ों एवं जटिल तथ्यों का उत्पादन करता है। इस अनुसंधान का उद्देश्य गणितीय, संगणकीय और सांख्यिकीय विधियों का उपयोग करके दो आश्रित कारकों या चरों के बीच कारण और प्रभाव संबंध स्थापित कर निष्कर्ष की प्राप्ति करना है। इस प्रकार के शोध को अनुभवजन्य अनुसंधान के रूप में भी जाना जाता है क्योंकि इसे सटीकता के साथ मापा जा सकता है।

निम्नलिखित आधारों पर इसके विभेद का अध्ययन किया जा सकता है–

1. गुणात्मक शोध, मात्रात्मकता व परिमाण के स्थान पर व्यक्तिगत अनुभवों, विचारों और विविध पक्षों के विश्लेषण पर जोर देता है, इसमें शोध के निष्कर्ष में भाव एवं पक्ष को स्थान प्रदान किया जाता है। यह विधि कारण के विश्लेषण और सत्यापन से संबंधित होती है। वहीं परिमाणात्मक शोध आंकड़ों पर आधारित होता है, एवं इसके परिणाम भी आंकड़ों के अध्ययन पश्चात् ही निर्धारित किए जाते हैं। आंकड़ों के आधार पर नवीन आंकड़ों की प्राप्ति व उद्घाटन ही परिमाणात्मक

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शोध का उद्देश्य होता है। परिमाणात्मक शोध किसी भी प्रकार के पक्ष या भाव रहित होता है।

2. गुणात्मक शोध का लक्ष्य ग्रुप, गहन साक्षात्कार, इंटरव्यू साहित्य समीक्षा पर आधारित होता है। वहीं परिमाणात्मक शोध मात्रात्मक, सांख्यिकीय सूचनाओं पर आधारित होता है। यह सर्वेक्षण, निर्धारित साक्षात्कार, अवलोकन, रिकॉर्ड्स और रिपोर्ट्स के रिव्यू पर आधारित होता है।

3. मौखिक आंकड़ों का संचयन गुणात्मक शोध में किया जाता है जबकि परिमाणात्मक अनुसंधान में औसत आंकड़ों का संग्रहण किया जाता है।

4. गुणात्मक शोध में मुख्यतः विवेचनात्मक प्रक्रिया का प्रयोग किया जाता है वहीं परिमाणात्मक शोध में निगमनात्मक शोध प्रक्रिया का प्रयोग किया जाता है।

5. गुणात्मक शोध अधिकांशतः सब्जेक्टिव अथवा विषयनिष्ठ होता है वहीं परिमाणात्मक शोध ज्यादातर आब्जेक्टिव अथवा वस्तुनिष्ठ होता है, जिसके तहत् किसी भी स्थिति या समस्या के स्पष्ट दिखने वाले प्रभाव या परिणाम का वर्णन होता है।

6. गुणात्मक शोध डिस्क्रिप्टिव अथवा वर्णनात्मक होता है जिसे व्याख्यापूर्ण वर्णन किया गया होता है, परिमाणात्मक शोध संख्यात्मक अथवा संख्या आधारित होता है।

7. गुणात्मक शोध में किसी भी प्रकार के सांख्यिकीय परीक्षण की संभावना नहीं होती हैं, वहीं परिमाणात्मक शोध में सांख्यिकीय परीक्षण और सांख्यिकीय विश्लेषण की संभावना होती है।

8. गुणात्मक शोध के अंतर्गत विषयों पर विस्तृत जानकारी एवं विशद ज्ञान की प्राप्ति होती हैं, जबकि परिमाणात्मक अनुसंधान के अंतर्गत गहन या कम गहन किंतु अधिकाधिक विषयों से संबंधित अधिक विस्तृत जानकारी प्राप्त होती है।

9. गुणात्मक शोध के अंतर्गत अनस्ट्रक्चर्ड और सेमी स्ट्रक्चर्ड रिस्पॉंस के कारण उत्तरों के विविध विकल्प होते हैं वहीं परिमाणात्मक शोध के परिणामस्वरूप निश्चित प्रतिउत्तर का विकल्प होता है।

10. गुणात्मक शोध के अंतर्गत शोध के परिणाम की वैद्यता और विश्वसनीयता शोधकर्ता के प्रयास और परिश्रम के फलस्वरूप विशिष्ट स्वरूप में परिलक्षित होती है, जबकि परिमाणात्मक शोध के अंतर्गत प्रयुक्त तकनीक, यंत्रों व मापकों पर परिणाम की वैद्यता और विश्वसनीयता निर्धारित होती है।

11. गुणात्मक शोध में परियोजना के स्तर पर कम समय की आवश्यकता होती है, किंतु विश्लेषण में अधिक समय की आवश्यकता होती है, जबकि परिमाणात्मक अनुसंधान में परियोजना के स्तर पर अधिक समय की आवश्यकता होती है परंतु विश्लेषण में कम समय की आवश्यकता होती है।

12. गुणात्मक शोध में सामान्यीकरण की संभावना कम होती है, वहीं परिमाणात्मक अनुसंधान में सामान्यीकरण की संभावना अधिक होती है।

गुणात्मक अनुसंधान का उपयोग अक्सर नीति और कार्यक्रम मूल्यांकन अनुसंधान के लिए किया जाता है, क्योंकि वह परिमाणात्मक अनुसंधान की तुलना में कतिपय महत्वपूर्ण प्रश्नों का अधिक कुशलतापूर्वक और प्रभावी ढंग से उत्तर दे सकती है।

## गुणात्मक अनुसंधान क्या है–

अनुसंधान की विधियों को मुख्यतः दो भागों में विभक्त किया जात सकता है– तार्किक प्रत्यक्षवाद (Logical Positivism) और गोचर खोज (Phenomenological)। शैक्षिक शोधों में तार्किक प्रत्यक्षवाद का अधिकांशतः प्रयोग होता आया है। किंतु शैक्षिक परिस्थितियों से संबंधित समस्याओं, समाधान प्रक्रियाओं एवं व्यवस्थाओं से संबंधित विषयों को स्पष्ट व उजागर करने के लिये गोचर खोज पद्धति पर अधिक ध्यान दिया जाने लगा है। गुणात्मक शोध एवं परिमाणात्मक शोध एक दूसरे के पूरक हैं।

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जॉन डब्ल्यू बेस्ट तथा जेम्स वी कान के अनुसार – क्या है?, का वर्णन करने के लिए अमात्रात्मक विधियों का प्रयोग किया जाता है। विवरणात्मक शोध प्रत्यक्ष चरों के मध्य के अमात्रात्मक संबंधों को जानने के लिये व्यवस्थित प्रक्रियाओं का प्रयोग, गुणात्मक अनुसंधान कहलाता है।

इसके अंतर्गत व्यवहार में कई पदों का प्रयोग किया जाता है जैसे – नृ–शास्त्र शोध (Enthnographic Research), व्यष्टि अध्ययन शोध (Case Study research), घटना–क्रिया विज्ञानपरक शोध (Phenomenological Research), संरचनावाद (Constructivism), सहभागी प्रेक्षण (Participant Observation) आदि। इस प्रकार के शोध में व्यक्तियों अथवा संस्थाओं की अभिवृत्तियां, व्यवहार, कार्यपद्धति, गुण–दोष के कारकों तथा अभिप्रेरणाओं के प्रति समझ पैदा करने के लिये व्यैक्तिक लेखों, सम्मेलन कार्यवाहियों, असंरचित साक्षात्कारों, प्रश्नावलियों, तथा सहभागी प्रेक्षण विधियों का प्रयोग किया जाता है। इस प्रकार के अनुसंधान में संकलित प्रदत्तों का उपयोग निर्धारित की गई परिकल्पनाओं की जांच के स्थान पर परिकल्पनाओं के निर्माण में किया जाता है।

