
analysis
qualitative
quantitative
statistics
research
methodology
methods
spss
data
survey
proposal
t-test
correlation
validity
reliability
triangulation
action-research
questions
qualitative-vs-quantitative
challenging
blog
stats
measurement
observation
standard-deviation
feedback
hard-work
design
reading
pbworks
language-of-research
transferability
what-is-real
peer-review
head-full-of-ideas
accomplishment
relief
research-blog
learning-together
grounded-theory
test-subjects
intensive
individualistic
operationalization
random-sample
content-analysis
listening
inquisitive
lies-damned-lies-and-statistics
stats-workshops
fun
awesome
panic
worthwhile
article-review
process
methodologies
experimental
ethics
learning
great-skill
class-presentations
thinking-intensive
inductive
gentle-and-firm-leadership
resume-building
promising
statistics-are-hard-to-comprehend
deductive
scholarly
wiki
constructs
presentations
reflective
iterative
i-cant-do-this
presentation
confirmability
unit-of-analysis
peer-review-buddies
new-ways-of-thinking
thoughtful
critical
interesting
thought-provoking
trochim
frustration
theory
theory-laden
hypothesis
ethnographic
statistic
variable
null-hypothesis
joyce
options
lots-of-information
more-panic
joyce-is-an-extraordinarily-gifted-teacher

1. THE MEANING OF RESEARCH

> Search for Knowledge

> Scientific and systematic search for pertinent information on a specific topic

> A careful investigation or inquiry specially through search for new facts in any branch of knowledge

> A movement from the known to the unknown

> A voyage of discovery

> An academic activity, not confined to science or technology.

> Research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organising and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the formulateing hypothesis. *C. Woody*

> "The manipulation of things, concepts or symbols for the purpose of generalising to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art." *D. Slesinger & M. Stephenson, Encyclopaedia of Social Sciences, 1934*

> An original contribution to an existing stock of knowledge making its advancement, through objective and systematic method of finding a solution to a problem.

> pursuit of truth with the help of study, observation, comparison and experiment

'*Research*' refers to the **systematic method** consisting of **enunciating** a **problem**, **formulating** a **hypothesis**, **collecting facts or data**, **analysing** the facts and **reaching** certain **conclusions** either in the form of **solution(s)** towards the concerned problem or in certain generalisations for some **theoretical formulation**.

2. OBJECTIVES OF RESEARCH

> Purpose:
discover answeres to questions through the application of scientific procedures.

> Main aim:
find out the truth which is hidden and which has not been discovered yet.

Some general research objectives:

> Gain familiarity with a phenomenon or to acheive new insights into it
(*exploratory or formulative research studies*)

> Portray accurately the characteristics of a particular individual. situation or group
(*descriptive research studies*)

> Determine the frequency with which something occurs or with which it is associated with something else
(*diagnostic research studies*)

> Test a hypothesis of a casual relationship between variables
(*hypothesis-testing research studies*)

NB: *Each research study has its own specific purpose, with specific objectives, these are exemplifications*

3. THE IMPORTANCE OF RESEARCH

> Research inculcates scientific and inductive thinking and it promotes the development of logical habits of thinking and organisation

> The role of research in several fields has greatly increased, with rapid technological advancements

> Research provides the basis all government policies in our economic system

> Research is at the basis of resolving operational and planning problems at all scales (business, industry, urban, social...etc)

> To those writing a Master's and PhD thesis, research may mean a careerism or academic prestige

> To professionals in research methodology, research may mean a source of livelihood

> To philosophers and thinkers, research may mean the outlet for new ideas and insights

> To literary people, research may mean the development of new styles and creative work

> To analysts and intellectuals, research may mean the development of theories.

Research is the fountain of **knowledge for the sake of knowledge** and an important source of providing guidelines for **solving** business, governamental and social **problems**.

It is a sort of formal trainging which enables one to **understand the new developments** in one's field in a better way.

4. RESEARCH METHODS VS METHODOLOGY

> Research Methods or Techniques are those methods or techniques used to conduct a research: the methods a researcher uses in performing researcg operations.

> Research Methods can be put in 3 groups:

1. Methods which are concerned with the collection of data. This method will be used where the data already available is not sufficeint to arrive to a required solution.

2. Statistical Techniques which are used for establishing relationships between data and the unknown.

3. Methods used to evaluate the accuracy of an obtaianed result.

We can also differenciate between techniques and methods:

> **Research Techniques**: the behaviour and instruments we use in performing research operations such as making observations, recording data, processing data, etc.

> **Research Methods**: Behaviour and instruments used in selecting and constructing the research technique.

Type	*Methods*	*Techniques*
1. Library Research	(i) Analysis of historical records	Recording of notes, Content analysis, Tape and Film listening and analysis.
	(ii) Analysis of documents	Statistical compilations and manipulations, reference and abstract guides, contents analysis.
2. Field Research	(i) Non-participant direct observation	Observational behavioural scales, use of score cards, etc.
	(ii) Participant observation	Interactional recording, possible use of tape recorders, photographic techniques.
	(iii) Mass observation	Recording mass behaviour, interview using independent observers in public places.
	(iv) Mail questionnaire	Identification of social and economic background of respondents.
	(v) Opinionnaire	Use of attitude scales, projective techniques, use of sociometric scales.
	(vi) Personal interview	Interviewer uses a detailed schedule with open and closed questions.
	(vii) Focussed interview	Interviewer focuses attention upon a given experience and its effects.
	(viii) Group interview	Small groups of respondents are interviewed simultaneously.
	(ix) Telephone survey	Used as a survey technique for information and for discerning opinion; may also be used as a follow up of questionnaire.
	(x) Case study and life history	Cross-sectional collection of data for intensive analysis, longitudinal collection of data of intensive character.
3. Laboratory Research	Small group study of random behaviour, play and role analysis	Use of audio-visual recording devices, use of observers, etc.

