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SELECTING AND DEFINING A RESEARCH PROBLEM

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ABSTRACT

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Selecting and defining a research problem is crucial for any research study, as it guides the research process. This abstract discusses the factors to be considered when choosing a research problem and the steps involved in defining a research problem. A well-defined research problem contributes to the overall success of a study. Researchers can use guidelines to select their own research problem and understand the rationale for selecting a research topic.

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INTRODUCTION

Research is an essential aspect of any academic or scientific field, aimed at expanding knowledge and understanding of various phenomena. However, before undertaking any research, it is crucial to select and define a research problem. The research problem sets the tone for the entire study and acts as a guide for the research process. Choosing a research problem is not always easy, as it requires careful consideration of various factors, such as relevance, feasibility, and significance. Defining a research problem is equally important, as it helps to clarify the purpose and scope of the study. In this article, we will explore the importance of selecting and defining a research problem, as well as the steps involved in the process. We will also discuss some of the challenges and considerations that researchers

should keep in mind when selecting and defining a research problem. By the end of this article, readers will have a better understanding of the role of a well-defined research problem in contributing to the overall success of a research study.

AIM AND OBJECTIVE

The objectives of this article are to:

1. Highlight the importance of selecting and defining a research problem in the research process.
2. Outline the factors to consider when selecting a research problem.
3. Discuss the steps involved in defining a research problem.
4. Identify the challenges and considerations that researchers should keep in mind when selecting and defining a research problem.

5. Demonstrate the significance of a well-defined research problem in contributing to the overall success of a research study.

Identification and Formulation of Research Paper

A crucial stage in writing a technical paper is recognizing and formulating a research problem. A step-by-step procedure is used when formulating a research query. Finding a research issue that is pertinent, important, and doable is crucial. The need for a clearly defined and specific research issue is one of its fundamental qualities. There are numerous types of study issues, including descriptive, exploratory, and causal ones. The research question, which should be expressed clearly and succinctly, and the research objectives, which describe the anticipated results of the study, are both necessary when defining the research issue. We frequently use the same methodical strategy to gather, analyze, and resolve small problems in our daily lives. For the objectives of this lecture, formal research will be the emphasis. This is the kind of study that scientists deliberately embark upon to better their comprehension of natural

phenomena. Formalized study can differ greatly in a variety of ways, such as complexity, duration, etc. Formal research differs from other types of study in that it has a number of distinctive characteristics. These include:

- The research originates from a question or problem that needs to be addressed.
- It requires a clearly defined goal to be achieved.
- A specific plan must be in place to guide the research process.
- The principal problem is typically broken down into manageable sub-problems.
- The research is guided by a specific research problem, question, or hypothesis.
- Certain critical assumptions are made during the research process.
- Data must be collected and analyzed in an effort to resolve the problem that initiated the research.
- The research process is cyclical or helical in nature, meaning that it is an ongoing process that involves reflection, analysis, and refinement.



Fig. 1 Research Study Steps

Understanding these distinct features of formal research is critical to conducting effective research that yields accurate and meaningful results. By following a specific plan, breaking down complex problems into manageable sub-problems, and collecting and analyzing data,

researchers can gain new insights and make meaningful contributions to their respective fields.

To achieve top-notch research, certain elements should be present, such as:

- It is feasible

- It is novel
- It is ethical
- It is relevant, and
- It is interesting
- It originates with a question or problem.
- It requires clear articulation of a goal.
- It requires a specific plan for proceeding.
- It usually divides the principal problem into more manageable sub-problems.
- It is guided by the specific research problem, question, or hypothesis.
- It accepts certain critical assumptions.
- It requires the collection and interpretation of data in an attempt to resolve the problem that initiated the research.

Understanding the Essence of Research Problems and How to Identify Them

Every research endeavor needs to have research problems. An area of concern, a knowledge gap, or a discrepancy in the literature that requires a methodical investigation is referred to as a research issue. Understanding research issues is essential because they establish the parameters for the entire research process, from the development of research questions to the choice of suitable research methods and data analysis procedures.

Finding research issues can be a difficult job. It requires critical thinking abilities, familiarity with the body of literature, and a thorough understanding of the research subject. Conducting an extensive literature study is one methodical way to spot research issues. This entails conducting a methodical review of the pertinent literature to find any gaps, contradictions, or unresolved research questions.

