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Scientific Ways to Handle Out Problems faced by Researchers in India

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Abstract

A scientific inquiry starts with the identification of a problem that is in need of a solution. The following features are taken into consideration while defining a research problem:-

1. The topic chosen for research should neither be too vague nor too broad in scope.
2. Technical and statistical terms should be clearly defined.
3. Clear investigation material to acquire must be ensured.

The purpose of research in to discover answers to questions through the application of scientific procedure. These procedure have been developed in order to believe that the information gathered will be relevant to the question asked and will be reliable. Scientific Method involves certain stages which invariably lead to systematic, controlled, empirical and critical investigation of hypothetical proposition.

Keywords: Scientific Method, Research Problem, Hypothesis, Narrative Interview, Schedule, Mailed Quessionaire, Field Observations, Reporting & Disseminating.

Introduction

"There is shortcut to truth: no way to gain knowledge of the universe except through the gateway of scientific Method"

- **By Karl Pearson**

Science has popularly defined as an accumulation of systematic knowledge. The word 'knowledge' refers to the goal of science while 'systematic' refers to the method that is used in reaching that goal. The term 'scientific method' refers to a procedure or a mode of investigation by which scientific and systematic knowledge is acquired. In fact, any study can claim to be scientific wherein the data are subjected to logical analysis regardless of the fact whether the results are obtained by experiment, statistics or common sense.

What is Scientific Method?

George L. Lundbege says that "Scientific method consists of systematic observation, classification and interpretation of data"

According to Karl Pearson Scientific Method should be marked by the following features:

1. Careful and acute classification of data.
2. The discovery of scientific laws by aid of creative imagination.
3. Self – Criticism.

What is a Research Problem?

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1. The topic chosen for research should neither be too vague nor too broad in scope.
2. Technical and statistical terms should be clearly defined.
3. Clear investigation material to acquire must be ensured.

In brief, the researcher needs to know his problem precisely and should reduce it down to workable size before he starts his works on it. Thus, the researcher is required to describe the background of the study and must clarify what is to be determined or solved.

Component of Stages Involved in Scientific Method

"Any mode of investigation by which science has been built up and is being developed, is entitled to be called scientific method''

By Wolfe

The purpose of research is to discover answers to questions through the application of scientific procedure. These procedure have been developed in order to believe that the information gathered will be relevant to the question asked and will be reliable. Scientific Method

involves certain stages which invariably lead to systematic, controlled, empirical and critical investigation of hypothetical proposition.

The following are the stages involved in Scientific Methods

Facing Difficulty

Man encounters some obstacle or problem that makes him unrest, when he is not able to get the desired output. When he feels the difficulty in identifying the character of an object and when is not able to solve his problem.

Research Problem

A Scientific inquiry starts with the identification of a problem that is in need of solution. The researcher is required to describe the background of the study. It must clarify exactly what is to be determined or solved.

Formulation of Hypothesis

Webster's Dictionary defines a hypothesis as 'a proposition, condition or principle which is assumed perhaps without belief, in order to draw out its logical consequences and by this method to test its accord, with facts which are known or may be determined.' Thus hypothesis is in a sense a type of supposition of assumption or reasoning which may or may not be true.

W.H. Werkmeister says that "The guesses the investigator makes are the hypothesis which either solve the problem or guide him in further investigation".

Observation and Collection of Data

After the hypothesis has been formulated the next step is to proceed to test validity. Following four methods are generally used for this purpose:-

1. Narrative Interview
2. Schedules
3. Mailed Questionnaire
4. Field Observation

While collecting data care should be taken that the data are related to the subject under study. They must be adequate and accurate.

Generalisation or Testing of Hypothesis

The next important step in the scientific research is generalisation or drawing of inference. The method of generalisation may be broadly classified into two ways -

1. A hypothesis must tally with the already existing theories.
2. The consequences derived from it must tally with experience and observation.

Reporting

Reporting is the stage when the collected data is verified by competent people to draw out inferences of the subject under observation and study.

