

Recent Trends to Formulate the Research Problem

Dr. G. Tamizhselvi¹, D. Durga Devi²

¹Assistant Professor, Department of Economics, Sri Akilandeswari Women's College, Wandiwash, Tamilnadu

²Assistant Professor, Department of Computer Applications, Sri Akilandeswari Women's College, Wandiwash, Tamilnadu

ABSTRACT

The word 'universe' as used in Statistics denotes the aggregate from which the sample is to be taken. When secondary data are not available for the problem under study, a decision may be taken to collect primary data. A sample data is the piece of the universe which we would select for the reason of investigation. A sample data should exhibit the features of the universe; it should be a microcosm'. A word which means "small universe or world". In this paper we address the how to formulate the problem using recent trends.

Keywords: Tools to Collect Data, Research Problem, Structure and Writing Style, Research Objectives, Sample Size.

I. SURVEY RESEARCH

- ❖ Survey studies are usually used to find the fact by collecting the data directly from population or sample. It is the most commonly used descriptive method in educational researches.
- ❖ The researcher collects the data to describe the nature of existing condition or look forward the standards against existing condition or determine the relationships that exist between specific events.
- ❖ Survey researches demand various tools to collect the data from samples. They are ranging from observation, interview to questionnaire. So the kind of survey study needed for any study is based on its purpose, nature of data and population and sample of the study.

Various Tools to Collect Data:

- **Mail-out survey:** The dissemination of printed questionnaire through the mail which is commonly by post. Respondents are asked to complete the questionnaire on their own and return it by mail to the researcher.
- **Web-Based Survey:** Individuals are contacted by e-mail and asked to participate in a survey which is designed and submitted by computer.
- **In - Person Interviews:** Surveys are structured to permit an interviewer to solicit information directly from a respondent in a personal interview.

Research Problem:

- A **research problem** is a statement about an area of concern, a condition to be improved, a difficulty to be eliminated, or a troubling question that exists in scholarly literature, in theory, or in practice that points to the need for meaningful understanding and deliberate investigation.
- In some social science disciplines the research problem is typically posed in the form of a question. A research problem **does not** state how to do something, offer a vague or broad proposition, or present a value question.

II THE PURPOSE OF A PROBLEM STATEMENT

1. Introduce the reader to the importance of the topic being studied. The reader is oriented to the significance of the study and the research questions or hypotheses to follow.

2. Places the problem into a particular context that defines the parameters of what is to be investigated.

3. *Provides the framework for reporting the results* and indicates what is probably necessary to conduct the study and explain how the findings will present this information.

III SELECTION OF RESEARCH TOPICS

The priority of a topic for research depends on

The characteristics of the problem (topic):

- Impact on strength
- Magnitude
- Seriousness
- Preventability
- Curability
- Available interventions
- Proposed solutions

The characteristics of the proposed study

- Feasibility
- Cost-effectiveness
- Applicability of the results

IV STRUCTURE AND WRITING STYLE

- There are four general conceptualizations of a research problem in the social sciences:
- **Casual Research Problem** -- this type of problem relates to the determination of right and wrong in questions of conduct or conscience by analyzing moral dilemmas through the application of general rules and the careful distinction of special cases.
- **Difference Research Problem** -- typically asks the question "Is there a difference between two or more groups?" This type of problem statement is used when the researcher compares or contrasts two or more phenomena.
- **Descriptive Research Problem** -- typically asks the question, "what is...?" with the underlying purpose to describe a situation, state, or existence of a specific phenomenon.
- **Relational Research Problem** -- suggests a relationship of some sort between two or more variables to be investigated. The underlying purpose is to investigate qualities/characteristics that are connected in some way.

What Makes A Good Research Statement ?

- A good problem statement begins by introducing the broad area in which your research is centered and then gradually leads the reader to the more narrow questions you are posing. The statement need not be lengthy but a good research problem should incorporate the following features:

1. Compelling topic

Simple curiosity is not a good enough reason to pursue a research study. The problem that you choose to explore must be important to you and to a larger community you share. The problem chosen must be one that motivates you to address it.

2. Supports multiple perspectives

The problem must be phrased in a way that avoids dichotomies and instead supports the generation and exploration of multiple perspectives. A general rule of thumb is that a good research problem is one that would generate a variety of viewpoints from a composite audience made up of reasonable people.

3. Researchable

It seems a bit obvious, but you don't want to find yourself in the midst of investigating a complex research project and realize that you don't have much to draw on for your research. Choose research problems that can be supported by the resources available to you. Not sure? Seek out help from a librarian!

Research Objectives:

- The research objectives should be:
 - Closely related to the research question
 - Covering all aspects of the problem
 - Very specific
 - Ordered in a logical sequence
 - Stated in action verbs that could be evaluated e.g. to describe, to identify, to measure, to compare, etc.
 - Achievable, taking into consideration the available resources and time
 - Mutually exclusive, with no repetitions or overlaps
- Properly formulated, specific objectives will facilitate the development of your research methodology and will help to orient the collection, analysis, interpretation and utilization of data.