Engaging in brainstorming, where researchers create a list of potential research questions based on their knowledge and experience, is another method for finding research problems. Additionally, talking with peers, consulting subject matter specialists, and running pilot studies can all be helpful in figuring out research issues.

To make sure that a research issue is manageable, researchable, and important, it must be clarified and refined after it has been identified. A well-defined research issue ought to be particular, narrowly focused, and pertinent to the field of study. Additionally, it must be doable, moral, and add to our body of knowledge.

Conducting efficient and impactful research requires an understanding of the fundamental nature of research issues and the ability to recognize them. Researchers can make sure that their research questions are pertinent, important, and doable by following a methodical process of issue identification and refinement.

Crafting and Refining a Research Problem: The Essentials

A crucial stage in the research process is defining and formulating a research problem. It entails identifying a gap in the body of prior research, formulating a research query, and creating a hypothesis. An in-depth knowledge of the research domain, familiarity with the body of literature, and critical thinking abilities are necessary for formulating and honing a research issue.

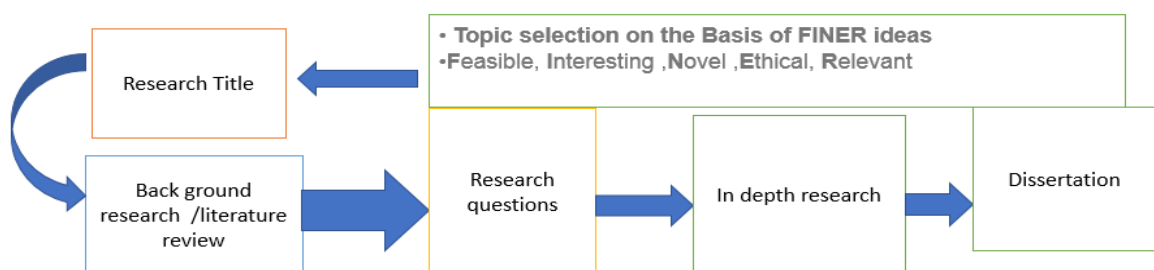


Fig. 2 Selecting of Research Paper

Researchers must define the research domain and the particular area of interest before they can create a research issue. The next step is to perform a thorough literature review to find any gaps in the body of knowledge and open-ended research questions. By modifying the research question and creating a hypothesis after a gap has been found, the research issue can be created.

Making sure a study problem is precise, testable, and significant is part of refining it. The research question should be precise and direct, and the research issue should be narrowly focused on one aspect of the research domain. The theory ought to be verifiable and add to our body of knowledge.

The Importance of Hypotheses in Scientific Research

A basic part of guiding scientific inquiry and advancing knowledge is played by hypotheses. Researchers can create studies that can carefully evaluate their claims and establish testable predictions by developing hypotheses. A theoretical framework for interpreting empirical data and evaluating research results is also made available to researchers by hypotheses. Researchers can communicate their results in a systematic and coherent manner that is understandable to other researchers and the larger scientific community by connecting research questions to theoretical concepts through hypotheses.