इस प्रकार माना जा सकता है कि व्यवस्थित प्रक्रियाओं के तहत गहनतापूर्वक किया गया है अनुसंधान, गुणात्मक अनुसंधान है जिसमें गुणात्मक प्रदत्त संकलन की विधियों का प्रयोग कर, परिकल्पनात्मक निष्कर्षों को मात्रात्मक अथवा गुणात्मक रूप में प्राप्त किया जा सकता है।

## गुणात्मक अनुसंधान की विशेषताएं –

गुणात्मक अनुसंधान की निम्नलिखित विशेषताएं होती हैं –

1. इसमें आगमनात्मक (Inductive) उपागम का प्रयोग होता है।
2. इसमें शोधकर्ता की भूमिका महत्वपूर्ण होती है।
3. इस शोध अध्ययन का केंद्र बिंदु विशिष्ट परिस्थिति, संस्थायें, समुदाय या मानव निर्मित समूह होता है।

4. यह समस्या अथवा घटना विशेष में निहित कारकों, व्याख्याओं, निहित अर्थों पर अधिक बल देता है।

5. व्यक्तिक अनुभवों और विचारों को संरचित उपकरणों के स्थान पर इसमें अधिक बल दिया जाता है।

6. यह कम घटनाओं, कम समूह या कम सदस्य संख्या पर आधारित होता है।

7. इसमें संगठनात्मक प्रक्रियाओं, घटनाओं, लक्ष्यों और प्राप्ति पर बल दिया जाता है।

8. गुणात्मक अनुसंधान विशिष्ट संदर्भ के साथ केंद्रित रहता है, इसका सामान्यीकरण नहीं होता है।

9. यह किसी निर्धारित प्रारूप अथवा प्रक्रिया के आधार पर नहीं अपितु परिस्थितिजन्य कारकों पर आधारित होता है।

## गुणात्मक अनुसंधान के उद्देश्य

1. किसी प्रत्याशित घटना की पहचान करना।

2. कारण और निहितार्थों की पहचान कर उसकी व्याख्या करना।

3. घटना विशेष अथवा व्यवहार विशेष के कारकों की जांच के लिए गहन अध्ययन करना।

4. विस्तृत अर्थों वाले विषयों के लिये गहन समझ विकसित करना।

5. परिदृश्यों और व्यवहारों का आकलन करना जिसमें घटना विशेष घटित हुई हो।

6. किसी घटना अथवा व्यवहार के जिम्मेदार विविध कारकों के मध्य अंतर्संबंधों को ज्ञात करना।


## गुणात्मक अनुसंधान के प्रसंग (Themes)

गुणात्मक अनुसंधान के उद्देश्यों को फ्रॉयड द्वारा विकसित मनोविश्लेषण के सिद्धांत तथा पियाजे द्वारा विकसित संज्ञात्मक विकास

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सिद्धांत द्वारा समझा जा सकता है जिसमें उन्होंने गुणात्मक अनुसंधान का प्रयोग किया था। गुणात्मक अनुसंधान की विशेषताओं तथा उद्देश्यों के आधार पर गुणात्मक अनुसंधान के प्रसंगों को निर्धारित किया जा सकता है। गुणात्मक अनुसंधान के प्रसंग को पैटन ने दस प्रसंगों के रूप में प्रदर्शित किया है। पैटन द्वारा बताये गए प्रसंग निम्नानुसार हैं –

1. नैसर्गिक अध्ययन (Naturalistic Inquiry) अर्थात पूर्व निर्धारित नियमों के आधार पर प्राप्त निष्कर्षों के बिना, बिना किसी नियंत्रण या अवरोध अथवा किसी भी प्रकार के हस्तक्षेप के बिना, वास्तविक सांसारिक परिस्थितियों में अनसुलझी प्रकृतिजन्य परिस्थितियों में अध्ययन।

2. आगमनात्मक विश्लेषण (Inductive Analysis) अर्थात् सैद्धांतिक आधार पर परिकल्पनाओं के निर्माण एवं जांच के स्थान पर खोज के लिए विस्तृत तथा विशिष्ट प्रदत्तों के महत्वपूर्ण वर्गों, विभागों तथा अंतर्संबंधों को समझना।

3. समग्र परिपेक्ष्य (Holistic Perspective) अर्थात् किसी घटना के अंशों या विवृत चरों के रेखीय या कार्यकारण संबंधों के स्थान पर अध्ययन विषय की संपूर्ण घटना (Whole Phenomenon) का जटिल रूप में अध्ययन।

4. गुणात्मक प्रदत्त (Qualitative Data) अर्थात् मानव के व्यैक्तिक लेखों, अनुभवों, प्रत्यक्ष लिखित विचारों, व्याख्याओं आदि का विस्तृत एवं गहन अध्ययन।

5. व्यक्तिगत संपर्क एवं अंतर्दृष्टि (Personal contact and Insight) अर्थात् संबंधित व्यक्तियों अथवा घटनाओं क प्रत्यक्ष संपर्क में रहकर व्यैक्तिक अनुभव एवं अंतर्दृष्टि के आधार पर व्यक्तियों के व्यवहारों या घटना के प्रति समझ विकसित करना।

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6. अभिकल्पगत लचीलापन (Design Flexibility) अर्थात शोध अभिकल्प का चयन करने में लचीलापन प्रदान करता है। वह परिस्थितियों के अनुसार अभिकल्पों का निर्माण एवं उनमें परिवर्तन कर सकता है।

7. तदनुभूति तटस्थता (Empathic Neutrality) अर्थात् विषय वस्तु की आवश्यकतानुरूप अपने व्यक्तिगत अनुभव एवं अंतर्दृष्टि का प्रयोग अध्ययन में करना किंतु पूर्वाग्रहों से पृथक होकर अध्ययन करना।

8. संदर्भगत सूक्ष्मग्राहिता (Context Sensivity) अर्थात् स्थान एवं समय की दृष्टि से घटना या परिस्थितियों के सामाजिक, ऐतिहासिक एवं सांस्कृतिक पृष्ठिभूमि के प्रति संवेदनशीलता से अध्ययन करना।

9. विशिष्ट व्यष्टि अभिमुखीकरण (Unique case Orientation) अर्थात् प्रत्येक व्यष्टि अथवा घटना को विशिष्ट व अद्वितीय मानकर उसका अध्ययन करना।

10. गतिशील व्यवस्थायें (Dynamic System) अर्थात् विशिष्ट घटना से संलग्न संपूर्ण केंद्रित रहकर, परिवर्तनों को स्थिर मानकर सावधानीपूर्वक शोध कार्य करना।

