

Basic Research:

- This research is conducted largely for the enhancement of knowledge, and this research does not have immediate commercial potential.
- The research which is done for human welfare, animal welfare and plant kingdom welfare.
- It is called basic, pure, fundamental research.
- The main motivation here is to expand man's knowledge, not to create or invent something.
- According to Travers, "Basic Research is designed to add to an organized body of scientific knowledge and does not necessarily produce results of immediate practical value."
- Such a research is time and cost intensive
- Aims to solve a problem by adding to the field of application of a discipline
- Often several disciplines work together for solving the problem
- Often researches individual cases without the aim to generalise
- Aims to say how things can be changed
- Acknowledges that other variables are constant by changing
- Reports are compiled in a common language



Applied Research:

- This research is designed to solve practical problems of the modern world, rather than to acquire knowledge for knowledge's sake.
- The goal of applied research is to improve the human condition. It focuses on analysis and solving social and real life problems.
- For example:- improve agriculture crop production, treat or cure a specific disease, improve the energy efficiency of homes, offices
- Such research is often conducted with the support of some financing agency like the national government, public corporation, World Bank, UNICEF, UGC, Etc.
- Tries to eliminate the theory by adding to the basics of a discipline
- Problems are analysed from the point of one discipline
- Generalisations are preferred
- Forecasting approach is implemented
- Assumes that other variables do not change
- Reports are compiled in a language of technical language of discipline

Applied vs Fundamental

- Research can either be applied (or action) research or fundamental (to basic or pure) research.
- Applied research aims at finding a solution for an immediate problem facing a society or an industrial/business organisation, whereas fundamental research is mainly concerned with generalizations and with the formulation of a theory.
- "Gathering knowledge for knowledge's sake is termed 'pure' or 'basic' research."
- Research concerning some natural phenomenon or relating to pure mathematics are examples of fundamental research.
- Similarly, research studies, concerning human behavior carried on with view to make generalizations about human behavior, are also examples of fundamental research, but research aimed at certain conclusions facing a concrete social or business problem is an example of applied research.
- Research to identify social, economic or political trends that may effect a particular institution or copy research or the marketing research are examples of applied research.
- Thus, the central aim of applied research is to discover a solution for some pressing practical problems. Whereas basic research is directed towards finding information that has a broad base of applications and thus, adds to the already existing organized body of scientific knowledge.



Descriptive research

- It includes surveys and fact-finding enquiries of different kinds.
- The major purpose of descriptive research is description of the state of affairs as it exists at present.
- For example, the periodic table categorizes the elements.
- Scientists use knowledge about the nature of electrons, protons and neutrons to devise this categorical scheme.
- We now take for granted the periodic table, yet it took descriptive research to devise it.
- Descriptive research generally precedes explanatory research.
- For example, over time the periodic table's description of the elements allowed scientists to explain chemical reaction and make sound prediction when elements were combined
- Descriptive research methods are pretty much as they sound — they describe situations.
- They do not make accurate predictions, and they do not determine cause and effect.
- There are three main types of descriptive methods:
 1. observational methods
 2. case-study methods and
 3. survey method

Observational Method

- With the observational method animal and human behavior is closely observed.
- There are two main categories of the observational method —
 1. Naturalistic observation and
 2. Laboratory observation.
- The biggest advantage of the naturalistic method of research is that researchers view participants in their natural environments.
- This leads to greater ecological validity than laboratory observation, proponents say.
- Laboratory observations are usually less time-consuming and cheaper than naturalistic observations.
- Of course, both naturalistic and laboratory observation are important in regard to the advancement of scientific knowledge.



Case Study Method

- Case study research involves an in-depth study of an individual or group of individuals.
- Case studies often lead to testable hypotheses and allow us to study rare phenomena.
- Case studies should not be used to determine cause and effect, and they have limited use for making accurate predictions.
- There are two serious problems with case studies — expectancy effects and atypical individuals.

Survey Method

- In survey method research, participants answer questions administered through interviews or questionnaires.
- After participants answer the questions, researchers describe the responses given.
- In order for the survey to be both reliable and valid it is important that the questions are constructed properly.
- Questions should be written so they are clear and easy to comprehend.
- Another consideration when designing questions is whether to include open-ended, closed-ended, partially open-ended, or rating-scale questions.

Analytical Research

- The researcher has to use facts or information already available, and analyze these to make a critical evaluation of the material.

Descriptive research answer- Which elements are in solid, liquid, gaseous, or unknown state?

Whereas Analytical research will answer - How these element react with each other?

- Analytical approach is concentrates on the process of the final result rather giving importance to the result.
- Analytical approach stands applicable in all stages of research, right from the articulation of thesis to the formulation of arguments on the issues mentioned in the research.

