

Cihan University of Sulaimani

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Research methodology

Second Lecture



By

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Outline

- What is Research ?
- What is research question.
- Importance of research question.
- Origin of research question.
- Criteria of good research question.

Objectives

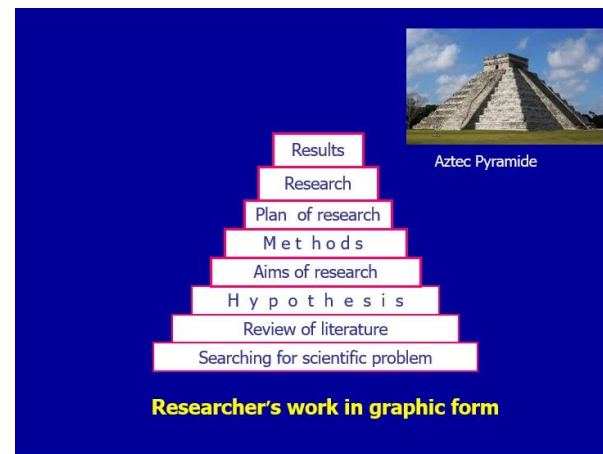
- Understand the importance of a well-developed research question.
- Be aware of numerous methods for generating a research question.
- Develop a concise research question.
- Be able to evaluate the quality of a research question.

What is Research ?

- The main goal of research is the gathering and interpreting of information to answer questions (Hyllegard, Mood, and Morrow, 1996).
- Research is a systematic attempt to provide answers to questions (Tuckman, 1999).
- Research is a systematic way of asking questions, a systematic method of inquiry (Drew, Hardman, and Hart, 1996).

Research question

- It is uncertainty about some thing in the population that the investigator want to resolve by making measurement on his or her study subjects.
- The problem is not in finding a research question but it is the difficulty of finding an important one that can be transformed into a feasible and valid study plan.



The importance of research question

- The research question is the starting point of the study.
- Everything flows from the research question.
- It will determine the population to be studied, the setting for the study, the data to be collected, and the time for the study.
- A clear and concisely stated research question is the most important requirement for a successful study

The importance of research question (Cont.)

- Help writers focus their research by providing a path through the research and writing process.
- The specificity of a well-developed research question helps writers avoid the “all-about” paper and work toward supporting a specific, arguable thesis

How the research question emerges?

- For an established investigator, the research question usually emerges from his previous findings and observations, or from other workers in the field.
- Literature review in the field of study. E.g. meta analysis.
These can also serve as background for grants proposals and research reports.

How the research question emerges?

- Careful observation of patients.
- Application of new technology : often generate new question.
- Scientific communications.

How the research question emerges?(Cont.)

- Literature review in the field of study.
- Repeat studies in your field.
- Do a study recommended by a journal article's authors.
- Look for practical implications of the research.
- Attending conferences.

How the research question emerges?(Cont.)

- Teaching (during preparation of teaching material and discussion with students).
- Creativity : finding new answers to old questions.
- Question validity of commonly held beliefs:
 - If it is true ? Why?
 - If it is not true? Why

Characteristics of a good research question

1. Feasible
2. Interesting
3. Novel
4. Ethical
5. Relevant

Feasible

I. Adequate number of subjects.

Estimate sample size, then estimate the number of

- subjects likely to be available.
- Consider subjects whom would be excluded, or refuse

Feasible (Cont.)

- II. Adequate technical expertise.
- Investigators must have skills, equipment, and experience needed for recruiting the subjects, measuring the variables, and managing and analyzing the data.
- The easiest strategy is to use familiar and established approaches.

Feasible (Cont.)

- III. Cost in time and money
 - Put in mind that the time & money needed usually exceed the projection.
 - If high cost: Use less expensive design
find other sources of funding.
- IV. Measurement of variables: Is it possible to measure or manipulate the variables?.

Feasible (Cont.)

V. Scope :

- If your topic is too broad , your research will be unfocused and superficial and if it is too narrow , you will not find the information you need to proceed.

2. Interesting

- The investigator is interested in the research question because:
 - Getting at the truth of the matter seems interesting.
 - It is important for his or her career development.
 - It will provide financial support

3.Novel(New)

Good clinical research contributes new information.

The novelty of a study can be determined by:

- Reviewing the literature.
- Consulting experts working in the same field.
- Searching list of funded projects in the region

3.Novel (Cont.)

- The research question need not be totally original.
 - It may ask whether a previous observation can be applied to other communities.
 - A confirmatory study is particularly useful if it avoids the weakness of previous studies.
 - The novelty of a study may be in the topic or way of investigation

4.Ethical :

- Any research should not cause any harm to the participants and the society. If so, look for other methods to answer the research question.
- Potential harm to subjects?
- Potential breach of subject confidentiality?
- Potential harm to society ?

5.Relevant (to scientific knowledge)


- Imagine the various outcomes that are likely to occur and consider how each possibility might:
 - Innovation/Contribution to science: What will we learn that we don't already know? Will it make a difference?

5. Relevant (Cont.) :

- Will it be possible to apply the results in practice?
- To organizational, health or social management and policy?
- To individual welfare?

References

- 1. Bob Mathews & Liz Ross. Research Methods, a practical guide for the social sciences. Pearson Education limited 2010. England.
- 1. Jonathan Grix. The Foundation of Research. Palgrave Macmillan 2004. London.
- 2. Geoffrey Marczy k, David DeMatteo& David Festinger. Essentials of Research Design & Methodology. John Wiley & Sons, Inc 2005. New Jersey.
- 3. SK Gupta. Basic principles of clinical research & methodology. Jaypee brothers medical publishers (P) limited 2007. New Delhi.
- 4. RL Bijlani. Medical Research. Jaypee brothers medical publishers (P) limited 2008. New Delhi.
- 5. Mohit Bhandari &ParagSanchesti. Clinical Research made easy, a guide to publishing in medical literature. Jaypee brothers medical publishers (P) limited 2010. New Delhi.
- 6. Yugish Kumar Singh. Fundamental of Research Methodology & Statistics. New Age International Publishers 2006. New Delhi.
- 7. Catherin Dawson. Practical Research Methods, A user-friendly guide to mastering research. British Library Cataloguing in Publication Data 2002. UK.



Thank you for your Attention
Any Question!