## गुणात्मक अनुसंधान का महत्व

गुणात्मक अनुसंधान का शोध में महत्वपूर्ण स्थान है। सामाजिक क्षेत्र में इस प्रकार के अनुसंधान की महत्ता प्रारंभ से ही रही है किंतु शैक्षिक अनुसंधान में भी इस विधा पर कार्य किया जाना प्रारंभ हो गया है। गुणात्मक अनुसंधान की महत्व अपनी विशिष्टताओं के कारण अधिक प्रभावी है। गुणात्मक अनुसंधान के मूलतः दो व्यवहारिक प्रयोग हैं –

1. ग्रहण करने अथवा समझने योग्य सिद्धांतों की स्थापना करने में। मूल्यांकित किये जा रहे किसी उत्पाद या किसी कार्यक्रम की उपयोगिता को सामान्य रूप से आकलन करने के स्थान पर वर्तमान के अभ्यास या प्रयासों को सुधारने की ओर अग्रसर संरचनात्मक मूल्यांकन के संचालन में।

2. शोधार्थियों के साथ सहयोगात्मक शोधों (Collaborative Research) में संलग्नता।

इन व्यवहारिक उपयोग से गुणात्मक अनुसंधान की महत्ता और भी बढ़ जाती है। अतएव गुणात्मक अनुसंधान के महत्व को निम्नानुसार समझा जा सकता है –

1. सामाजिक एवं शैक्षिक क्षेत्र के लिए सिद्धांतों के निरूपण की दृष्टि से।

2. शोधार्थियों में शोध के प्रति गहनता बढ़ाने की दृष्टि से।

3. संख्यिकीय जटिलता के स्थान पर शोधार्थियों के अनुभव एवं अंतर्दृष्टि के विकास की दृष्टि से।

4. किसी घटना के वास्तविक चित्रण की दृष्टि से।

5. अभिवृत्ति, पसंद या व्यवहारों को विस्तृत एवं स्पष्ट रूप से प्रदान करने की दृष्टि से।

6. भावी शोध को दृष्टि प्रदान करने के रूप में।

7. शोधार्थियों में आत्मविश्वास एवं उसकी विश्वसनीयता बढ़ाने में।

8. परिकल्पनाओं के निर्माण की दृष्टि से।

9. शोध में यांत्रिकता को न्यून करने की दृष्टि से।

10. विभिन्न समस्याओं के समाधान एवं कार्यक्रमों को सफल बनाने की दृष्टि से।

11. किसी कार्यक्रम के संरचनात्मक मूल्यांकन की दृष्टि से।

12. परस्पर संबंद्ध शोधों में संलग्नता की दृष्टि से।

## गुणात्मक अनुसंधान के प्रकार

गुणात्मक अनुसंधान के प्रकार निम्नानुसार हैं –

## घटना–क्रिया विज्ञानपरक अध्ययन

यह प्रकार एडमंड हूसर्ल (Edmund Husserl) द्वारा प्रतिपादित किया गया है। कालांतर में इसके विकास में मार्टिन हेडेगर ने भी अपना योगदान दिया। यह एक दार्शनिक परंपरा है। घटना–क्रिया विज्ञान, मानवीय अनुभवों के शोध को मुख्य आधार मानता है। इस विधि में शोधार्थी

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अपने जीवन संसार के अनुभवों को परिलक्षित करता है। इसमें प्रतिभागियों को किसी घटना के बारे में प्रत्यक्ष अनुभव को उद्घाटित करने का अवसर प्रदान किया जाता है। इनसे प्राप्त जानकारियों एवं आंकड़ों का विश्लेषण उनकी प्रत्यक्षीकरण की समानता एवं भिन्नता के आधार पर शोधार्थी करता है।

## ह्यूरिस्टिक अध्ययन

ह्यूरिस्टिक शब्द ग्रीक भाषा के ह्यूरिस्को शब्द से बना है जिसका अर्थ 'to discover', खोजता हूं। यह गहनता पूर्वक खोज की प्रक्रिया को इंगित करता है जो विविध अनुभवों के अर्थ एवं प्रकृति को जानने तथा भावी अन्वेषण एवं विश्लेषण की विधियों तथा प्रक्रियाओं के विकास से संबंधित होता है। ह्यूरिस्टिक अध्ययन एक प्रक्रिया है जो किसी एक समस्या या एक ऐसे प्रश्न से प्रारंभ होती है जिसका समाधान या हल शोधार्थी प्राप्त करना चाहता है।

## शास्त्रीय अध्ययन

नृ–शास्त्रीय शोध अध्ययन का जन्म मानव शास्त्र विषय से हुआ है। इसका प्रमुख उद्देश्य सामाजिक समूहों का अध्ययन और सांस्कृतिक विशेषताओं का विवरण देना है। इस विधि में अध्ययन समूह के सदस्य के रूप में सम्मिलित होकर शोधार्थी समूह से घनिष्ठता स्थापित करता है एवं उनके साथ रहकर समूह के साक्ष्यों की क्रियाओं, वार्तालापों, सांस्कृतिक विशेषताओं तथा घटनाओं पर सूक्ष्म दृष्टि रखकर एक विस्तृत विवरण तैयार करता है। इस शोध में शोधार्थी की भूमिका अत्यंत महत्वपूर्ण होती है तथा वस्तुनिष्ठता को बनाए रखना सबसे बड़ी चुनौती होती है।

## व्यष्टि अध्ययन

इसमें किसी घटना से संबंधित कुछ इकाईयों या व्यष्टियों को चुनकर उनका गहन अध्ययन किया जाता है। एक व्यष्टि या इकाई एक व्यक्ति, एक संस्था, एक सामाजिक समूह, एक समुदाय अथवा एक ग्राम हो

सकता है। इस विधि में पक्षपात रहित होकर कार्य करना आवश्यक होता है।

## दार्शनिक अध्ययन

शैक्षिक शोधों में दार्शनिक अध्ययनों की महत्वपूर्ण भूमिका हैं इस प्रकार के अध्ययन मानव जीवन तथा संसार की आधारभूत मान्यताओं के निर्धारण में महत्वपूर्ण होती है। दर्शन शैक्षिक नीतियों तथा प्रक्रियाओं के निर्धारण को प्रभावित करता है।

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# अंतर्राष्ट्रीय स्तर का गुणात्मक शोधपत्र लेखन

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**सारांश**

अंतर्राष्ट्रीय स्तर पर गुणात्मक शोधपत्र लेखन का प्रयोजन विश्वदृष्टि (World View) को नया दृष्टिकोण प्रदान करना है। जैसा कि समाजषास्त्र विश्वकोष में लिखा है कि ''विश्व के प्रति सोचने–समझने के हमारे विषिष्ट दृष्टिकोण या नजरिये को विश्वदृष्टि कहा जाता है। यह वास्तविकता का एक मानसिक अवबोधन है। एक व्यक्ति विश्व एवं मानव के उद्भव और अस्तित्व के संबंध में क्या धारणायें रखता है, उसकी दृष्टि में विश्व और जीवन का क्या उद्देश्य है; इन सभी विषयों के प्रति सोच द्वारा उसकी विश्वदृष्टि का निर्माण होता है।'' जर्मन भाषा में 'विश्वदृष्टि' को 'वल्टेचुआंग' (Waltanschaung) कहा जाता है।