There are different types of Analytical research methods available. They are,

1. Regression Analysis approach
2. Grouping Analysis approach
3. Multiple Equation Methods



Regression Analysis Approach

- In Regression Analysis the outcome, or the result produced from the research, is affected by the one or more individual elements of the experiment.
- Therefore, the Regression analysis method is further divided into four major subdivisions –
 1. Logistic,
 2. Linear hierarchal,
 3. Duration,
 4. Ordinary least squares (OLS) method.

Group Analysis Approach

- Grouping methods of analytical approach are based on classification and grouping of the variables in an experiment based on their discriminate values and characteristics.

Multiple Equation Method

- Multiple method is just an extension of Regression method discussed above.
- This method explains about the path of individual elements in an experiment.
- There are two main types of multiple equation models –
 1. Path analysis
 2. SEM-structural equation models.

Empirical research

- Empirical Research relies on experience or observation alone, often without due regard for system and theory.
- It is data-based research, coming up with conclusions which are capable of being verified by observation or experiment.
- We can also call it as experimental type of research.
- In such a research it is necessary to get at facts first hand, at their source, and actively to go about doing certain things to stimulate the production of desired information.
 - ❖ In such a research, the researcher must first provide himself with a working hypothesis or guess as to the probable results.
 - ❖ He then works to get enough facts (data) to prove or disprove his hypothesis.
 - ❖ He then sets up experimental designs which he thinks will manipulate the persons or the materials concerned so as to bring forth the desired information.



- Empirical Research is research that is based on experimentation or observation, i.e. Evidence.
- Such research is often conducted to answer a specific question or to test a hypothesis (educated guess).

Main methods used in empirical research

Experiment - an experiment involves deliberately testing a hypothesis and reaching a conclusion, by creating a situation where one of the variables is manipulated: what happens to one variable (usually called the independent variable) when another variable (usually called dependent) is removed or altered. It starts with a hypothesis, then tests it, analysing the resultant data and reporting the findings.

Survey - this method involves collecting a large amount of data from a large population, most usually by questionnaires or structured interviews. Most usually it is a quantitative method, involving 'closed' questions with a predetermined number of answers. These are in fact much easier to fill in, and therefore more likely to get a high response rate, as does keeping the questionnaire short. It's a good idea to trial the survey to ensure ease of completion and lack of ambiguity.

Case study - these are much used in business research, and involve looking at a particular set of issues in a particular context in a particular organization or part of an organization. There are many case studies published in Emerald journals, and to access some examples and read more about this method, go to '[How to write a case study](#)'.

Ethnographic and observational methods - as the term suggests, this has its roots in anthropology and requires involvement in the setting of the research. Various forms of observation are much used in management research, although they can be time consuming. It is most usually a qualitative method, although it can be used quantitatively if highly structured. Often done at exploratory stages of research. It is particularly useful when watching people interacting with something, for example students interacting with learning material, people interacting with their environment in a shopping precinct or leisure centre.

Grounded theory - this is a research approach where there is an initial observation with minimal preconceptions followed by the generation of a hypothesis, theory or prediction, which is then further tested. Its use of data is therefore iterative, with theory being grounded and refined as further data is sought. As a method it is initially **inductive**, but can become **deductive** at a later stage.

Action research - This occurs in situations where people are ostensibly reflecting on their own work and self consciously trying to improve practice and performance.



There will here be close collaboration between the practitioner and the researcher, and a strong focus on change.

Qualitative and Quantitative Approaches

Quantitative Research

- Quantitative Research is based on numeric figures or numbers.
- Quantitative research aim to measure the quantity or amount and compares it with past records and tries to project for future period.
- In social sciences, “quantitative research refers to the systematic empirical investigation of quantitative properties and phenomena and their relationships”.
- The objective of quantitative research is to develop and employ mathematical models, theories or hypothesis pertaining to phenomena.
- The process of measurement is central to quantitative research because it provides fundamental connection between empirical observation and mathematical expression of quantitative relationships.
- Statistics is the most widely used branch of mathematics in quantitative research. Statistical methods are used extensively with in fields such as economics and commerce.
- In sum, the research using the normative approach conducts why may be called quantitative research as the inferences from it are largely based on quantitative data.
- Moreover, objectivity is the primary guard so that the research may be replicated by others, if necessary.

