

Session- 14
Orientation Workshop for the Fresh Faculty Members

Research, Research Method and Research Methodology



Md Abu Reza, PhD
 Professor
 Dept of Genetic Engg. & Biotech.
 University of Rajshahi





Institutional Quality Assurance Cell
 University of Rajshahi
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Types of Research

Applied and Fundamental/Basic/Pure research:

Applied (or action) research: aims at finding a solution for an *immediate problem* facing a society or an industrial/business organization.

Fundamental (to basic or pure) research: Mainly concerned with generalizations and with the *formulation of a theory*.

Example: Analysis of an Oil Painting

Qualitative	Quantitative
Blue/green color	Picture is 10" X 14"
Gold frame	With frame, 14" x 18"
Smells old and musty	Weight 8,5 pounds
Texture shows masterful brush strokes	Surface area of painting = 140 sq. in.
Peaceful scene of the countryside	Cost = \$300

Types of Research

Descriptive and Analytical research:

Descriptive research, includes surveys and fact-finding enquiries of different kinds. The methods of research utilized in descriptive research are *survey methods* of all kinds, including comparative and correlation methods.

Analytical research, on the other hand, the researcher has to use facts or information already available, and analyze these to make a critical evaluation of the material.

Types of Research

Quantitative and Qualitative research:

Quantitative research is based on the *measurement* of quantity or amount.

Qualitative research, on the other hand, is concerned with qualitative phenomenon, i.e., phenomena relating to or involving *quality* or kind.

Types of Research

Conceptual and Empirical research:

Conceptual research :
 Related to some abstract idea(s) or theory.

Empirical research :
 Data-based research, coming up with conclusions which are capable of being verified by observation or experiment.
 Also called *experimental research*.

Types of Research

Some Other Types of Research:

- *One-time research and longitudinal research:* In the former case the research is confined to a *single time-period*, whereas in the latter case the research is carried on over several time-periods.
- *Field-setting research or laboratory research or simulation research:* depending upon the environment in which it is to be carried out.
- *Clinical or diagnostic research:* Such research follow *case-study* methods or in-depth approaches to reach the basic causal relations.
- *Conclusion-oriented and decision-oriented:* While doing conclusion-oriented research, a researcher is free to pick up a problem, redesign the enquiry as he proceeds and is prepared to conceptualize as he wishes.

What you need to do to become a researcher ?

Your desire is good enough !!

- Need to know how to plan and carry a research
- Need to be systematic, logical and scientific
- Need to practice
- Only hard working is not enough, *Work smart*
- Push yourself
- Maturity comes with experience and hard work
- Do not be over-smart

Research design

- There are several research designs, such as,
 - Experimental and
 - Non-experimental hypothesis testing
- *Experimental* designs can be either
 - *Informal* designs
 - *Formal* designs (such as completely randomized design, randomized block design, Latin square design, simple and complex factorial designs), out of which the researcher must select one for his own project

Research Methods vs Methodology

- *Research methods* - all those methods/techniques that are used for conduction of research operations
- *Research methodology* - the way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically
- When we talk of research methodology we not only talk of the research methods but also consider the logic behind the methods we use in the context of our research study and explain why we are using a particular method or technique and why we are not using others so that research results are capable of being evaluated either by the researcher himself or by others.
- Research methodology has many dimensions and research methods do constitute a part of the research methodology

Preparing the research design

- The research problem having been formulated in clear cut terms, the researcher will be required to prepare a research design, i.e., he will have to state the conceptual structure within which research would be conducted.
- Research purposes may be grouped into four categories
 - (i) Exploration
 - (ii) Description
 - (iii) Diagnosis
 - (iv) Experimentation

Determining sample design

- It is not possible to take data of whole population of Rajshahi City
- All the items under consideration in any field of inquiry constitute a 'universe' or 'population'.
- A complete enumeration of all the items in the 'population' is known as a *census* inquiry.

Some important sampling method

(i) *Deliberate sampling:*

Deliberate sampling is also known as purposive or non-probability sampling

(ii) *Random sampling:*

This type of sampling is also known as chance sampling or probability sampling where each and every item in the population has an equal chance of inclusion in the sample and each one of the possible samples, in case of finite universe, has the same probability of being selected.

(iii) *Systematic sampling:*

In some instances the most practical way of sampling is to select every 15th name on a list, every 10th house on one side of a street and so on.

Some important sampling method

(vii) *Multi-stage sampling:*

This is a further development of the idea of cluster sampling.

(viii) *Sequential sampling:*

This is somewhat a complex sample design where the ultimate size of the sample is not fixed in advance but is determined according to mathematical decisions on the basis of information yielded as survey progresses.

Data Analysis

- Categories
- Coding
- Tabulation
- Analysis work after tabulation is generally based on the computation of various percentages, coefficients, etc., by applying various well defined statistical formulae
- Various tests, such as Chi square test, t-test, F-test, have been developed by statisticians for the purpose

Some important sampling method

(iv) *Stratified sampling:*

If the population from which a sample is to be drawn does not constitute a homogeneous group, then stratified sampling technique is applied so as to obtain a representative sample.

(v) *Quota sampling:*

In stratified sampling the cost of taking random samples from individual strata is often so expensive that interviewers are simply given quota to be filled from different strata, the actual selection of items for sample being left to the interviewer's judgment.

Data collection

Data can be collected by any one or more of the following ways:

- (i) By observation
- (ii) Through interview
- (iii) By experimentation

End of session