

A Basic Approach towards the Literary Meaning of Research Methodology and Quantitative Methods of Computer Applications by Formulation of Hypothesis of Given Factual Information

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Abstract- *Research is a process of collecting, analyzing and interpreting information to answer questions. But to qualify as research, the process must have certain characteristics: it must, as far as possible, be controlled, rigorous, systematic, valid and verifiable, empirical and critical. Research is undertaken within most professions. More than a set of skills, it is a way of thinking: examining critically the various aspects of your professional work. It is a habit of questioning what you do, and a systematic examination of the observed information to find answers with a view to instituting appropriate changes for a more effective professional service. In this paper, a new approach which is based on quantifying the process of research with respect to the social and academic perspective of a given subject's beauty is illustrated.*

Keywords: *Research Methodology, Quantitative Methods, Hypothesis, Innovation, descriptive, Structured, Unstructured*

I. DEFINITION OF RESEARCH

Research is undertaken within most professions. More than a set of skills, it is a way of thinking: examining critically the various aspects of your professional work.

1. It is a habit of a set of philosophies (approaches).
2. It uses procedures, methods and techniques that have been tested for their validity and reliability; of questioning what you do, and a systematic examination of the observed information to find answers with a view to instituting appropriate changes for a more effective professional service. When you say that you are undertaking a research study to find answers to a question, you are implying that the process is being undertaken within a frame work. It is designed to be unbiased and objective Philosophies means approaches e.g. qualitative, quantitative and the academic discipline in which you have been trained. Validity means that correct procedures have been applied to find answers to a question. Reliability refers to the quality of a measurement procedure that provides repeatability and accuracy. Unbiased and objective means that you have taken each step in an unbiased manner and drawn each conclusion to the best of your ability and without introducing your own vested interest.(Bias is a deliberate attempt to either conceal or highlight something)

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Adherence to the three criteria mentioned above enables the process to be called 'research'. However, the degree to which these criteria are expected to be fulfilled varies from discipline to discipline and so the meaning of 'research' differs from one academic discipline to another. The difference between research and non-research activity is, in the way we find answers: the process must meet certain requirements to be called research. We can identify these requirements by examining some definitions of research. The word research is composed of two syllables, *re* and *search*. *re* is a prefix meaning again, anew or over again *search* is a verb meaning to examine closely and carefully, to test and try, or to probe. Together they form a noun describing a careful, systematic, patient study and investigation in some field of knowledge, undertaken to establish facts or principles. *search* is a verb meaning to examine closely and carefully, to test and try, or to probe. Research is a structured enquiry that utilizes acceptable scientific methodology to solve problems and create new knowledge that is generally applicable. Scientific methods consist of systematic observation, classification and interpretation of data. Although we engage in such process in our daily life, the difference between our casual day-to-day generalisation and the conclusions usually recognized as scientific method lies in the degree of formality, rigorousness, verifiability and general validity of latter.

II. CHARACTERISTICS OF RESEARCH

Research is a process of collecting, analyzing and interpreting information to answer questions. But to qualify as research, the process must have certain characteristics: it must, as far as possible, be controlled, rigorous, systematic, valid and verifiable, empirical and critical.

-Controlled- in real life there are many factors that affect an outcome.

The concept of control implies that, in exploring causality in relation to two variables (factors), you set up your study in a way that minimizes the effects of other factors affecting the relationship. This can be achieved to a large extent in the physical sciences (cooking, baking), as most of the research is done in a laboratory. However, in the social sciences (Hospitality and Tourism) it is extremely difficult as research is carried out on issues related to human beings living in society,

where such controls are not possible. Most of the research is done in a laboratory. Therefore in Hospitality and Tourism, as you cannot control external factors, you attempt to quantify their impact.

-Rigorous-you must be scrupulous in ensuring that the procedures followed to find answers to questions are relevant, appropriate and justified. Again, the degree of rigor varies markedly between the physical and social sciences and within the social sciences.

-Systematic-this implies that the procedure adopted to undertake an investigation follow a certain logical sequence. The different steps cannot be taken in a haphazard way. Some procedures must follow others.

-Valid and verifiable-this concept implies that whatever you conclude on the basis of your findings is correct and can be verified by you others.

-Empirical-this means that any conclusion drawn are based upon hard evidence gathered from information collected from real life experiences or observations

-Critical-critical scrutiny of the procedures used and the methods employed is crucial to a research enquiry. The process of investigation must be foolproof and free from drawbacks. The process adopted and the procedures used must be able to withstand critical scrutiny.

For a process to be called research, it is imperative that it has the above characteristics.

III. TYPES OF RESEARCH

Research can be classified from three perspectives:

1. Application of research study
2. Objectives in undertaking the research
3. Inquiry mode employed

Application:

From the point of view of application, there are two broad categories of research:

- pure research and
- applied research.