जहाँ तक गुणात्मक शोध पत्र लेखन का प्रश्न है यह शोधकार्य करने के पूर्व और पश्चात् दोनों स्थितियों में लिखा जाता है। शोधकार्य के पूर्व शोध पत्र लेखन को अनुसंधान अभिकल्प (Research wesign) या शोधकार्य की संक्षिप्त रूपरेखा (Synopsis) कहा जाता है। इसमें अनुसंधान

या शोध के उद्देश्यों की प्राप्ति के पूर्व ही उद्देश्यों का निर्धारण करके अध्ययन विषय के विभिन्न पक्षों को उद्घाटित करने के लिए पहले ही एक योजना बनायी जाती है। यह एक ऐसी योजना है, जो समस्या के प्रतिपादन से लेकर अनुसंधान प्रतिवेदन (Research Report) के अंतिम चरण तक विश्लेषण करती है। इसके साथ ही यह भी ध्यान रखा जाता है कि समस्त उपलब्ध विकल्पों पर ध्यान देकर इस प्रकार से निर्णय लिया जाये कि न्यूनतम प्रयासों (Efforts), समय (Time) वं लागत (Money) के व्यय से अधिकतम अनुसंधान उद्देश्यों को प्राप्त किया जा सके। एफ0 एन0 कलिंजर ने भी 'फाउंडेशन ऑफ बिहेवरियल रिसर्च' में लिखा है कि 'अनुसंधान अभिकल्प अन्वेषण की योजना, संरचना (Structure) एवं एक रणनीति (Strategy) है, जिसकी रचना इस प्रकार की जाती है कि अनुसंधान प्रश्नों के उत्तर प्राप्त हो सके तथा विविधताओं (Variance) को नियंत्रित किया जा सके।''

शोधकार्य के पश्चात् लिखे गए पत्र लेखन को सारांश या उद्देशिका (Abstract) कहा जाता है। यह शोध प्रतिवेदन (Research Report) किसी शोध कार्य का अंतिम सोपान होता है। इसे शोधकार्य का परिणाम कहा जा सकता है। इसके अंतर्गत शोध द्वारा प्राप्त अथवा प्रमाणित तथ्यों का क्रमबद्ध प्रारूप प्रस्तुत किया जाता है। असत्य, संदिग्ध तथा अनुमान द्वारा ज्ञात तथ्यों का समावेश सारांश में नहीं किया जाता।

जहाँ तक 'शोधकार्य (Research Work) के सामान्य अर्थ का प्रश्न है, तो यह दो शब्दों 'रि' और 'सर्च' के संयोग से बना है। 'रि' अर्थात् बार–बार और सर्च अर्थात् 'खोजना'। इसका सम्मिलित अर्थ होता है खोज की पुनरावृत्ति। अतः 'शोध' शब्द से एक प्रकार की शुद्धि या संशोधन का बोध होता है। शोध के समानार्थी दो अन्य शब्दों का भी प्रयोग होता है– अनुसंधान और गवेषण। वास्तव में अनुसंधान एक प्रक्रिया है जिसमें 'शोध'

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तथा गवेषण उपक्रियायें भी सम्मिलित हैं। 'अनुसंधान' शब्द में प्रकृति के अनुसार पूछ–ताछ, जाँच, गहन निरीक्षण, व्यापक परीक्षण, योजनाबद्ध अध्ययन, सोद्देश्य एवं सामान्यीकरण आदि प्रक्रियाएं महत्त्व रखती है। अन्वेषण की क्रिया इस बात का गवाह है कि कोई समस्या अति निकट से देखने–परखने की मांग करती है। अनुसंधान द्वारा उन मौलिक प्रश्नों के उत्तर देने का प्रयास किया जाता है, जिनका उत्तर अभी तक उपलब्ध नहीं था। प्राचीन काल में गवेषणा (Invention) जंगल में खो जानेवाली गायों को वापस लाने की व्यापक खोज को कहा जाता था। वर्त्तमान संदर्भ में 'गवेषणा' शब्द का प्रयोग किसी वस्तु, पदार्थ तथा नवीन तथ्य की खोज के लिए कर सकते हैं। 'कार्य' (Work) शब्द को समाजशास्त्र कोष में बताया गया कि ''अपने लिए या दूसरों के उपभोग या विनिमय के लिए वस्तुओं और सेवाओं के उत्पादन हेतु शारीरिक, मानसिक और संवेगात्मक प्रयासों की आपूर्ति को कार्य कहा जाता है।'' यदि वर्त्तमान परिप्रेक्ष्य में शैक्षिक–सामाजिक कार्यों को देखें, तो हम कह सकते हैं कि "Anything that be do and requires energy in called work." इससे स्पष्ट होता है कि शोध के क्षेत्र में कार्य करके उन मौलिक प्रश्नों का उत्तर ढुँढ़ने का प्रयास किया जाता है, जिनका उत्तर अभी तक उपलब्ध नहीं हो सका है। इस दौरान हर प्रश्न का उत्तर मनुष्य के 'प्रयासों' पर निर्भर करता है। अतः शोधकार्य प्रयोगमूलक ज्ञान के साधन माने जाते हैं। ज्ञान का यह साधन जॉनी ड्यूबी के Trying and under going की प्रक्रिया का उदाहरण कहा जा सकता है।

शीर्षक शोधकार्य के उद्देश्यों पर आधारित होता है। यह समस्या के चयन का अप्रत्यक्ष आधार और प्रत्यक्ष संकेत प्रतिध्वनित करता है। शीर्षक के चयन में मानव समाज की आवश्यकता एवं अपेक्षा की आपूर्ति

अथवा संतुष्टि काम करती है। यदि सूत्रबद्ध कहना पड़े तो हम कह सकते हैं कि –

आवश्यकता – साधन = समस्या

Need – Resources = Problem

इसका अर्थ यह हुआ कि आवश्यकता की संतुष्टि के साधन के मार्ग में उपस्थित बाधा ही समस्या है। जैसे ही समस्या समाधान के साधन खोज लिए जाते हैं, आवश्यकता की संतुष्टि हो जाती है और समस्या का अंत हो जाता है।

प्रस्तावना समस्या की गंभीरता, आवश्यकता की गहनता और साधनों की उपलब्धि पर निर्भर होती है। इस प्रकार आवश्यकता जितनी प्रबल होगी, अवरोध जितना तीव्र होगा, समस्या उतनी ही गंभीर होगी। प्रस्तावना में समस्या के आवश्यक पक्ष कारण और कार्य के बीच सह संबंध बनाते हुए क्रमबद्ध रूप से विवेचित किये जाते हैं।

ध्यान देने योग्य बात यह है कि शोध–कार्य में व्यक्तिगत समस्या को कम महत्त्व दिया जाता है। जॉन सी0 राउनसेण्ड के अनुसार; ''समस्या तो समाधान के लिए प्रस्तावित प्रश्न है।'' (A problem is a question proposed for solution)

अतः विश्वस्तीय गुणात्मक शोधपत्र आलेखन में शीर्षक, प्रस्तावना एवं सारांश मानवीय ज्ञान–विज्ञान एवं संज्ञान के लिए त्रिध्रुवीय केन्द्रक सिद्ध हो सकते हैं। समसामयिक सार्वभौमिक समस्या समुचित शीर्षक, तार्किक प्रस्तावना एवं तथ्यात्मक संदर्भों का सारांश सृजित करती है। प्रस्तुत तीनों चरणों में साहित्यिक चोरी से बचना अनिवार्य है।

