

Research Methodology

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What is Research?

- **Search**

Try to find something by looking or seeking carefully and thoroughly.

- **Research**

- It is a systematic investigation and study of materials and sources in order to establish facts and reach new conclusions.

Qualities of Good Research

- Systematic
- Controlled
- Logical
- Empirical
- Replicable
- Self Correcting

Find Domain

- Read topics which you have interest.
- Pick a specialized topic and study thoroughly.
- Pick best journals in that area and read topic related to research paper.

Pick Sub-Domain

- During the whole process.
 - What you find interesting?
- Any problem or solution in which you think an idea that it make have been done differently.
- Found any open problems.
- Any limitations of the current work.

Choose Topic as General and Think

- **WHY** did you choose this Topic? What interests you about have an opinion about the issues involved?
- **WHO** are the information providers on this topic? What publish information about it? Who is affected by the topic?
- **WHAT** are the major issues for this topic? Are there a range of issues and viewpoints to consider?
- **Where** is your topic important: Local, National or International Level?
- **When** is your topic important? Is it a current event or historical issues or compare from your current topic?

Literature Survey

- Why write a literature review?
 - It shows the investigation you are conducting fit with what has gone earlier and put it into context.
 - To understand and critically analyze the background research .
 - To find the source of information which is necessary to develop a context for your research.
 - It also show how your investigation relates to previous research.
 - Fill the gap by contributing your investigation.
 - Provides evidence that may help your findings later.

Title of Research

- Clear Short and concise.
- Be Specific not Vague.
- Don't be too general.
 - Make sure that, highlight the most important aspects of your research in the title itself.
 - Think of your title as a research paper.

Existing Solutions for Problem

- Find relevant facts of an event issue, procedure or problem.
- Reviewing and evaluating the topic being researched, especially explanation which may differ from the current research.
- Reviewing the opinion of the research finding among researchers.
- Spreading the findings and conclusion for critical review.

Limitations

- Describe each limitations in detailed but concise terms.
- Explain why each limitations exists.
- Provide the reasons why each limitation could not be overcome using the method.
- Assess the impact of each limitation in relation to the overall findings and conclusions.
- Describe limitations point to the required for further research.

Develop Methodology

- Mathematical Model
- Design Model
- To Improve existing algorithm
- Proposed new algorithm based on optimization technique.

Analysis

- Once the data are collected, analysis is required with data summaries.
- Write the table and figure details.
- Result section has both the text and clarification materials.
- Each Table and Figure must be referenced in the text portion of the results.

Conclusion

- It is the final part of the research.
- Describing each and everything and connecting it into your initial research.
- Your conclusion should reflect the entire paper.
- Point out the importance of the study and point out how it relates to the field.

References

- **Types of References**
 - **APA** (American Psychological Association) is used by Education, Psychology, and Sciences.
 - **MLA** (Modern Language Association) style is used by the Humanities.
 - **Chicago/Turabian** style is generally used by Business, History, and the Fine Arts.