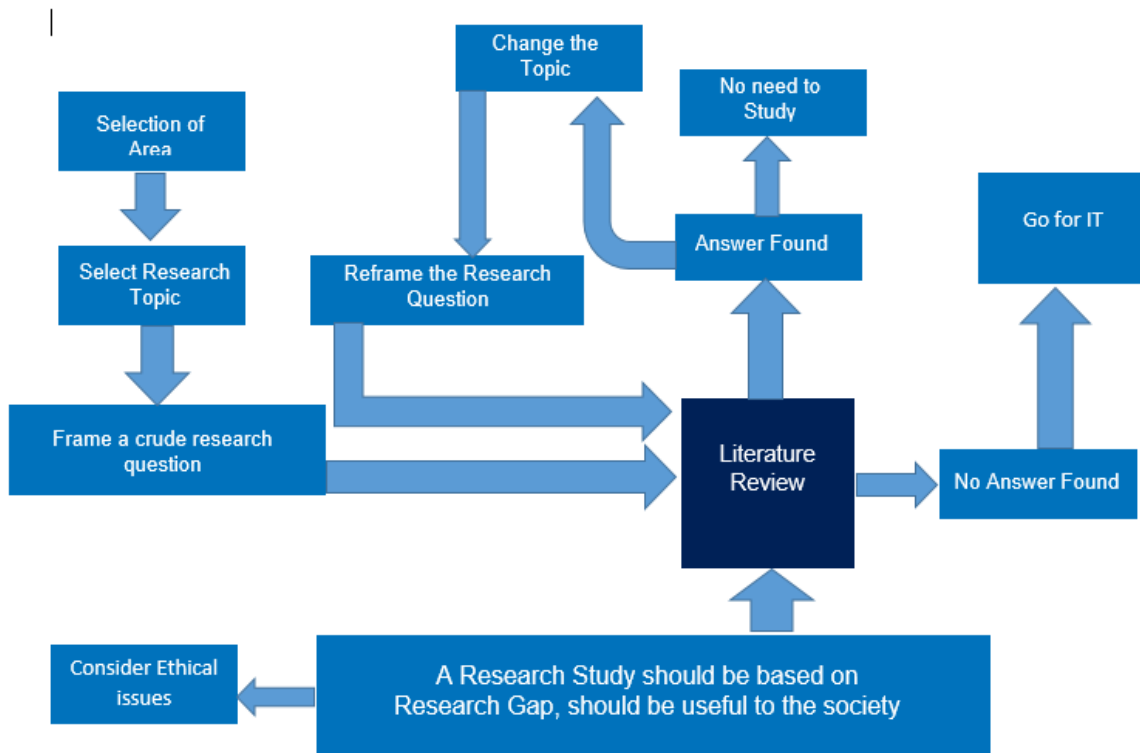


Fig. 3 In-depth Research Study Steps

Additionally, hypotheses give researchers the ability to identify causal links between various factors, which is crucial for creating new theories and revising old ones in light of empirical data. Researchers can produce new insights that advance knowledge in a variety of

fields by testing hypotheses to see how much their results support or contradict preexisting theories.

The ability of hypotheses to direct the research process, make it easier to understand research results, and encourage the creation of new

knowledge all point to the significance of hypotheses in scientific research. The foundation for scientific inquiry that hypotheses provide is crucial for the ongoing development and advancement of science because it connects theory, research questions, and data analysis.

Transforming Conceptual Ideas into Concrete Research Topics

After generating ideas, researchers must critically evaluate them to identify potential research topics. This involves a non-linear process that includes the following steps:

- **Topics of Interest:**

To maintain motivation and overcome encountered challenges, researchers should carefully select topics of interest. These topics should not only pique the researcher's curiosity, but also captivate the attention of the supervisor and the committee. Additionally, the chosen topic must align with the university's specifications and standards, ensuring that the research adheres to the highest level of academic rigor.

- **Finding a Suitable Supervisor:**

When applying for Ph.D. registration, candidates are usually required to submit a research proposal and identify a supervisor who will guide them throughout the dissertation process. In most cases, the supervisor is from the same department as the student, but for interdisciplinary research, a co-supervisor from another department may be appointed. Part-time candidates may have co-supervisors from their employer, while research projects undertaken by scientists may have coordinators or advisors instead of supervisors. However, institutions may have their own regulations regarding the role of supervisors.

- **Refining Research Narrowing Down Broad Topics to Specific Topic:**

Refining research involves the process of narrowing down broad topics to specific research questions. This helps researchers to focus their study, develop testable hypotheses, and identify relevant data sources. By refining their research questions, scholars can better articulate their research objectives and make meaningful

contributions to the existing body of knowledge in their field.

- **Relevance of the Research Paper:**

A research topic should have scientific, social, or practical relevance and contribute to the field. Universities often require published papers before submitting a Ph.D. dissertation. Research solving practical industry problems is supported and relevant to the community. Selecting a topic related to career goals, such as a mining geologist exploring limestone deposits for a cement job, is appropriate.

- **Feasibility of the Study:**

Assess topic feasibility in terms of resources like manpower, finances, equipment, and facilities. Research studies are time-bound and uncertainties can delay the project. Consider the total cost and budget breakdown for equipment, travel, and contingency. Determine whether to use primary or secondary data and ensure accessibility, reliability, and completeness. Identify assets and flaws by performing a SWOT analysis. Prepare to acquire new skills if the topic doesn't match qualifications and experience.