Pure research involves developing and testing theories and hypotheses that are intellectually challenging to the researcher but may or may not have practical application at the present time or in the future. The knowledge produced through pure research is sought in order to add to the existing body of research methods. Applied research is done to solve specific, practical questions; for policy formulation, administration and understanding of a phenomenon. It can be exploratory, but is usually descriptive. It is almost always done on the basis of basic research. Applied research can be carried out by academic or industrial institutions. Often, an academic institution such as a university will have a specific applied research program funded by an industrial partner interested in that program.

IV. OBJECTIVES

From the viewpoint of objectives, a research can be classified as

- descriptive
- correlational
- explanatory
- exploratory

Descriptive research attempts to describe systematically a situation, problem, phenomenon, service or programme, or provides information about , say, living condition of a community, or describes attitudes towards an issue. Correlation research attempts to discover or establish the existence of a relationship/ interdependence between two or more aspects of a situation. Explanatory research attempts to clarify why and how there is a relationship between two or more aspects of a situation or phenomenon. Exploratory research is undertaken to explore an area where little is known or to investigate the possibilities of undertaking a particular research study (*feasibility study / pilot study*).

In practice most studies are a combination of the first three categories.

Inquiry Mode:

From the process adopted to find answer to research questions – the two approaches are:

- Structured approach
- Unstructured approach

Structured approach:

The structured approach to inquiry is usually classified as quantitative research. Here everything that forms the research process- objectives, design, sample, and the questions that you plan to ask of respondents- is predetermined.

It is more appropriate to determine the extent of a problem, issue or phenomenon by quantifying the variation.

e.g. how many people have a particular problem? How many people hold a particular attitude?

Unstructured approach:

The unstructured approach to inquiry is usually classified as qualitative *research*. This approach allows flexibility in all aspects of the research process.

It is more appropriate to explore the nature of a problem, issue or phenomenon without quantifying it. Main objective is to describe the variation in a phenomenon, situation or attitude. e.g, description of an observed situation, the historical enumeration of events, an account of different opinions different people have about an issue, description of working condition in a particular industry Both approaches have their place in research. Both have their strengths and weaknesses. In many studies you have to combine both qualitative and quantitative approaches. For example, suppose you have to find the types of cuisine / accommodation available in a city and the extent of their popularity Types of cuisine is the qualitative aspect of the study as finding out about them entails description of the culture and cuisine The extent of their popularity is the quantitative aspect as it involves estimating the number of people who visit restaurant serving such cuisine and calculating the other indicators that reflect the extent of popularity.

V. THE RESEARCH PROCESS

The research process is similar to undertaking a journey.

For a research journey there are two important decisions to make-

- 1) What you want to find out about or what research questions (problems) you want to find answers to;
- 2) How to go about finding their answers.

There are practical steps through which you must pass in your research journey in order to find answers to your research questions.

The path to finding answers to your research questions constitutes research methodology.

At each operational step in the research process you are required to choose from a multiplicity of methods, procedures and models of research methodology which will help you to best achieve your objectives. This is where your knowledge base of research methodology plays a crucial role. Steps in Research Process:

1. Formulating the Research Problem
2. Extensive Literature Review
3. Developing the objectives
4. Preparing the Research Design including Sample Design
5. Collecting the Data
6. Analysis of Data
7. Generalisation and Interpretation
8. Preparation of the Report or Presentation of Results- Formal writes ups of conclusions reached.

Step1. Formulating the research problem:

It is the first and *most crucial step* in the research process

- Main function is to decide *what* you want to find out about.

- The way you formulate a problem determines almost every step that follows.

Sources of research problems Research in social sciences revolves around four Ps:

- People- a group of individuals
- Problems- examine the existence of certain issues or problems relating to their lives; to ascertain attitude of a group of people towards an issue
- Programs- to evaluate the effectiveness of an intervention
- Phenomena- to establish the existence of regularity.

In practice most research studies are based upon at least a combination of two Ps.

Every research study has two aspects:

1. Study population-

- People: individuals, organizations, groups, communities (they *provide* you with the information *or* you collect information about them).

2. Subject area-

- Problems: issues, situations, associations, needs, profiles
- Program : content, structure, outcomes, attributes, satisfactions, consumers, Service providers, etc.
- Phenomenon: cause-and-effect relationships, the study of a phenomenon itself

(Information that you need to collect to find answers to *your* research questions)

You can examine the professional field of your choice *in* the context of the four Ps in order to identify anything that looks *interesting*.

Considerations in selecting a research problem:

These help to ensure that your study will remain manageable and that you will remain motivated.