# शोध विधियां एवं शोध प्रारूप

प्रिया तिवारी

प्रवक्ता

समाजशास्त्र विभाग

हे0नं0ब0राज0स्ना0महाविद्यालय

नैनी, इलाहाबाद, उ.प्र., भारत

**सारांश**

वर्तमान समय में शोधपत्र लेखन बड़ी तीव्र गति से हो रहा है। विश्वविद्यालय अनुदान आयोग द्वारा जब से एकेडमिक परफार्मेन्स इन्डीकेटर लाया गया है तब से शोधपत्र लेखन की बाढ़ सी आ गयी है। इन शोधपत्रों का कई स्तर होता है। कुछ तो मौलिक, उच्च कोटि के एवं सारगर्भित होते हैं वहीं कुछ शोधार्थी एवं शिक्षक इस ए.पी.आई. को बढ़ाने के लिये एवं अपने लेखों की संख्या बढ़ाने के उद्देश्य से अन्य दूसरे लेखकों की किताबों से एवं इंटरनेट से लेखन सामग्री लेकर अपने लेख प्रकाशित करवाते हैं। इस प्रकार के लेखों में न ही गुणवत्ता रहती है और न ही मौलिकता। हमको यदि अन्तर्राष्ट्रीय स्तर का गुणवत्ता युक्त शोधपत्र लिखना है तो हमें सबसे पहले विषय का व्यापक अध्ययन करना होगा। विभिन्न काल, स्थान, परिस्थिति कें संदर्भ में उस विषय का प्रभाव देखना होगा। विषय का चुनाव पक्षपात रहित होकर करना चाहिए। विषय के अनुरूप शोध प्रारूप का निर्माण, उपयुक्त शोध पद्धति एवं तथ्य संकलन की तकनीक का चुनाव कर लेना चाहिए। प्राप्त तथ्यों का सांख्यिकीय विश्लेषण द्वारा निष्कर्ष प्राप्त कर उपकल्पना की सत्यता की जांच कर लेना चाहिए।

इस प्रारूप द्वारा जो शोधपत्र प्रस्तुत होगा वास्तव में वह मानकों पर खरा शोधपत्र होगा।

## प्रस्तावना

सामाजिक मूल्य, परम्पराएं, जनरीति, विश्वास आदि अमूर्त तथ्यों के लिये गुणात्मक पद्धतियों का प्रयोग करते हैं। इन गुणात्मक पद्धतियों में हम आगमन एवं निगमन पद्धति, वैधानिक जीवन अध्ययन पद्धति, सभा समिति तथा सामुदायिक अध्ययन पद्धति को शामिल कर सकते हैं।

वहीं दूसरी ओर कुछ घटनाएं जिनका निश्चित परिणाम हमको प्राप्त करना रहता है उन घटनाओं के अध्ययन हमको प्राप्त करना रहता है उन घटनाओं के अध्ययन के लिये सामाजिक सर्वेक्षण पद्धति, सांख्यिकी पद्धति, तुलनात्मक पद्धति को प्रयोग में लाते हैं।

इसी क्रम में आंकड़े एकत्रित करने के लिये जो तकनीक होती है उसका चुनाव भी सावधानी पूर्वक करना होता है। यदि विषय ऐसा है जिसका गहन एवं सूक्ष्म अध्ययन करना है तो हम अनुसूची का प्रयोग करते हैं। यदि विषय का क्षेत्र काफी विस्तृत है, उत्तरदाता शिक्षित है और हमें कम समय में अध्ययन करना है तो हम प्रश्नावली का प्रयोग करते हैं। जाति अध्ययन में, जेल में, अस्पताल आदि स्थानों पर अवलोकन प्रणाली प्रयोग की जाती है। जिस विषय के बारे में थोड़ा भी पता नहीं है ऐसी स्थिति में जानकारी एकत्र करने के लिए साक्षात्कार प्रणाली अपनायी जाती है।

जनमत जानने के लिये अन्तर्वस्तु विश्लेषण तथा ऐतिहासिक व्यक्ति या घटना के अध्ययन के लिये वैयक्तिक अध्ययन पद्धति को अपतने हैं।

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अतः सही तकनीक के द्वारा हम पर्याप्त और सटीक आंकड़े प्राप्त करते हैं अर्थात पद्धतियों की सफलता तकनीक के चुनाव पर निर्भर करती है।

पुराने समय से ही प्राकृतिक विज्ञान एवं सामाजिक विज्ञान में यह विवाद का विषय रहा है कि सामाजिक विज्ञान को विज्ञान मानना कहां तक उचित है? कार्ल पियर्सन भी कहते हैं कि विज्ञान एक निश्चित कार्य पद्धति के कारण विज्ञान है अर्थात् जो भी सामाजिक विषय एक निश्चित पद्धति को लेकर आगे बढ़ेगा वह सामाजिक विज्ञान कहलायेगा। यद्यपि सामाजिक विज्ञान के अध्ययन क्षेत्र में सामाजिक सम्बन्ध आते हैं जिनका व्यवहार परिवर्तित होता रहता है अतः ऐसी स्थिति में हमें सामाजिक विज्ञानों के लिये कुछ निश्चित विधियों की आवश्यकता पड़ती है जैसे समाजमिति तथा बोगार्डस के सामाजिक दूरी के पैमाने।

अब हम इस शोधपत्र में शोध प्रारूप के बारे में जानेंगे। किसी भी अनुसंधान को शुरु करने से पहले जो खाका तैयार करते है उसे ही हम अनुसंधान प्रारूप कहते हैं। शोध प्रारूप में शोध की समस्या उपकरण, पद्धति, तथ्य संग्रहण की तकनीक, निदर्शन आदि सभी निश्चित कर लिया जाता है और उस रोड मैप पर चलकर हम आसानी से शोध पूर्ण कर लेते हैं।

इस शोधपत्र में हम अपने को सामाजिक शोध प्रारूप तक ही सीमित रखेंगे। शोध प्रारूप दो तरह के होते हैं– (क) आदर्श शोध प्रारूप (ख) व्यवहारिक शोध प्रारूप आदर्श शोध प्रारूप में हम पहले ही प्रारूप का निर्माण करते हैं और व्यवहारिक शोध प्रारूप भी कई प्रकार के होते हैं–

## प्रयोगात्मक शोध प्रारूप

जब विषय पर वाह्य चर द्वारा प्रभाव का अध्ययन करना रहता है तो हम प्रयोगात्मक शोध प्रारूप का सहारा लेते हैं। इस शोध प्रारूप द्वारा उपकल्पना की जांच होती है एवं चारों के बीच कार्य–करण सम्बन्धों का भी पता लग जाता है। इस शोध प्रारूप में दो चरों (जिसमें एक नियंत्रित चर होता है और दूसरा परिवर्तित) के बीच सम्बन्धों को देखा जाता है।

शोध प्रारूप का दूसरा प्रकार अन्वेषणात्मक शोध प्रारूप है जब हम कोई ऐसा विषय चुनते हैं जिसके बारे में हमको ज्यादा नहीं पता रहता तो ऐसी स्थिति में अन्वेषणात्मक शोध प्रारूप का सहारा लिया जाता है। इस प्रारूप में अनुसंधानकर्ता घटनाओं से सम्बन्धित मुख्य तथ्य, व्यक्तियों, साहित्य, परिस्थिति आदि का गहन विश्लेषण करके अनुसंधान प्रारूप का निर्माण करता है। इसमें उपकल्पना का निर्माण बाद में किया जाता है।

