

UNIT ONE

CLASSIFICATION OF RESEARCH

There is no commonly agreed or accepted guideline for classifying research method at different discipline. It is really difficult to propose a single classification method that fits different disciplines. There are different ways of classifying research at different fields. Anyhow, at this level, for our discussion and illustrating how research is classified the following ways of classifying research method can be treated; accordingly research can be classified in terms of

- Goal of research
- Approaches of research
- The type of data used
- Fields of study

2.1 Classification of Research Based on the Goal of Research

Based on the nature of the problem and the research attempts to solve it could be- theoretical or practical, hence research can be classified as

- ❖ Basic research
- ❖ Applied research

2.1.1 Basic/Pure Research

The primary objective of basic or fundamental research is knowledge advancement and the formulation of theory. It does not necessarily produce results of immediate practical use.

1. 1.2 Applied Research

Applied research is designed to solve problems of the modern world, rather than to acquire knowledge for the sake of knowledge. The principal aim of applied research is to improve the human condition. Applied scientists might look forward for answers to specific questions that help humanity, for example medical research or environmental studies.

2.2 Classification of Research Based on the Approaches of Research

Based on the approaches to be employed in conducting research, Research can be classified as

- ✓ Quantitative research and
- ✓ Qualitative research when the issue at hand is.

2.2 .1 Qualitative Research

In qualitative research data are often described in quality rather than quantity or statistical form. The study do not attempt to quantify the results through statistical summary or analysis

2.2.2 Quantitative Research

Quantitative research involves collecting and analyzing numerical data and statistical tests. The process of measurement is central in quantitative research because it provides the fundamental connection between empirical observation and mathematical expression. This approach typically concentrates on measuring and counting data.

Classification of Research based type of Data

Depending on the type of data generated and used research can be classified as

- Primary (field research) and
- Secondary research (desk research).

Primary research involves generating primary data or the collection of data that does not already exist whereas secondary research involves the *summery* and *synthesis* of existing data

Classification of Research based Fields of Study

Based on fields of the study Research can be classified as

- Natural Science Research
- Social Science Research
- Educational Research
- Behavioral Science Research
- Health Science Research

CHARACTERISTICS OF HIGH QUALITY THESIS/DISSERTATION

1. ***State your Thesis and Recognizing the Purpose:*** understanding the purpose of thesis prepares the student to be a professional in the discipline and develop the ability to conduct independent, original, and significant research.
2. ***Understanding Originality and Significance:*** what originality and significance mean?
 - ❖ Originality can be defined as 'something that ***has not been done, found, proved, or seen before.***
 - ❖ It is publishable because it adds to knowledge, changes the way people think, provides information to policy makers, moves the field forward, or advances the state of the art.
 - ***What is significance?*** It can be defined as something that is ***useful and will have an impact, and*** is therefore publishable in top-tier/reputable journals because
 - ✓ It offers a very important breakthrough at ***the empirical, conceptual, theoretical, or policy level***
 - ✓ It helps, the community to see things differently
 - ✓ The influence of the results on further developments in the field, as well as the degree to which the results affect other fields, disciplines, and even society.

ORIGINALITY AND SIGNIFICANCE OF DISSERTATION DEPENDS ON

- ❖ **Understanding of the Discipline:** clearly state the problem and addresses and explain its importance
 - ❖ **Research Design:** if your research project used well-planned and well-executed sources and reliable data from multiple sources it become more acceptable
 - ❖ You may get sources from encyclopedias, scholarly journals, articles, books, magazines, and newspapers
3. **Good Writing style:** quality of your paper can be determined by your ability to write and analysis document.
 - ✓ Brilliant ideas and findings are easily lost due to poor writing techniques.
 - ✓ Well-written and organized papers become acceptable and popular.

Students often have trouble with grammar and composition, while preparing paper, so to improve your writing skill, develop Professional-Level Writing Skills and consider the following steps.

