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RESEARCH METHODOLOGY'S: AN OVERVIEW AND GUIDELINES

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ABSTRACT

Research methodology simply refers to the practical "how" of any given piece of research. More specifically, it's about how a researcher systematically designs a study to ensure valid and reliable results that address the research aims and objectives. Knowledge production within the field of research is accelerating at a tremendous speed while at the same time remaining fragmented and interdisciplinary. Traditional literature reviews often lack thoroughness and rigor and are conducted mostly in theoretical manner, rather than following a specific methodology. This overview discusses the objective of research, types of research as well as significance of research. It also discusses common research and scientific methods.

Keywords: Literature review, Synthesis Research methodology, Systematic review, Research process, Discovery, Qualitative, and Quantitative.

1. INTRODUCTION

Research in common parlance refers to a search for knowledge. There are number of definitions come across with respect to research methodology. Simply one can also define research as a scientific and systematic search for pertinent information on a specific subject. Building your research on and relating it to existing knowledge is the building block of all academic research activities, regardless of discipline. A literature review may consist of simply a summary of key sources, but in the social sciences, a literature review usually has an organizational pattern and combines both summary and synthesis, often within specific conceptual categories.D.Slesinger and M.Stephenson in the encyclopaedia of social sciences define research "the manipulation of things, concepts or symbols for purpose of generalising to extent, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art".

Features of a literature review may be

- To find out and correct out research problem which being already studied.
- To perform comparative research work to the others under hypothetical consideration.
- To find out any gaps that present in the literature.
- To Correlate the Point the way in fulfilling a need for additional research.
- To find out our calibrated research within the context of existing literature

Objective of research:

- To discover answers to questions through the literature of scientific procedures.
- To gain familiarity with a phenomenon or to achieve new insights into it studies with this object in view are termed as exploratory or formulative research studies.
- To provide systematic structure
- To enhance the research quality
- To derive better solution.

Types of research methodology:

- Qualitative research methodology
- Quantitative research methodology
- Basic research
- Applied research

- Problem oriented research
- Case solving research

2. QUALITATIVE RESEARCH METHODOLOGY

The qualitative research methodology is descriptive and subjective irrespective depends on realistic facts. Qualitative research on other hand, is concerned with qualitative phenomenon i.e., phenomena relating to or involving quality or kind. Through qualitative research we can analyse the various factors which motivate researchers to work in specific way or that make researcher like or dislike particular thing. Observation and description are more important in this type of Methodology. The main aim of this type of Methodology is to evaluate knowledge, attitudes, behaviours, and opinions of people about the Research's topic.

With the name concerned phenomenon based on quality and research. Immaterial things which includes in qualitative research are data like intensity, amount or frequency. size is a less consideration in qualitative research methodology. The useful qualitative method encompasses highly focused, flexible, and provides quick results. However, there is a scope of misunderstanding and misuse of qualitative methods.

3. QUANTITATIVE RESEARCH METHODOLOGY

Quantitative research is based on quantitative measurements of some characteristics .It is a phenomena which relates in terms of quantities. It works on the basis of number and particle. This is a systematic research methodology and is in numbers. The quantitative research methodology uses a laboratory tools like laboratory experiments, econometric, mathematical calculations, surveys, simulation etc. The measurement, quantity or amount is the critical factor in quantitative research methodology.

In quantitative research methodology, the analysis and measurement of data and relationship between variables are essential. It involves number based Research which measures attitude, behaviour, and performance in numbers. This method makes data easier to interpret. It requires those techniques which can apply to a larger view. The data received for the purpose to use in quantitative research methodology can effectively convert into graphs or charts. So, there will be a difficulty for an interpreter to influence it. n this method, the data concerned can be analysed in numbers. The results obtained from this research method are analysed and interpreted easily. As the term suggests, the quantitative way is the collection and analysis of data which can be found in numeric form. Large-scale and representative sets of data are required for adopting this type of Research Methodology. This method is comparatively expensive.

4. BASIC RESEARCH

This type of research is known as a basic, it purely works on fundamental of science, and it gives different creative new ideas, principles and theories. In this article, we will define what basic research is, its data collection methods and how it differs from other approaches to research. Approach of basic research that is aimed at gaining. Basic research is also referred to as pure research or fundamental research. Basic research can be carried out in different fields with the primary aim of expanding the frontier of knowledge and developing the scope of these fields of study. Examples of basic research can be seen in medicine, education, psychology, technology, to mention but a few. With respective to science for e.g. Research to determine the drug concentration on given dosage form in terms of biotechnology researcher have to discover a components of human DNA. Basic research ,it involve fundamental of research along with better prediction with improving scientific literature. of natural or other phenomena. Basic research generates new ideas, principles, and theories, which may not be immediately utilized but nonetheless form the basis of progress and development in different fields. Basic research is performed without thought of practical ends. It results in general knowledge and understanding of nature and its laws. The general knowledge provides the means of answering a large number of important practical problems, though it may not give a complete specific answer to any one of them. The function of applied research is to provide such complete answers.