- 1. Interest:** a research endeavour is usually time consuming, and involves

hard work and possibly unforeseen problems. One should select topic of great interest to sustain the required motivation.

2. Magnitude: It is extremely important to select a topic that you can manage within the time and resources at your disposal. Narrow the topic down to something manageable, specific and clear.

3. Measurement of concepts: Make sure that you are clear about the indicators and measurement of concepts (if used) in your study.

4. Level of expertise: Make sure that you have adequate level of expertise for the task you are proposing since you need to do the work yourself.

5. Relevance: Ensure that your study adds to the existing body of knowledge, bridges current gaps and is useful in policy formulation. This will help you to sustain interest in the study.

6. Availability of data: Before finalizing the topic, make sure that data are available.

7. Ethical issues: How ethical issues can affect the study population and how ethical problems can be overcome should be thoroughly examined at the problem formulating stage.

Steps in formulation of a research problem:

Working through these steps presupposes a reasonable level of knowledge in the broad subject area within which the study is to be undertaken. Without such knowledge it is difficult to clearly and adequately 'dissect' a subject area.

Step 1 Identify a broad field or subject area of interest to you.

Step 2 Dissect the broad area into sub areas.

Step 3 Select what is of most interest to you.

Step 4 Raise research questions.

Step 5 Formulate objectives.

Step 6 Assess your objectives.

Step 7 Double check.

So far we have focused on the basis of your study, *the* research problem. But every study in social sciences has a second element, the study population from whom the required information to find answers to your research questions is obtained.

As you narrow the research problem, similarly you need to decide very specifically who constitutes your study population, in order to select the appropriate respondents.

Step 2. Reviewing the literature:

-Essential preliminary task in order to acquaint yourself with the available body of knowledge in your area of interest.

-Literature review is integral part of entire research process and makes valuable contribution to every operational step.

-Reviewing literature can be time-consuming, daunting and frustrating, but is also rewarding. Its functions are:

- a. Bring clarity and focus to your research problem;
- b. Improve your methodology;
- c. Broaden your knowledge;
- d. Contextualise your findings.

a. Bring clarity and focus to your research problem;

The process of reviewing the literature helps you to understand the subject area better and thus helps you to conceptualise your research problem clearly and precisely. It also helps you to understand the relationship between your research problem and the body of knowledge in the area.

b. Improve your methodology:

A literature review tells you if others have used procedures and methods similar to the ones that you are proposing, which procedures and methods have worked well for them, and what problems they have faced with them. Thus you will be better positioned to select a methodology that is capable of providing valid answer to your research questions.

c. Broaden your knowledge base in your research area:

It ensures you to read widely around the subject area in which you intend to conduct your research study. As you are expected to be an expert in your area of study, it helps fulfil this expectation. It also helps you to understand how the findings of your study fit into the existing body of knowledge.

d. Contextualise your findings:

How do answers to your research questions compare with what others have found? What contribution have you been able to make in to the existing body of knowledge? How are your findings different from those of others? For you to be able to answer these questions, you need to go back to your literature review. It is important to place your findings in the context of what is already known in your field of enquiry. Procedure for reviewing the literature:

- i) search for existing literature in your area of study;
- ii) review the literature selected;
- iii) develop a theoretical framework;
- iv) develop a conceptual framework.

Search for existing literature:

-To effectively search for literature in your field of enquiry, it is imperative that you have in mind at least some idea of broad subject area and of the problem you wish to investigate, in order to set parameters for your search.

-Next compile a bibliography for this broad area. Sources are:

1. books
2. journals

BOOKS

Books comprise a central part of any bibliography.

Advantage-material published generally is of good quality and the findings are integrated with other research to form a coherent body of knowledge. Disadvantage-material is not completely up to date, as it can take a few years between the completion of a work and publication in the form of a book. Search for books in your area of interest, prepare a final list, locate these books in the libraries or borrow from other sources. Examine their content, if contents are not found to be relevant to your topic, delete it from your reading list.

JOURNALS

Journals provide you with the most up-to-date information, even though there is a gap of two to three years between the completion of a research project and the publication in a journal.

As with books, you need to prepare a list of journals for identifying literature relevant to your study. This can be done as follows:

- locate the hard copies of the journal that are appropriate to your study;
- use the internet
- look at the index of research abstracts in the relevant field to identify and read the articles.

VI. CONCLUSION

In this paper, the definition of research is given according to the subject point of view as per the visual and fundamental characteristics of psychological and physical prospects of a quantifiable view of research. A conceptual definition of research is illustrated by giving a specific example of human physiological aspect and the impact of working strategy of a individual's psyche. In this way, a brief account of research methodology is accounted by giving suitable examples with respect to the subject viewpoint of a certain postulate.

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