- ✓ Familiarizing yourself with the writing style of authors recommended by your advisors.
 - ✓ Get feedback. The feedback of others is extremely important. *Ask peers* and faculty *advisors* for help with short revisions
 - ✓ Prior to write your paper, Plan your dissertation by mapping or outlining what you want to express i.e., the order and content of each chapter before actually writing
 - ✓ Show the plan to *your advisors* and *peers* before you begin writing. A good outline is the most important step in writing a good paper.
 - It help a researcher to think through their topic carefully and organize it logically and save from disruption of idea
 - ✓ Follow convention/principle. There are norms for the form and style of dissertations in your field. Read books about academic writing; and understand the formatting conventions of your field.
 - ✓ Practice presenting your research. Take opportunities to practice both written and oral presentation.
4. **Aiming for Excellence in the Dissertation:** ability to prepare or write a competent dissertation.
- ✓ Quality of your dissertation determine it excellence.
5. **Maintaining Consistency within the Dissertation:**
- ✓ A typical dissertation should comprises of an introduction, literature review, a theory section, a method section, a results or data analysis section, a discussion of these results, and a conclusion part. .
6. **Practice Academic Honesty:** Honesty is the key point to academic work.
- The strength/quality of your paper and its contribution can be determined by your ability to acknowledge others.
 - If you failed to acknowledge or plagiarize/misuse data your works become worthless.

CHAPTER TWO

How to write research proposal?

A research proposal is intended to ***convince others*** that you have a worthwhile research project and that you have the competence and the work-plan to complete it. Generally, a research proposal should contain all ***the key elements*** involved in the research process and include sufficient information for the readers to evaluate the proposed study. Regardless of your research area and the methodology you choose, all research proposals must address the following questions: ***What you plan to accomplish, why you want to do it and how you are going to do it.***

Components of a research proposal

A research proposal should contain the following key elements such as

- ❖ Title
- ❖ Introduction
- ❖ Literature review
- ❖ Methodology
- ❖ Plan - time frame and schedule of activities
- ❖ Budget/logistics
- ❖ Reference

1. Title

The title of a research proposal should be ***concise*** and ***descriptive***. It should be clear, precise, accurate and catchy because it is the first thing that a reader will see. It should have twelve words or fewer in length and describe the main theme, the type, and the location of the study area.

2. Introduction

The main purpose of the introduction is to provide the ***necessary background*** or ***context for the research problem***. The introduction typically begins with a ***general statement of the problem*** area, with a focus on a specific research problem, and then followed by the Rational or justification for the proposed study. How to frame the research problem is perhaps the biggest problem in proposal writing.

The introduction part generally covers the following elements:

2.1. Statement of the problem: refers to an issue/problem that exists in the literature, theory, or practice that need be solved by the proposed research. Effective problem statements answer the question like “*Why does this research need to be conducted?*”

2.2. Objective of the study: objective of the study should be clear, and concise as well as measurable and feasible. objectives identified should be

➤ *General objective and*

➤ *Specific objective*

2.3. Purpose of the study (rationale of the study): It clearly indicates *why* it is worth doing.

The following Key points to be keep in mind when preparing a purpose statement.

❖ Try to incorporate a sentence that begins with “*The purpose of this study is . . .*”

❖ Clearly identify and define the central concepts or ideas of the study. If the purpose is not clear to the writer, it cannot be clear to the reader

2.4. Research question: Briefly describe the major issues and sub-problems to be addressed by the research. The research questions are more specific than your research objectives.

NB. Be careful with the use of words *what, how and why* while preparing research question. *What for exploratory research, How for descriptive and Why for explanatory research.*

2.5. Scope of the Study/delimitation of the study/: This section of the proposal specifies the *spatial or temporal contexts* of the research. It addresses how a study will be narrowed in scope.

❖ *It explains things that you are not doing* and why you have chosen not to do them.