5. APPLIED RESEARCH

Mainly applied research is used to do scientific study and research to solve a practical problem, this is useful in find solutions to everyday problems, cure illness, and develop innovative technologies. Basic research used for increasing the scientific knowledge based around a particular topic. applied research is a type of research design that seeks to solve a specific problem or provide innovative solutions to issues affecting an individual, group or society. It is often referred to as a scientific method of inquiry or contractual research because it involves the practical application of scientific methods to everyday problems.

When conducting applied research, the researcher takes extra care to identify a problem, develop a research hypothesis and goes ahead to test these hypotheses via an experiment. In many cases, this research approach employs empirical methods in order to solve practical problems. n education, applied research is used to test pedagogic processes in order to discover the best teaching and learning methods. It is also used to test educational policies before implementation and to address different issues associated with teaching paradigms and classroom dynamics for a better learning experience. In itself, applied research is a scientific method of investigation because it applies existing scientific knowledge to practical situations. It is useful in different fields including thermodynamics, physics, material sciences and microbiology. For e.g. applied research to improve agricultural crop production, applied research to treat or cure a specific disease.

6. PROBLEM SOLVING RESEARCH

Problem solving differentiates fact from opinion used to specify the underlying causes. It also used to implement for determine in which process is problem lie. Primarily it can be defined as Diagnose the situation so that your focus is on the problem, not just its symptoms. Helpful problem-solving techniques include using flowcharts to identify the expected steps of a process and cause-and-effect diagrams to define and analyse causes. We can start by problem solving by

1. Evaluating the possible impact of new tools and revised policies in the development of your "what should be" model.

2. Reviewing and documenting how processes currently work (i.e., who does what, with what information, using what tools, communicating with what organizations and individuals, in what time frame, using what format).

Problem Solving Methodologies are processes through which a situation or issue may be analysed and solutions implemented. Different methodologies may be optimized for specific applications.

Employers seek people who can effectively identify and ask significant questions that clarify and lead to better solutions in a variety of work conditions. They require employees who can use multiple techniques to solve problems and can articulate the reason for choosing a course of action or solution

7. CASE SOLVING RESEARCH

The case study method is a very popular form of qualitative analysis and involves a careful and complete observation of a social unit, be that unit a person, a family, an institution, a cultural group or even the entire community. It is a method of study in depth rather than breadth. Under this method the researcher can take one single social unit or more of such units for his study purpose; he may even take a situation to study the same comprehensively.

Here the selected unit is studied intensively i.e., it is studied in minute details. Generally, the study extends over a long period of time to ascertain the natural history of the unit so as to obtain enough information for drawing correct inferences. Case study method enhances the experience of the researcher and this in turn increases his analysing ability and skill.

This method makes possible the study of social changes. On account of the minute study of the different facets of a social unit, the researcher can well understand the social change then and now. This also facilitates the drawing of inferences and helps in maintaining the continuity of the research process. In fact, it may be considered the gateway to and at the same time the final destination of abstract knowledge.

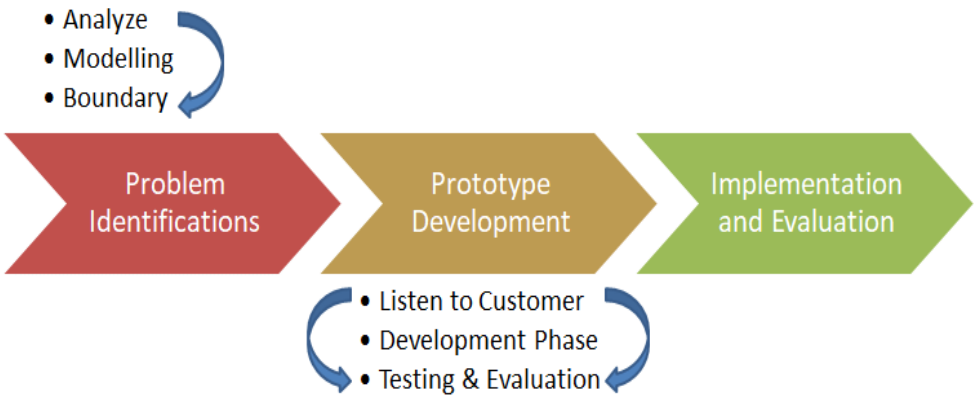

Fig.(a)

Guidelines for research methodology:

1. **Introduction of method**

Introduce the methodological approach used in investigating your research problem. In one of the previous sections, your methodological approach can either be quantitative, qualitative, or mixed methods.