शोध प्रारूप का तीसरा प्रकार वर्णनात्मक शोध प्रारूप है। इस शोध प्रारूप में शोध के चरणों का सही क्रम सम्भव हो पाता है। समस्या का चुनाव, अध्ययन का उद्देश्य, उपकल्पना का निर्माण, निदर्शन का चुनाव, तथ्य संकलन प्रविधि, वर्गीकरण एवं विश्लेषण तद्पश्चात निष्कर्ष आदि इस प्रारूप के विभिन्न चरणों में आता है।

शोध प्रारूप में ही घटनाओं के अध्ययन के लिये कुछ पद्धतियों का भी प्रयोग करते हैं। जिनको गुणात्मक एवं परिणात्मक पद्धतियों में बांटते हैं।

## विश्लेषण एवं निष्कर्ष

इस प्रकार हम देखते हैं कि अनुसंधान प्रारूप किसी भी अनुसंधान की रीढ़ होती है। रीढ़ जितनी मजबूत अनुसंधान उतना ही मौलिक एवं सृजनात्मक होता है। प्रस्तावना में हम लोगों ने देखा कि किस तरह अनुसंधान के विषय के आधार पर प्रारूप बनाना पड़ता है। अगर विषय

एकदम नया है जिसके बारे में जानना है तो अन्वेषणात्मक अनुसंधान प्रारूप का निर्माण करना रहता है जिसमें प्रायप के चरणों में उपकल्पना का स्थान बाद में रहता है। उसी तरह यदि विषय की वर्णनात्मक व्याख्या करनी है तो अनुसंधान प्रारूप वर्णनात्मक प्रकृति का होगा। जिसमें अनुसंधान के चरणों का प्रारम्भिक स्तर से अन्तिम स्तर तक की रूपरेखा बनानी पड़ती है। इसी तरह प्रयोगात्मक अनुसंधान प्रारूप कार्य–करण सम्बन्धों तथा उपकल्पना की वैधता का परीक्षण करता है। किन्हीं परिस्थितियों का अलग–अलग चरों तथा विभिन्न समय पर किसका कितना प्रभाव पड़ा इसका अध्ययन हम प्रयोगात्मक अनुसंधान प्रारूप में करते हैं।

इसी तरह इन अनुसंधान प्रारूपों में हम जिन पद्धतियों का सहारा लेते हैं इसका विश्लेषण भी हम करेंगे।

आगमन एवं निगमन पद्धति के द्वारा हम अनुसंधान कार्य बड़े सरल ढंग से कर लेते हैं। निगमनात्मक विधि में किसी सामान्य सिद्धांत के आधार पर कोई विशेष सिद्धांत का निर्माण किया जाता है और आगमनात्मक विधि में कई उदाहरण देकर एक सामान्य नियम निकाला जाता हैं। अनुसंधान कार्य में यह दोनों ही पद्धतियों अत्यन्त उपयोगी है। समाजमिति तकनीक में सामाजिक सम्बन्धों का अध्ययन किया जाता है। इसके द्वारा उपेक्षित वर्ग की समस्याओं का पता लगाया जाता है।

गुणात्मक पक्ष को मापने के लिए ही बोगार्डस ने सामाजिक दूरी का पैमाना दिया। इसमें गुणात्मक पक्षों को निश्चित क्रम देकर और संकेतको के आधार पर वर्गीकरण करके अध्ययन को आसान बनाया जाता है।

इस तरह गुणात्मक पद्धतियां अनुसंधान प्रक्रिया को आसान बनाने में कई तरह से सहायता करती है। परिणात्मक पद्धति में सर्वेक्षण पद्धति व अनुसंधान व सांख्यिकी पद्धति का सहारा लिया जाता है। सर्वेक्षण पद्धति

जहां छोटे क्षेत्र एवं अल्पकालीन परिवर्तनों को त्वरित अध्ययन करता है वहीं अनुसंधान में गहन व दीर्घकालीन अध्ययन होता है। तुलनात्मक पद्धति द्वारा भी चरों का पारस्परिक प्रभाव तथा कार्यकरण सम्बन्धों का पता लगाया जाता है। तुलनात्मक पद्धति में दो तरह से अध्ययन किया जाता है एक अध्ययन जहां विशेष समयान्तरण पर होता है कि इस अंतराल में क्या अंतर आया ओर दूसरा एक ही क्षेत्र में विभिन्न विषयों के विशेषज्ञों के संयुक्त शोध में अलग–अलग परिपेक्ष्य को सामने रखकर किया जाता है।

वास्तव में पद्धति कोई भी हो निष्कर्ष सत्य ज्ञात करना होता है। वास्तव में सामाजिक विज्ञानों में यह 'पद्धति' ही है जो समाज विज्ञान को प्राकृतिक विज्ञान की श्रेणी में लाती है और इस पद्धति का प्रयोग कैसे और किस समय करना है इसका पता हमें प्रारूप से ही चलता है अतः अनुसंधान प्रारूप वह रूपरेखा है जो किसी अनुसंधान को ठीक ढंग से करवाकर विचलन की स्थिति आने से रोकते हैं।

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# शोधपत्र लेखन की सावधानियाँ

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### सारांश

अंग्रेजी भाषा का डिस्कवरी ऑफ फैक्ट्स हिंदी भाषा में शोध कहलाता है इसके कई और अन्य नाम हैं जिनमें गवेषणा अनुसंधान या अनुशीलन आदि प्रमुख है। शोध साहित्य की व्याख्या या पुनः मूल्यांकन है। दरअसल नवीनीकरण का ज्ञान सार्थक जीवन की समझ एवम समय–समय पर उस समझ का पूनर्मूल्यांकन है, और ज्ञान की सीमा का विस्तार शोध कहलाता है। एक शोधपत्र लेखक  जब अपना कार्य करता है तब वह शोधपत्र  के लाभ को जन जन तक या तत्सम्बन्धी परिक्षेत्र के लोगों को उससे परिचित कराना चाहता है और शोधपत्र से प्राप्त दिशा पर विद्वत जनों की प्रतिक्रिया जानना चाहता है । कई शोध पत्र, शोध पत्रिकाओं का हिस्सा बन जाते हैं एवम ज्ञान पिपासुओं की ज्ञान क्षुधा की तृप्तीकरण का कार्य करते हैं तथा जन जन तक इसका लाभ पहुँचना सुगम हो जाता है सेमीनार में भी ऐसे ही शोधपत्र स्वीकार किए जातें हैं।

### शोधपत्र से आशय

शोधपत्र, शोध रिपोर्ट या शोध कार्य का व्यावहारिक प्रस्तुति योग्य सार आलेख है जो परिणाम को अन्तिम रूप में समेट भविष्य की दिशा निर्धारण में सहयोगान्मुख है "किसी विषय पर जब हम शोध–कार्य आरंभ करते हैं, तो हमारा प्रयोजन उस विषय के मौलिक ज्ञान में वृद्धि करना है तदर्थ प्राक्कलपना का सहयोग लेना ज्ञान में मौलिक वृद्धि के लिए आवश्यक है, जो विषय हमारे सामने है, उस विषय पर चिंतन करना पड़ेगा"[1]।