❖ *The literature you will not review* (and why not),

❖ The population you are not studying (and why not),

❖ *The methodological procedures you will not use* (and why you will not use them.

3. Literature Review/review of related literature: The work of major author(s) in your research area that had or is being conducted. The aim of the literature review is to provide adequate background information on the research being proposed. It should be brief, and indicate relevant related research that had or is being conducted

The literature review serves several important functions:

- ❖ It help to build/refine your research work based the relevant concepts
- ❖ Demonstrates your knowledge of the research problem(identify gap or research problem)
- ❖ Provides new theoretical insights or develops a new model as the conceptual framework for your research.
- ❖ Gives credits to those who have laid the groundwork for the proposed research
- ❖ Shows your ability to *critically evaluate relevant literature* information.
- ❖ Indicates your ability to *integrate and synthesize* the existing literature.
- ❖ Convinces your reader that your proposed research will make a significant and substantial contribution to the literature (i.e., resolving an important theoretical issue or filling a major gap in the literature).

NB. Don't forget to provide references while writing literature review ((*references* should be included for each and every ideas).

4. Methodology: - The methods or procedures section is really the *heart of the research* proposal. This section should discuss what methods you are going to use in order to address the research problem. The Methodology section is very important because it tell *how you plan to tackle* your research problem and you will explain what steps you took to carry out the research, and how

The methodology section should contain the following:

4.1. Description of the study area: it may be geographical and/or demographic description of the study area.

4.2. Research/study design: describe how to carry out research and why. Is it a questionnaire study or a laboratory experiment? What kind of design do you choose (descriptive, cross-sectional, case-control)?

4.3. Procedure: Describe and explain the method used to collect data:

- ✓ Looking for both primary and/or secondary data and sources.
- ✓ Outline the instruments you propose to use such as surveys, use of books, article, journals, interview or observation procedures

4.4. Sample size Decide which data/information should be gathered and from who – and why.

- ❖ Who will take part in your study,?
- ❖ What kind of sampling method / procedure do you use?

There are several formulas for sample size calculation.

- **A probability sampling/ random sampling:** - All probability samples involve the idea of Random selection—participants to be included in the sample have been chosen at random from the same population.
- **Systematic sampling:** the variables are manipulated, measured, or selected by the researcher

5. Data Analysis □□□ How you will analyze the data/information you collect. Data analysis and interpretation includes plans for processing and coding data, computer software to be used (eg Statistical Package for Social Sciences / SPSS, EPI-INFO, etc), choice of statistical methods, confidence levels, significance levels etc.

6. Schedule/Time and budget breakdown/

Planning for the research proposal should include the **time frame** and **activity schedule** for the proposed research.

6.1. Time schedule: - showing how you plan to complete the thesis by the due date.

- Provide a general outline of the time schedule you expect to follow.

The time frame should include time for:

- ❖ purchasing and obtaining relevant consumables and facilities needed to conduct the study
- ❖ conduct of study
- ❖ analysis of data and writing up of project report

The activity schedule is essential for effective monitoring of project. It should list the time frame for major activities, and include milestones. A most effective way of plotting the activity schedule is by using the Gantt chart. (See example below)

Year	2004											
Project (Activities)	J	F	M	A	M	J	J	A	S	O	N	D
1.Planning of research												
2. Literature search												

3. Development of questionnaire												
4. Pre-testing												
5. Training of researchers and research assistant Data collection												
Data entry and analysis												
8. Report writing and presentation												

7. **Budget Breakdown:** money that is requested to conduct the research works

- ✓ It includes the proposed budget for the research project, listing the budget sheet for each year separately, followed by a cumulative budget sheet combining the total number of years.
- ✓ Facilities and Administrative Costs.
- ✓ Include a budget justification describing each proposed budget line item.
- ✓ Give appropriate estimates of costs depending on the different areas, eg: travel and transportation, consumables, salaries, services, rentals, equipment, utilities, repairs, etc.
- ✓ Provide adequate justification, especially for costly item