2. **To map methodology connection:**

Explain the relevance of your methodological approach to the overall research design. Keep in mind that the connection between your methods and your research problem should be clear. This means that your methodology must be appropriate to achieve your research paper's objective—to address the research problem you presented.

3. Focus on research limitation:

Make sure to address possible limitations you may encounter in your research, such as practical limitations that may affect your data gathering process. If there are potential issues you anticipate to encounter in the process.

4. Sampling out the process:

Explain the reason behind your sampling procedure. For example, if you are using statistics in your research, indicate why you chose this method as well as your sampling procedure. If you are going to do interviews, describe how are you going to choose the participants and how the interviews will be conducted.

5. Details of instrumentation:

Indicate the instruments you are going to use in collecting your data and explain how you are going to use them. These tools and instruments can be your surveys, questionnaires for interviews, observation, etc. If your methods include archival research or analysing existing data, provide background information for documents, including who the original researcher is, as well as how the data were originally created and gathered.

6. Details of analysis:

Explain how you are going to analyse the results of your data gathering process. Depending on the methods you use, you can use statistical analysis or explore theoretical perspectives to support your explanation of observed behaviours.

7. Provide background information

When using methods that your readers may be unfamiliar with, make sure to provide background information about these methods.

8. GUIDELINES TO ASSESS THE QUALITY OF A LITERATURE REVIEW

Phase 1: Design

- In relationship to the overall research field, is this literature review needed and does it make a substantial, practical, or theoretical contribution?
- Are the motivation, the purpose, and the research question(s) clearly stated and motivated?
- Does the review account for the previous literature review and other relevant literature?
- Is the approach/methodology for the literature review clearly stated?
- Is this the most appropriate approach to address the research problem?
- Are the methodology and the search strategy clearly and transparently described and motivated (including search terms, databases used, and explicit inclusion and exclusion criteria)?

Phase 2: Structuring and writing the review

- Is the review article organized coherently in relation to the overall approach and research question?
- Is the overall method of conducting the literature review sufficiently described? Can the study be replicated?
- Is the result of the review reported in an appropriate and clear way?
- Does the article synthesize the findings of the literature review into a clear and valuable contribution to the topic?
- Are questions or directions for further research included? Are the results from the review useable?

Phase 3: Conduct

- Is the search process appropriate for this type of review?

- Is the practical search process accurately described and accounted for?
- Is the process of the inclusion and exclusion of articles transparent?
- Have proper measures been taken to ensure research quality?
- Can it be trusted that the final.

Phase 4: Data abstraction and analysis

- Is the data abstracted from the article appropriate in concordance with the overall purpose of the review? • Is the process for abstracting data accurately described?
- Have proper measures been taken to ensure quality data abstraction?
- Is the chosen data analysis technique appropriate in relation to the overall research question and the data abstracted?
- Is the analysis process properly described and transparent?

Significance of research methodology:

To solve the difficulties coming in the way of Research is the main work of designing a methodology. It is necessary not just to identify the problem for Research but to determine the best method to solve that problem as well.

1. It helps in deciding the best method to resolve the difficulties for Research.

2. Research describes how efficient the method is in solving the problem

3. It aids to know the accuracy of the way decided to apply in Research for a suitable outcome.

Conclusion:

1. A restatement of the research problem.

2. A summary of your key arguments and/or findings.

3. A short discussion of the implications of your research.

9. CONCLUSION

Research is a voyage of discovery; a journey; an attitude; an experience; a method of critical thinking; an activity caused by instinct of inquisitiveness to gain fresh insight/find answers to question/acquire knowledge.

REFERENCES

[1] National institute of general medical sciences (NIGMS). In: The Grants Register 2019. London: Palgrave Macmillan UK; 2019. p. 541–2.

[2] Review of vocational education: the Wolf report [Internet]. GOV.UK. 2011 [cited 2022 Jun 7]. Available from: https://www.gov.uk/government/publications/review-of-vocational-education-the-wolf-report

[3] Roll-Hansen N, London School of Economics and Political Science. Centre for Philosophy of Natural and Social Sciences. Why the distinction between basic (theoretical) and applied (practical) research is important in the politics of science. London, England: London School of Economics and Political Science Contingency and Dissent in Science Project; 2009.