> **Research Methodology**: a way to systematically solve a problem.

It is necessary for the researcher to know not only the research **methods/techniques** but also the methodology; i.e. to know which of the methods or techniques are **relevant** and which are not, and what they would **mean and indicate**.

In very short:
Research Method = What you do
Research Methodology = How you do it in a consequential way

5. TYPES OF RESEARCH

Descriptive Research:

> Used for the description of an existing state of affairs

> Also known as **Ex Post Facto Research**

> The main chracteristic is that the researcher has no control over the variables; he can only report what has happened or is happening

>The main methods used in descriptive research are survey methods of all kinds, including comparative or correlational methods

Analytical Research:

> The researcher uses facts or information already available, and analyses and critically evaluates this material.

> Analytical techniques enable researchers to examine complex relationships between variables.

Applied Research:

> learning by doing

> systematic inquiry involving the practical application of science

> central aim is to discover solutions for pressing practical problems.

Fundamental (or Basic, or Pure) Research:

> concerns generalisations and the formulation of a theory

> scientific research aimed to improve scientific theories for improved understanding or prediction of natural or other phenomena

> gathering knowledge for knowledge's sake, adding to the already existing body of scientifc knowledge

Quantitative Research:

> The systematic empirical investigation of observable phenomena via statistical, mathematical or computational techniques

> Based on quantitative measurements of particular characteristics

> Applicable only to phenomena that can be expressed in quantities.

Qualitative Research:

> Concerned with qualitative phenomenon, linked to quality or kind

> Qualitative research is especially important in behavioural sciences where the aim is to discover the underlying motives of human behaviour.

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Qualitative and Quantative Research:

https://www.youtube.com/watch?v=agUF_53fmyw

Conceptual Research:

> Related to some abstract idea(s) or theory

> Genrally used by philosophers or thinkers to develop new concepts to reinterpret existing ones.

Empirical (or Experimental type) Research:

> Relies on experience or observation alone, ofetn without regard for system and theory

> It is data-base research, conclusions are verified by observation or experiment

> facts are found first hand, at their source, through active stimulation for the production of desired information

> To forego empirical research:

1. develop a working hypothesis and guess probable results
2. get enough facts (data) to prove or disprove hypothesis

> Characterised by the experimenter's control over the variables under study, and the deliberate manipulation of these to study diverse effects

> Evidence gathered through experiments or empirical studies are considered to be the most powerful support possible for testing a given hypothesis.

6. STAGES OF RESEARCH

Some sources of identification of a research topic and problems are the following:
> Theory of one's own interest
> Daily problems
> Technological changes
> Recent trends
> Unexplored areas
> Discussion with experts

Always consider the relevance and interest of the research problems posed.

Defining the problem is more important than its solution, it is a crucial part of the research study:
> State the problem in questionnaire form or in an equivalent form
> Specify the problem in detail and in precise terms
> List the assumptions made
> Remove the ambiguities, if any, in the statement of the problem
> Examine the feasibility of a particular solution

The first stage of the development of a thesis is to develop a framework. This will allow you to understand the current state of affairs, therefore further the body of knowledge available by not researching what has already been discovered, but rather advancing on it.

You can do this through:
> Litterary survey (journals, articles, conferences, workshop results)
> The Internet
> Collection of reference projects
Allowing to to asses the current status.

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This helps us to:
>sharpen the problem, reformulate it or even leads to defining other closely related
problems,
> get proper understanding of the problem chosen, acquire proper theoretical and practical knowledge to investigate the problem,
> show how the problem under study relates to the previous research studies and
> know whether the proposed problem had already been solved.

For internet research, the following scientific paper platforms are good:
http://arxiv.org/
http://www.ams.org/global-preprints/
http://front.math.ucdavis.edu/math.AG/
http://www.ma.utexas.edu/mp_arc/
http://www.clifford.org/anonftp/clf-alg/

> Hypotheses are scientifically reasonable predictions

> To formulate a hypothesis the researcher should acquire enough knowledge in the topic of research and a reasonably deep insight about the problem

> An hypothesis should have conceptual clarity and a theoretical orientation

> Laying out Research Objectives + Expected Results
While your problem formulation serves to describe the aim of your thesis, the objectives provide an accurate description of the specific actions you will take in order to reach this aim. As with the problem formulation, the overall objective (your expected results) should be framed in a single sentence.

> Proposing a Methodology
How do I develop these objectives and get to my expected result.

NEXT CLASSES

> EXPERIMENTATION, SETTING UP A SCIENTIFIC EXPERIMENT

> BIBLIOGRAPHY AND CITATION

> COMMUNICATING YOUR RESEARCH (with Ece)

5 + 1 SLIDES:
SLIDE 1 > FRAMEWORK (in 3 bullet points)
SLIDE 2 > HYPOTHESIS (in one sentence)
SLIDE 3 > OBJECTIVES (in 3 bullet points)
SLIDE 4 > METHODOLOGY (in 3 bullet points)
SLIDE 5 > BIBLIOGRAPHY (internet references)
SLIDE+1 > STORYTELLING

Title of the project...is the story of (target)....that does (what?)....confronts with (who?)....and gains its finality (how?).

Multi-City Coast is the story of the Mediterranean city, that lives through exchanges and fluxes, that confronts itself with the mountains and the sea, and whose finality is the consolidation of a strong identity.