Example of a budget plan

Project expenses		
Expense Categories and Items	Details	Year RM
1. Temporary and contract personnel Justification:	salary	

2. Travel and transportation Justification:		
3. Rentals (J 600) Justification:		
3. Rentals (J 600) Justification:		
Minor modifications and repairs Justification:		
6. Special services (J 900) Justification:		

8. References

- ❖ Follow APA (2001) guidelines regarding use of references in text and in the reference list.
- ❖ It is possible to use Chicago or MLA, according to the interest of your committee or field of your discipline
- ❖ Only references cited in the text are included in the reference list;
- ❖ However, exceptions can be found to this rule. For example, committees may require evidence that you are familiar with a broader spectrum of literature than that immediately relevant to your research. In such instances, the reference list may be called a *bibliography*.

CHAPTER THREE

STEPS OF WRITING RESEARCH PAPER

Sometimes the most difficult part of writing a research paper is just getting it started. Here you find a list of steps that will help you in the research paper writing process.

1. ***Understand the assignment and set schedule:*** one of the biggest problems student have when beginning a research paper is that they don't understand the assignment. Some specific details you should know here are
 - How long the paper has to be(pages, number of words)
 - The type of citations preferred and number and types of sources allowed
 - Set schedule according to the due dates and how long it will take you to complete the task
2. ***Find a Topic:*** once you have figured out what the assignment is about, choose a specific topic to research. Your research paper contains main and sub topics. Something to consider when choosing a topic:
 - ✓ Is the topic appropriate?
 - ✓ The topic should interest you and your reader
 - ✓ Narrow the focus of your paper.
 - ✓ Select the topic you can manage and avoid subjects that are too technical.
 - ✓ Avoid topics that have only a very narrow range of source materials.
3. ***Locate Information***
 - ✓ Make sure you use information from a wide variety of sources (, internet, encyclopedias, journals, articles, books, magazines, and newspapers, interview, etc.
 - ✓ Don't forget to cite your sources both in-text and in the bibliography.
2. ***State the Thesis:*** write your thesis statement down in one sentence.
 - The main portion of your essay will consist of arguments to support and defend this belief.
3. ***Prepare an Outline:*** A good outline is the most important step in writing a good paper.
 - It is helpful to organize your thoughts with outline. Help a researcher to think through your topic carefully and organize it logically.
 - It also helps to resolve disruption of idea.

An outline should be formulated in this manner:

- Introduction: Clearly State your thesis statement and the purpose of your research paper
 - ✓ Briefly explain the major points you plan to cover in your paper and why your topic is interesting.
- Body: here you present different arguments to support your thesis statement.
 - ✓ Find 3 supporting arguments for each position you take.
 - ✓ Begin with a strong argument, then use a stronger one, and end with the strongest argument for your final point.
- Conclusion - Summarize your arguments and explain why you have come to this particular conclusion.

4. Organize Your Notes and all the information according to your outline.

- Critically analyze your research data, Using the best available sources,
- Check for accuracy and verify that the information is factual, up-to-date, and correct.
- Here you will analyze, synthesize, sort, and digest the information you have gathered and
- Hopefully learn something about your topic which is the real purpose of doing a research paper in the first place.

5. **Write a Rough Draft:** Using your note cards and outline to write a rough draft of your paper. When writing your draft, use numbered or/ footnotes to credit sources and take quotations for major ideas.

6. **Revise Your Outline and Draft:** checking whether any content errors or not.

- ✓ Make any changes needed to be sure your ideas are clearly expressed
- ✓ Arrange and rearrange ideas to follow your outline.
- ✓ Reorganize your outline if necessary, but always keep the purpose of your paper and your readers in mind.

7. Prepare Your Bibliography

- At the end of your paper, you should provide a list of all the sources you used to gather information for the paper.
- List your sources in alphabetical order by the first word.