- **Ethics in Research:**

Research ethics are crucial, especially when involving humans and animals. The researcher must be aware of applicable codes of ethics and consider necessary approvals for studies involving humans and clinical trials of drugs. The risk of harming people, the environment, or property must be evaluated, as well as privacy, confidentiality, and society's values. Honesty and integrity are essential for conducting research.

Exploring Different Research Methodologies to Address Research Problems

The systematic technique that researchers use to look into a certain phenomenon is known as research methodology. Depending on the research issue and research questions, researchers employ a variety of methodologies to gather and analyze data. The sort of data needed, the research design, and the research objectives are just a few of the variables that must be taken

into consideration when choosing a research methodology.

Some of the popular research methodologies include:

- **Qualitative research methodology:** This methodology is used to investigate social phenomena and subjective experiences of individuals. It is commonly used in social sciences, psychology, and education.

- **Quantitative research methodology:** This methodology is used to measure and analyze numerical data. It is commonly used in fields such as economics, finance, and engineering.

- **Mixed-methods research methodology:** This methodology combines both qualitative and quantitative research methods. It is commonly used in fields such as healthcare, education, and psychology.

- **Action research methodology:** This methodology is used to investigate and solve real-world problems. It is commonly used in fields such as management, education, and healthcare.

- **Case study research methodology:** This methodology is used to investigate complex phenomena in a particular context. It is commonly used in fields such as social sciences, business, and law.

To guarantee accurate and trustworthy results, researchers must choose the methodology that is best suited to their research problem. In-depth knowledge of various research methodologies, their benefits and drawbacks, and advice on how to choose the best methodology for a particular research issue are all provided in the paper "Exploring Different Research Methodologies to Address Research Problems."

In-depth Analysis in Simple Way

When choosing a research topic, it is important to consider the research question and supporting questions, as well as the study's feasibility, relevance, and significance. To help with this process, you can use the 1H and 5W questions. The 1H question asks "how" the study will be carried out, while the 5W questions (who, what, where, when, and why) provide additional context. 1H stands for HOW?

- How will the study be carried out?

5W stands for Who, What Where, When and Why.

1. Who?

- Who will conduct the research? You alone or a group or an organization

- Who will fund the research?

- Who stands to benefit from the research?

- WHO are the information providers on this topic? Who might publish information about it? Who is affected by the topic?

- Do you know of organizations or institutions affiliated with the topic?

2. What?

- What does the research involve? What is the focus of the study?

- What main research question and supporting questions are you attempting to address?

- A research problem in a question form is a research question ?

- A research problem should be researchable , should have theoretical and practical significance , should be relevant to academic interest, level of research skill .

3. Where?

- Where will the study be conducted?

- The place, the location, the Organization.

- WHERE is your topic important: at the local, national or international level?

- Are there specific places affected by the topic?

4. When?

- When will the study be conducted?

- When will the study begin, and when will it end?

- WHEN is/was your topic important?

- Is it a current event or an historical issue?

- Do you want to compare your topic by time periods?

5. Why?

- Why is this study necessary?

- WHY did you choose the topic?

- What interests you about it?

Some simple way to remember about this which will help of abbreviations as FRIENDS, FISSO & DRCM

F	Feasible
R	Relevant
I	Interesting
E	Ethical
N	Narrow
D	Discipline
S	Supervisor

F	Feasibility
I	Interest
S	Significant
S	Solvability
O	Originality

D	Debatable
R	Researchable
C	Current
M	Manageable

CONCLUSION

A key component of any study is choosing and defining the research issue because it establishes the overall direction of the investigation. A research issue is an area of interest, a knowledge gap, or a discrepancy in the body of literature that needs to be investigated thoroughly. Finding research issues can be difficult, so researchers must conduct an organized search of the pertinent literature, evaluate it, and come up with a list of possible research questions based on their expertise. To make sure a study issue is manageable, researchable, and significant, it must be clarified and refined after it has been identified. By connecting research questions to theoretical ideas, hypotheses play a vital role in guiding scientific inquiry and advancing knowledge.

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