SMART Objectives:

- S Specific
- M Measurable
- A Achievable
- R Relevant
- T Time-bound

V EXAMPLES OF RESEARCH TOPICS AND OBJECTIVES

Research topic 1:

Water harvesting for groundwater recharge and flood mitigation

Research objectives

- ▶ Develop a water harvesting manual that details the different techniques that are necessary to improve groundwater recharge and mitigate floods
- ▶ Identify the three most effective practical water harvesting systems that have the potential to:
 - Reduce the imbalance between groundwater recharge and use by 50%
 - Cut by 75% the frequency of large destructive floods

Research topic 2 :

Research topic: Institutional Reforms of Water Sector Organizations

Research objectives

- ▶ Develop a social model for reforming water sector organizations
- ▶ Assess the different existing methods for reforming the water sector organizations?
- ▶ Analyse alternatives and recommend the most optimal reform that could result in zero-beaucracy in decision making
- ▶ Develop and pilot test a reform process that could eventually lead to empowering women within the water sector

Research topic 3 :

Research topic: Assessing Crop Water Productivity from Field to National Scale within the IWRM Framework - Case study

Research objectives

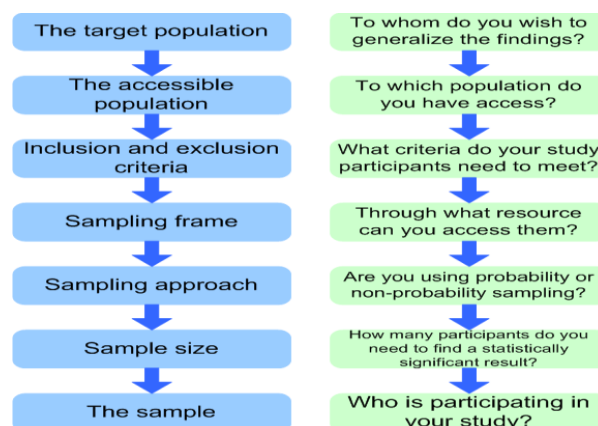
- ▶ Develop an IWRM framework suitable to the Yemeni Agricultural Sector

- ▶ Analyse the impact of different water deficit irrigation approaches and cropping pattern on sorghum crop water productivity
- ▶ Identify a set of socially acceptable and economically feasible technical interventions that could increase sorghum water productivity by 20% while reducing government subsidy by half .

VI SAMPLE SIZE

- ❖ Quantitative researchers get larger samples than the researchers who follow qualitative for the simple reason that quantitative researchers could make use of largest sample possible.
- ❖ The larger the sample the more representation from the entire population is possible.
- ❖ Smaller samples tend to produce less accurate estimates than larger ones.
- ❖ Researchers can estimate how large their samples should be to adequately test their research hypotheses through sampling process and sampling determination.

VII SAMPLING PROCESS



VIII SAMPLING DESIGNS

Probability Sampling

- ❖ It involves the random selection of elements from a population. Random selection is confirmed that each member of the sample has an equal chance of getting selected.

Different types are:

Simple random sampling:

Each participant in the population has an equal, independent chance of getting selected. This way the selected samples are not subject to the researcher partiality. Random sampling is not an easy process but includes series of activities like developing the frame work, ensuring subjects, and choosing the sample from a very large population.

Stratified random sampling:

It is often based on demographic variables like age, gender, race, geographical location, education societal status etc. When the features of sub-population vary considerably, it is better to sample each sub-population independently as a stratum. Stratification is the process of grouping members of the population into relatively homogeneous sub-groups before getting samples.

Cluster sampling:

It involves the successive selection of random samples from larger to smaller units. It is used when natural groupings are evident in a population. Here, the total population is divided into these groups and a sample of the groups is selected .In stratified sampling, the analysis is done on elements within strata. The main objective of cluster sampling is to reduce costs by increasing sampling efficiency

Systematic sampling:

It is obtained by dividing the population size as the desired sample size; the researcher establishes the sampling interval (k), which is the distance, between the selected elements.

- ❖ Example: If the population size $N=1500$ and the sample required $n = 150$ then $k = 1500/150 = 15$.
- ❖ It means every 15th person on the list would be included in the sample.
- ❖ This is similar to random sampling

Non probability sampling:

- ❖ Participants are selected from a population by non-random methods. Less likely to produce accurate and representative samples of the population; results cannot be generalized to the population. Various types are:

Convenience sampling:

The researcher selects sample from the most available people at his location, who meet the study parameter, as study participants. It is an easy method and rate of bias and risk is more Snowball sampling (network or chain sampling) where the members conveniently available for the sample are asked to identify other possible members who meet the study parameter and they in turn identify other people like that this method is used when the researcher is unable to identify sample respondents in advance.

Quota sampling:

It is used as a convenience sampling technique with an added feature of dividing the population into strata (subgroups) to ensure representativeness.

Consecutive sampling:

Where the researcher taking all of the people from an accessible population who met the eligibility criteria over a specific time or for a specified sample size.

Purposive sampling(judgmental sampling) :

Researchers decide to purposely select participants (or cases) who are judged to be typical of the population or particularly knowledgeable about the issues under study. This sampling is subjective and provides no external objective method for assessing the typicalities of the selected participants.

Keep these questions in your mind.

- Have you read broadly and deeply on the topic of your question?
- Have you spent time thinking *critically* about your objective and question?
- Have you spend a time to discuss your research objective with others? (supervisors, guide, your colleagues,)
- Do you found out how people in other disciplines consider about your objective?
- Do you ready to write your research proposal ?

If you have the answers for the above questions, surely you could formulate the problem .

CONCLUSION

In this paper discuss about the formulate problem using recent trends .It would common for all the domain. And also it satisfy the each and every criteria of formulating the problem; briefly explain about sampling size, designs with different types. It could help for the beginners. And we should spent a time for our research work.

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