8. **Final draft:** Before handing in your paper, you should make sure you have the following elements:

- ✓ A cover page stating the course information, title of your paper, your name, and the date on which the paper is due.
- Table of contents which lists the main topics, subtopics, and the page on which each is introduced in your paper.

CHAPTER FOUR

ORGANIZATION OF THESIS

A thesis has four main components. These are the text, the endnotes (footnotes), the bibliography, and the Appendices. The text part refers to the main body of the thesis from title page to conclusion. The endnote or footnote implies the source citation part of the essay. The bibliography is a section of a thesis consisting of list of references (evidences) in their category i.e. archive, oral, written and publications.

THESIS STRUCTURE (FORMAT/LAYOUT)

1) Title Page

Title page is part of the thesis/senior essay explaining the title, author, institution, department, date of delivery, research mentor(s) and advisor, their institutions and address.

2) Abstract

Abstract contain a summarized message about the objective, method and source of your thesis. A good abstract explains in one line why the paper is important. It then goes on to give a summary of your major results. The final sentences explain the major implications of your work. A good abstract is concise and readable. It should be written based on the following criteria

- ✓ Length: 1-2 paragraphs, approx. 400 words.
- ✓ Abstracts generally do not have citations.
- ✓ Information in title should not be repeated.
- ✓ Be explicit.
- ✓ Answers to these questions should be found in the abstract:
 - What did you do?
 - Why did you do it? What question were you trying to answer?
 - How did you do it? State methods

- What did you learn? State major results

3) **Table of Contents**

Table of content is a part that has details or a list all headings and subheadings with page numbers.

4) **List of Figures**

Consist of list of page numbers of all figures. The list should include a short title for each figure but not the whole caption.

5) **List of Tables**

It includes list of page numbers of all tables. The list should include a short title for each table but not the whole description.

6) **Introduction**

The introduction part of the thesis is a statement of something sufficiently interesting to motivate your reader to read the rest of the paper, it is an important/interesting scientific problem that your paper either solves or addresses. You should draw the reader in and make them want to read the rest of the paper. The next paragraphs in the introduction should cite previous research in this area. It should cite those who had the idea or ideas first, and should cite those who have done the most recent and relevant work. You should then go on to explain why more work was necessary. The following points are included in the introductory part:

- ✓ a statement of the goal of the paper,
- ✓ sufficient background information to allow the reader to understand the context and significance of the question you are trying to address,
- ✓ proper acknowledgement of the previous work on which you are building,
- ✓ explain the scope of your work, what will and will not be included,
- ✓ A verbal road map or verbal table of contents guiding the reader to what lies ahead.

7) **Methods**

This section of a scientific paper has to include:

- ❖ Information to allow the reader to assess the believability of your results.
- ❖ Information needed by another researcher to reproduce your experiment.
- ❖ Description of your materials, procedure, theory
- ❖ Calculations, technique, procedure, equipment, and calibration plots
- ❖ Limitations, assumptions, and range of validity

- ❖ Description of your analytical methods,

The methods section should answer the following questions and requirement:

- ✓ Could one accurately replicate the study?
- ✓ Is there enough information provided about any instruments used so that a functionally equivalent instrument could be used to repeat the experiment?
- ✓ If the data are in the public domain, could another researcher lay his or her hands on the identical data set?

Citations in this section should be limited to data sources and references of where to find more complete descriptions of procedures.

8) Results

The results are actual statements of research discussion that indicate information on range of variation. It mentions negative results as well as positive. Present sufficient details so that others can draw their own inferences and construct their own explanations. You need to break up your results into logical segments by using subheadings. The writer must make it clear to the reader that statements are observation and which are interpretation. In most circumstances, this is best accomplished by physically separating statements about new observations from statements about the meaning or significance of those observations. On the other hand, this goal can be accomplished by careful use of phrases such as "I and we ..."