4.2.2.1 Regular Vs. Irregular Patient record

Type of Patients	Regular	Irregular (Drop Out)
Count of Records	108	42
Percentage	72%	28%

Total Sample Size = 150

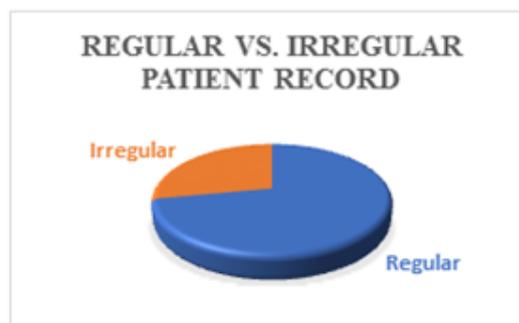


Fig. 4.9 Regular Vs. Irregular Patient record



Qualitative Research

- Qualitative research presents non-quantitative type of analysis.
- Qualitative research is collecting, analyzing and interpreting data by observing what people do and say.
- Qualitative research refers to the meanings, definitions, characteristics, symbols, metaphors, and description of things.
- Qualitative research is much more subjective and uses very different methods of collecting information, mainly individual, in-depth interviews and focus groups.
- The nature of this type of research is exploratory and open ended.
- Small number of people are interviewed in depth and or a relatively small number of focus groups are conducted.
- Qualitative research can be further classified in the following type.
 1. Phenomenology
 2. Ethnography
 3. Case Study
 4. Grounded Theory
 5. Historical Research

1. Phenomenology: A form of research in which the researcher attempts to understand how one or more individuals experience a phenomenon.
Example: we might interview 20 victims of bhopal tragedy.

2. Ethnography: This type of research focuses on describing the culture of a group of people. A culture is the shared attributes, values, norms, practices, language, and material things of a group of people.
Example: The researcher might decide to go and live with the tribal in Andaman island and study the culture and the educational practices.

3. Case study: It is a form of qualitative research that is focused on providing a detailed account of one or more cases.
Example: We may study a classroom that was given a new curriculum for technology use.

4. Grounded theory: It is an inductive type of research, based or grounded in the observations of data from which it was developed; it uses a variety of data sources, including quantitative data, review of records, interviews, observation and surveys



- 5. Historical research:** It allows one to discuss past and present events in the context of the present condition, and allows one to reflect and provide possible answers to current issues and problems.

Example: The lending pattern of business in the 19th century.

Table 4.1 Collective Analysis of Dosages

S.No.	Complains	Medicine	Dosages	Duration
1	Anemia	Navayas Lauh Punamavadi Mandoor	2-0-2 1-0-1	4 to 12 weeks
2	Ascites	ArogyaVardhini Vati Punamavadi Quath	2-0-2 30ml 1-1-1	Till the symptom subsides
3	Boils on nostril	Sukshma Triphala ArogyaVardhini Vati	2-0-2 2-0-2	Till the symptom
4	Boil over Scortum	Gandhak Rasayan (Tab)	2-0-2	2 weeks
5	Breath Less ness	Kanakasav Anu Oil for Nasya	30ml 1-0-1 Once in a day	Till the symptom subsides
6	Breathlessness & cough	Pushkar Mool Sitopaladi Talisadi Kanakasav	1 gm 1-0-1 1 gm 1-0-1 1 gm 1-0-1 30 ml 1-0-1	8 weeks

Key Differences between Qualitative and Quantitative Research

The differences between qualitative and quantitative research are provided can be drawn clearly on the following grounds:

1. Qualitative research is a method of inquiry that develops understanding on human and social sciences, to find the way people think and feel. A scientific and empirical research method that is used to generate numerical data, by employing statistical, logical and mathematical technique is called quantitative research.
2. Qualitative research is holistic in nature while quantitative research is particularistic.
3. The qualitative research follows a subjective approach as the researcher is intimately involved, whereas the approach of quantitative research is objective, as the researcher is uninvolved and attempts to precise the observations and analysis on the topic to answer the inquiry.
4. Qualitative research is exploratory. As opposed to quantitative research which is conclusive.



5. The reasoning used to synthesise data in qualitative research is inductive whereas in the case of quantitative research the reasoning is deductive.
6. Qualitative research is based on purposive sampling, where a small sample size is selected with a view to get a thorough understanding of the target concept. On the other hand, quantitative research relies on random sampling; wherein a large representative sample is chosen in order to extrapolate the results to the whole population.
7. Verbal data are collected in qualitative research. Conversely, in quantitative research measurable data is gathered.
8. Inquiry in qualitative research is a process-oriented, which is not in the case of quantitative research.
9. Elements used in the analysis of qualitative research are words, pictures, and objects while that of quantitative research is numerical data.
10. Qualitative Research is conducted with the aim of exploring and discovering ideas used in the ongoing processes. As opposed to quantitative research the purpose is to examine cause and effect relationship between variables.
11. Lastly, the methods used in qualitative research are in-depth interviews, focus groups, etc. In contrast, the methods of conducting quantitative research are structured interviews and observations.
12. Qualitative Research develops the initial understanding whereas quantitative research recommends a final course of action.