उपर्युक्त विवेचन को ध्यान रख कहा जा सकता है कि शोध प्रपत्र सम्पूर्ण शोध के परिणाम व सुझाव से युक्त वह प्रपत्र है जो स्व विचार के स्थान पर तथ्य निर्धारण हेतु तत्पर शोध आधारित दृष्टिकोण से वास्ता रखता है।

शोध प्रपत्र के निम्नलिखित प्रकार माने गए हैं, यह विभाजन काल व शोध के प्रकार के आधार पर स्वीकार किया गया है–

1. तार्किक शोध पत्र,
2. कारण प्रभाव शोध पत्र,
3. विश्लेणात्मक शोध पत्र,
4. परिभाषिक शोध पत्र,
5. तुलनात्मक शोध पत्र,
6. व्याख्यात्मक शोध पत्र।

## शोध प्रपत्र का प्रारूप

शोधपत्र लेखन का कोई निर्धारित प्रारूप सभी प्रकार के शोधों हेतु निर्धारित नहीं है शोध कर्त्ता का सम्यक दृष्टिकोण ही शोध प्रपत्र का आधार बनता है। दिशा, प्रवाह, अनुभव, अवलोकन सभी से शोध पत्र को प्रभावी बनाने में मदद मिलती है सामान्यतः शोध प्रपत्र प्रारूप में अधोलिखित बिन्दुओं को आधार बनाया सकता है–

1. भूमिका

2. विषय वस्तु

3. महत्वपूर्ण अंश

4. परिणाम एवं सुझाव

संक्षेप में भूमिका लिखने के बाद विषय वस्तु से परिचय कराना चाहिए यहीं शोध शीर्षक के बारे में लिखकर मुख्य अंश के रूप में शोध प्रक्रिया, उपकरण व प्रदत्त संग्रहण, विश्लेषण आदि के बारे में संक्षेप में लिखते हुए प्राप्त परिणामों को सम्यक ढंग से प्रस्तुत करना चाहिए व इसी आधार पर सुझाव देने चाहिए अपने दृष्टिकोण को थोपने से बचना चाहिए।

## अच्छे शोध प्रपत्र की विशेषताएं एवं लाभ

शोधपत्र सम्यक होना चाहिए इसके लिए जागरूकता के साथ निम्नलिखित विशेषताओं का होना आवश्यक है तभी समुचित लाभ प्राप्त होगा—

1. नवीन ज्ञान से संयुक्त।

2. सम्बन्धित दृष्टिकोण का सम्यक विकास।

3. पुनः आवृत्ति से बचाव।

4. परिश्रम को उचित दिशा।

5. विभिन्न परिक्षेत्र के शोधों से परिचय।

6. समीक्षा में सहायक।

7. विशेषज्ञों के सुझाव की स्वीकृति।

8. शक्ति व धन की मितव्ययता।

9. अनुभव में वृद्धि।

10. प्रसिद्धि में सहायक।

सम्पूर्ण शोध पत्र लेखन के उपरान्त सन्दर्भ ग्रन्थ सूची भी दे दी जाए तो कृतज्ञता ज्ञापन के साथ दूसरे शोधकर्त्ताओं की मदद हो सकेगी।

एक शोध–पत्र का इस्तेमाल वैज्ञानिक, तकनीकी और सामाजिक मुद्दों की ख़ोज–बीन और पहचान में किया जा सकता है। यदि शोध–पत्र लेखन का आपका यह पहला अवसर है, तो बेशक कुछ डरावना भी लग सकता है, पर मस्तिष्क को अच्छी तरह से संयोजित और एकाग्र करें, तो आप खुद के लिए इस प्रक्रिया को आसान बना सकते हैं। शोध–पत्र तो स्वयं नहीं लिख जाएगा, पर आप इस प्रकार से योजना बना सकते हैं, और ऐसी तैयारी कर सकते हैं कि लेखन व्यावहारिक रूप में खुद–ब–खुद जेहन में उतरता चला जाए।

शोधार्थी के समक्ष सबसे महत्वपूर्ण कार्य शोध विषय का चयन होता है। शोधकर्ता को इस विषय पर पहले हो चुके शोधों का ज्ञान हो। शोध पत्र में एक परिचय होता है। विषयों की पसंद पर टिप्पणी करनी चाहिए, इन खोजों की प्रासंगिकता पर जोर देना चाहिए, उनके आवेदन के संभावित तरीकों की रूपरेखा तैयार करना चाहिए। मुख्य भाग में, जिसमें कई घटक शामिल हो सकते हैं, शोध के मध्यवर्ती परिणाम आवश्यक रूप से प्रस्तुत किए जाते हैं, आपके द्वारा किए गए प्रयोगों या टिप्पणियों का वर्णन किया जाता है, और प्रारंभिक निष्कर्ष किए जाते हैं। इसमें, आपको उन तरीकों को प्रतिबिंबित करना चाहिए जो आपने परिणाम उत्पन्न करने के लिए उपयोग किए थे। ध्यान रखें कि किसी भी शोध कार्य के लिए एक पूर्वापेक्षा, भागों की तार्किक, सुसंगत व्यवस्था और साथ ही साथ आपकी स्वयं की खोजें और साक्ष्य के साथ गहरे निष्कर्ष हैं।

शोध एक अलग तरह का काम है। इसके लिए शारीरिक, आर्थिक या राजनीतिक क्षमता से काम नहीं चलेगा। शोध के लिए पहली शर्त व्यक्ति की शोध में रुचि होना। शोध में रुचि लेने वाले ही शोध के क्षेत्र में आएँ, इसके लिए सबसे पहले शोध को डिग्री से अलग करना होगा। एम.फिल. और पीएच.डी. की डिग्रियों से नाभि–नालबद्ध होने के कारण भारत में

शोधमात्र का बहुत नुकसान हुआ है। आजकल बाजार में अकादमिक नकल पकड़ने वाले सॉफ्टवेयर उपलब्ध हैं। इन सॉफ्टवेयरों की मदद से जब देश के अच्छे विश्वविद्यालयों की थीसिसों की जाँच की जा रही है तो अधिकांश शोधार्थी नकलची साबित हो रहे हैं। विदित है कि हमारा यह संसार प्राकृतिक एवं चमत्कारिक अवदानों से परिपूर्ण है। अनन्त काल से यहाँ तथ्यों का रहस्योद्घाटन और व्यवस्थित अभिज्ञान का अनुशीलन होता रहा है। कई तथ्यों का उद्घाटन तो दीर्घ अन्तराल के निरन्तर शोध से ही सम्भव हो सका है। जाहिर है कि इन तथ्यों की खोज और उसकी पुष्टि के लिए शोध की अनिवार्यता बनी रही है।

शोध कार्य के पश्चात उसे अच्छे से लिपिबद्ध करना और उसे प्रकाशित कराना सबसे बड़ी चुनौती होती है। एक अच्छा एवं प्रभावी शोध पत्र हम तभी लिख सकते हैं जब हम उस पर संपूर्ण एवं गहन अध्ययन कर चुके हो। पाठक को सारी चीज़े साफ साफ आसानी से समझ में आ जाये, जैसे कि लिखित शोध में नया क्या है, क्या इस शोध की पुनरावृति आसानी से हो सकती है और इस विषय पर हो रहे शोध कार्यों को ठीक से लिंक / डिसकस किया गया है, रिजल्ट्स अच्छे से विश्लेषित किये गये है या नहीं।