9) Discussion

Start with a few sentences that summarize the most important results. The discussion section should be a brief essay in itself, answering the following questions and requirement:

- a) What are the relationships, trends and generalization among the results?
- b) What are the exceptions to these patterns or generalizations?
- c) Is there agreement or disagreement with previous work?
- d) Interpret results in terms of background laid out in the introduction - what is the relationship of the present results to the original question?
- e) What is the implication of the present results for other unanswered questions in the topic of a research etc...?
- f) Multiple hypotheses: There are usually several possible explanations for results. Be careful to consider all of these rather than simply pushing your favorite one.

- g) What are the things we now know or understand that we did not know or understand before the present work?
- h) Include the evidence or line of reasoning supporting each interpretation
- i) What is the significance of the present results: why should we care?

This section should be rich in references to similar work and background needed to interpret results. However, interpretation/discussion section is often too long and verbose. Is there material that does not contribute to one of the elements listed above? Break up the section into logical segments by using subheads.

10) Conclusions

Conclusion is the strongest and most important statement that you can make from your study. Refer back to problem posed and summarize your finding, new interpretations, and new insights that have resulted from the present work. When you write conclusion do not repeat the words you used in the abstract, introduction or discussion parts.

11) Acknowledgments

An acknowledgment usually comes in front of the abstract. Nevertheless, you can also state your acknowledgment at the end. The acknowledgment part consists of Advisor(s) and anyone who helped you: technically (including materials, supplies) and intellectually (assistance, advice) financially (for example, departmental support, and travel grants)


12) References (Citation)

You are expected to cite all ideas, concepts, text, data that are not your own. Statement should be backed up with your own data or a reference.

13) Summary

Thesis organization seems easy but it is what gives the whole work beauty and systematically arranged coherences. The thesis has introductory, body text, footnotes, bibliography and appendixes. The arrangement order may vary from institution to institution. Your advisor gives you the type of organization his/her institution follow. Do not forget to consult your advisor on the format of organization before working out your outlines.

Generally, at the end your thesis has to pass through

 What you should check in your essay before submission?

✓ **Copy Editing**

1. Proof read your thesis a few times.
2. Check your spelling. Spellcheckers are useful for initial checking, but do not catch homonyms (e.g. hear, here), so you need to do the final check by eye.
3. Make sure that you use complete sentences
4. Check your grammar: punctuation, sentence structure, subject-verb agreement (plural or singular), tense consistency, etc.
5. Give it to others to read and comment.

✓ **Content Editing**

Content editing includes the logical presentation, repetition, relevance and style.

Avoiding ambiguity

1. Do not allow run-on sentences to sneak into your writing; try semicolons.
2. Avoid nested clauses/phrases.
3. Avoid clauses or phrases with more than two ideas in them.
4. Do not use double negatives.
5. Do not use dangling participles (i.e. phrases with an "-ing" verb, in sentences where the agent performing the action of the "-ing" verb is not specified: "After standing in boiling water for two hours, examine the flask.>").
6. Make sure that the antecedent for every pronoun (it, these, those, that, this, one) is clear.
7. Ensure that subject and verb agree in number (singular versus plural).
8. be especially careful with compound subjects. Be especially careful with subject/verb agreement within clauses.

Final Thesis

A submission of the thesis is the last formal requirement for most students after the defense. By the final deadline, the student must submit a complete copy of the thesis to the appropriate body within the accepting institution, along with the appropriate forms, bearing the signatures of the primary supervisor, the examiners, and, in some cases, the head of the student's department. Other required forms may include library authorizations (giving the university library permission to make the thesis available as part of its collection) and copyright permissions (in the event that the student has incorporated copyrighted materials in the thesis).

Submission of the thesis

- Make 3 final copies of final thesis printed cleanly on white paper.
- Double-spaced using 12-point font, 1-inch margins.
- Double-sided saves paper, Include page numbers