[4] Dörner D, Funke J. Complex problem solving: What it is and what it is not. Front Psychol [Internet]. 2017;8:1153. Available from: http://dx.doi.org/10.3389/fpsyg.2017.01153

[5] Baran E. Jonassen, "toward a design theory of problem solving." In: Learning Environments Design Reading Series.

[6] Jonassen DH. Learning to solve problems: A handbook for designing problem-solving learning environments. 1st ed. London, England: Routledge; 2010.

[7] Antons D, Breidbach CF. Big data, big insights? Advancing service innovation and design with machine learning. J Serv Res [Internet]. 2018;21(1):17–39. Available from: http://dx.doi.org/10.1177/1094670517738373

[8] Baumeister RF, Leary MR. Writing narrative literature reviews. Rev Gen Psychol [Internet]. 1997;1(3):311–20. Available from: http://dx.doi.org/10.1037/1089-2680.1.3.311

[9] Borman GD, Dowling NM. Teacher attrition and retention: A meta-analytic and narrative review of the research. Rev Educ Res [Internet]. 2008;78(3):367–409. Available from: http://dx.doi.org/10.3102/0034654308321455

[10] Arksey H, O'Malley L. Scoping studies: towards a methodological framework. Int J Soc Res Methodol [Internet]. 2005;8(1):19–32. Available from: http://dx.doi.org/10.1080/1364557032000119616

[11] Aromataris E, Riitano D. Constructing a search strategy and searching for evidence. A guide to the literature search for a systematic review. Am J Nurs [Internet]. 2014 [cited 2022 Jun 7];114(5):49–56. Available from: https://pubmed.ncbi.nlm.nih.gov/24759479/

[12] Anderson S, Allen P, Peckham S, Goodwin N. Asking the right questions: scoping studies in the commissioning of research on the organisation and delivery of health services. Health Res Policy Syst [Internet]. 2008;6(1):7. Available from: http://dx.doi.org/10.1186/1478-4505-6-7

[13] Ehrich K, Freeman GK, Richards SC, Robinson IC, Shepperd S. How to do a scoping exercise: continuity of care. Research, Policy and Planning [Internet]. 2002 [cited 2022 Jun 7];20(1):25–9. Available from: https://eprints.soton.ac.uk/33560/

[14] Ehrich K, Freeman G, Richards S, Robinson I, Shepperd S. Short report how to do a scoping exercise: Continuity of care. 2002 [cited 2022 Jun 7]; Available from: https://www.semanticscholar.org/paper/a370a1bb9fbaf2c72c34a447b914b5df6aad6d68

[15] Pham MT, Rajić A, Greig JD, Sargeant JM, Papadopoulos A, McEwen SA. A scoping review of scoping reviews: advancing the approach and enhancing the consistency. Res Synth Methods [Internet]. 2014 [cited 2022 Jun 7];5(4):371–85. Available from: http://dx.doi.org/10.1002/jrsm.1123

[16] Vian A, Alex O, Zeeshan A. Research methodology in the built environment: A selection of case studies. 1st ed. Ahmed V, Opoku A, Aziz Z, editors. London, England: Routledge; 2016.

[17] Brannen J, Moss G. Critical issues in designing mixed methods policy research. Am Behav Sci [Internet]. 2012;56(6):789–801. Available from: http://dx.doi.org/10.1177/0002764211433796

[18] Buchanan DA, Bryman A. Contextualizing methods choice in organizational research. Organ Res Methods [Internet]. 2007;10(3):483–501. Available from: http://dx.doi.org/10.1177/1094428106295046

[19] Choy LT, Faculty of Arts and Social Science, University of Malaya, Malaysia. The strengths and weaknesses of research methodology: Comparison and complimentary between qualitative and quantitative approaches. IOSR j humanit soc sci [Internet]. 2014 [cited 2022 Jun 10];19(4):99–104. Available from: https://iosrjournals.org/iosr-jhss/papers/Vol19-issue4/Version-3/N0194399104.pdf

[20] .Collis, J., & Hussey, R. (2013). Business Research A Practical Guide for Undergraduate and Postgraduate Students. London palgrave Macmillan. - references - scientific Research publishing [Internet]. Scirp.org. [cited 2022 Jun 10]. Available from: https://www.scirp.org/%28S%28lz5mqp453edsnp55rrgjct55%29%29/reference/referencespapers.aspx?referenceid=2407189

[21] Goddard W, Melville S. Research methodology: An introduction. 2nd ed. Cape Town, South Africa: Juta Academic; 2001.

[22] Haq M. A comparative analysis of qualitative and quantitative research methods and a justification for adopting mixed methods in social research. 2015 [cited 2022 Jun 10]; Available from: https://bradscholars.brad.ac.uk/handle/10454/7389