इंट्रोडक्शन लिखते समय इसको भी एक कहानी की ही तरह लिखे जैसे की आप ने आमुक विषय शोध के लिए क्यों चुना, वह विश्व व राष्ट्र स्तर पर क्या महत्त्व रखता है यह कार्य किस शोध कमी को पूरा करने वाला या क्या योगदान देने वाला है। "शोध छात्र के सामने प्राथमिक प्रश्न विषय का चयन होता है । सच तो यह है कि कोई भी विषय अपने आप में न अच्छा होता है और न ही बुरा ; यह तो अध्ययन करने वाले पर निर्भर है कि वह अपने विषय के प्रति कितना प्रामाणिक रहता है और चयन किए हुए विषय पर कितनी लगन से काम करता है"[2]। अपने कार्य की

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महत्ता को बारीकी से साफ साफ शब्दों में लिखे। ज्यादा से ज्यादा आप के शोध से संबंधित हो चुके कार्यों को उदाहरण के तौर पर ले और बताये की इन शोध पत्रों में अमुक चीज नहीं हो पायी और आप का शोध इसी लिए मत्वपूर्ण है। अच्छे स्रोत खोजें जो आपके विषय को संबोधित करते हैं। ये लेख या किताबें हो सकती हैं। सबसे प्रासंगिक और उपयोगी जानकारी खोजने के लिए उनको पढ़ें या स्किम करें। अधिक नोट कार्ड बनाओ। आपके द्वारा रिकॉर्ड की जाने वाली सभी जानकारी के लिए अपना स्रोत नाम और पृष्ठ संख्या इंगित करने के लिए सावधान रहें। राजमल बोरा विषय चयन को महत्व देते हुए कहते है कि "प्रबंध का नामकरण या विषय का चयन कह लीजिए – सोच समझ कर किया जाना चाहिए ...नामकरण के समय में विषय की व्याप्ति पर विचार कर लेना लाभप्रद होता है"[3]।

इसी तरह डिस्कशन में अपने शोध को अन्य शोधों के साथ विवरणात्मक रूप से लिखे, हर ऑब्जेक्टिव/पैरामीटर्स को व्यक्तिगत रूप से डिसकस करे। बैजनाथ सिंघल लिखते है कि–"वैज्ञानिक कार्यविधि तो शोध के ढाँचे व प्रक्रिया की सूचक है और शोध की आत्मा तथ्यों में बसती है"[4]। विषय का वर्गीकरण विषय को और भी व्यापकता देने के साथ ही साथ स्पष्ट करता है "वर्गीकरण से हम एक से अनेक की ओर बढ़ते हैं और अनेक में एक को देखते हैं ... वर्गीकरण में हमारा प्रयोजन यह रहता है कि एक से अनेक का जो विस्तार होता है उस विस्तार में प्रत्येक तथ्य का स्वतंत्र मूल्यांकन हो"[5]। एब्सट्रैक्ट में शोध कार्य की महत्वता बताते हुऐ मुख्य एवं नवीन रिजल्ट्स को प्रभावी तरह से लिखे, या कहे की कम शब्दों में पूरे शोध का निचोड़ पिरो दे, साथ ही भविष्य में यह कार्य क्यों और कैसे मदद करेगा और क्या शोध किये जाये, आखिर में जरूर लिखे। एब्सट्रैक्ट में लिखे शब्दों को कनक्लूजन में न दोहराये यहाँ सिर्फ सारांश दे और भविष्य के परिप्रेक्ष्य में बात करे।

शोध पत्र को लिपि बंद करते समय यह ध्यान रखना चाहिए कि शोध पत्र की भाषा सहज एवं सरस हो। शोध के लिए व्यक्ति में शोध विषय के प्रति रुचि होना आवश्यक माना गया जिस व्यक्ति को शोध में रुचि हो वही इस क्षेत्र में आए खाली डिग्री प्राप्त करने के लिए इस क्षेत्र में आने से शोध का बड़ा नुकसान हुआ है। शोध पत्र प्रकाशन से पूर्व गंभीरता के साथ शोध पत्र को कई बार पढ़ें। जिस पत्रिका में शोध पत्र प्रकाशन हेतु भेज रहे हैं उस पत्रिका के नियम एवं शर्तों का अच्छी तरीके से वाचन करें तत्पश्चात शोध पत्र को प्रकाशन हेतु भेजें।

## शोधपत्र की एक अनुमानित रूपरेखा देखें

## शीर्षक

1. सही शीर्षक का चुनाव
2. शीर्षक से शोध का उद्देश्य अच्छी तरह से स्पष्ट हो।
3. शीर्षक मध्यम हो।
4. शीर्षक में शोध में उपयोग किए गए शब्दों का उपयोग हो ।
5. शीर्षक भ्रमकारी न हो।
6. शीर्षक को रोचक एवं आकर्षक हो ।
7. शीर्षक के चुनाव में शोध प्रश्न का ध्यान आवश्यक है।

## भूमिका / प्रस्तावना

1. शोध प्रश्न को यहाँ स्पष्ट करें।
2. भूमिका मध्यम हो ।
3. भूमिका में शोध विषय का संक्षिप्त परिचय दें ।
4. भूमिका रोचक हो।
5. भूमिका में उस विषय पर पूर्व के कार्य का वर्णन हो ।
6. विषय से जुड़ी हुई अन्य बातें जैसे देश / प्रदेश / भाषा / जीवन की जानकारी दें ।

7. भूमिका, ऐसी हो जिससे पाठक विषय के बारे में जानकारी प्राप्त कर सके ।

8. प्राकल्पना को यहाँ लिखा जाए।

9. अगले पृष्ठों का संक्षिप्त परिचय दें।

## मुख्य भाग

1. मुख्य भाग में विषय–वस्तु की व्याख्या करें ।

2. यह भाग छोटे–छोटे भागों (उपशीर्षकों के साथ) में बंटा होता है।

3. उपशीर्षक चयन शोध की विषय–वस्तु को ध्यान में रख कर हो ।

4. मुख्य भाग में तालिकाओं, चित्रों, आरेखों आदि दें ।

5. मुख्य भाग में विश्लेषण करें ।

निष्कर्ष ⁄ उपसंहार

1. यहाँ शोध का सार लिखा जाता है।

2. यहाँ आपके शोध प्रश्न का उत्तर होता है।

3. निष्कर्ष मुख्य भाग के विश्लेषण अथवा व्याख्या पर ही आधारित हों ।

4. निष्कर्ष संक्षिप्त हो।

## संदर्भ ग्रंथ सूची

1. संदर्भ सूची में उन पुस्तकों, पत्रिकाओं, समाचार पत्रों, अप्रकाशित पांडुलिपियों, शोध लेखों का विवरण दिया जाता है जिनका आपने शोध में उपयोग हुआ हो ।

2. संदर्भ सूची में पुस्तक अथवा शोध लेख के नाम के साथ लेखक, वर्ष, प्रकाशक, स्थान तथा पृष्ठ संख्या का उल्लेख होना चाहिए।

3. संदर्भ सूची में इंटरनेट की वेबसाईट का भी उल्लेख किया जा सकता है।

## संदर्भ ग्रंथ सूची

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