Disseminating the Result of the Research

In this stage, the inferences and conclusions drawn out from the research is given a final shape in the form of principles and norms. This information is then passed on the general public for its practical use and implementation.

Problem Faced by Researchers in India

"Science begins with observation and must ultimately return to observation fort its final validation."

By Goode and Hatt

The basic problems faced by researchers in India are as following:-

Lack of Scientific Training

As far as research work is concerned, there is not any condition to acquire any scientific training before commencing any research work. Therefore, a researcher's perception for research work is completely influenced by his research guide and his own mindset to perceive things.

Lack of Sufficient Interaction

Research work is conducted to achieve some goals in the light of available information .Information's can be collected only when we have access to them. But lack of sufficient interaction with the concerned source of information acts as a hindrance to research work.

Lack of Support from the Institutions Regarding the Availability of Data

A research work can come to its form when it receives full support of receiving the data from the requisite sources. Lack of cooperation of the concerned department of interviews as indifferent attitude checks the proceedings of research work.

Lack of Adequate Information

Incorrect, incomplete and inadequate information on the given subject poses a great threat to research work. Inferences drawn on such bases are unreliable and a waste of time of money.

Lack of Sufficient Number of Libraries in the Towns and Cities

Researchers lack interest to carry out research work in the absence of good accommodated libraries with good number of latest books.

Lack of Timely and Proper Upkeep of Latest Records and Data

Proper upkeep of latest record and data on a given subject by the concerned department is of great help for the said organisation to use the information as and when required. But improper way of keeping of records would go contrary to the interest of the organisation and the researcher as well. Difficulty of timely availability of published data from various government and other agencies doing this work in our country, delays the work of a researcher.

Difficulty in Understanding the Concept of Research Problem

Very often the researcher has to face the problem of understanding the conceptual meaning of the research problem where he fails to adopt the rightful scientific approach of data collection and analyses thereafter.

Difficulty in Applying the Rightful Scientific Approach to a Given Problem

Research methodology is a way to find our solutions on any problem on scientific base. The application of empirical approach instead of conceptual approach would not bring out rightful conclusions results.

Difficulty in Funding the Research Work

Preparation of research design is based on research purpose like exploration, description, diagnosis and experimentation which requires funds. Lack of funds unable the researcher to carry out research whole heartedly.

Difficulty in the Use of Vague Information and Baised Attitude of the Interviewees

Availability of vague information is a threat to research work. Added to this problem, the baised attitude of the interviewees towards the interviewer is a hurdle for conclusive and result oriented research work.

Suggestions of Scientific Methods of Handling A Research Problems

"Scientific method involves observation, inference and verification. Data, the result of observation must be put into define form the given coherent structure before the process of inference is possible."

By F.C. Mill

A scientific inquiry starts with the identification of a problem that is in need of solution. The problem identified must be defined in such a manner that observation or experimentation in the natural world can provide a solution.

There must be some reason behind research work. All concerned factors must be taken into account by a researcher before finally defining a research problem.

The following suggestions are given to successfully handle a research problem:-

Selection of Research Would Should be Easy

The subject selected for research work should be easy, workable informative and within the reach of a researcher. Sometimes data collection process takes too long to complete investigations and the collected data becomes out dated due to delay.

Choice of the Research Problem should not be Common

While selecting the problem it is not desirable to choose the same subject on which a lot of research works in already done. In brief, selecting the problem may involve clear statement of the research problem and the determination of the rightful research approach to a given problem.

Vague Problems should be Avoided

Research involves considerable time and efforts to complete the investigations. It becomes much difficult to handle when the problems under review are vague and indefinite. The problems become more acute to deal with illiterate and ignorant respondents because of their indifference and lack of awareness of civic and academic investigation.

Defining Area & Scope of Research Study

Research work requires to determine the area of study. In other words the scope of research problem has to be pre-set giving due consideration to various limitations and restrictions associated with it.

Use of Simple & Non Technical Language

As far as possible simple & non technical language understandable by all should be used. Where use of technical terms is unavoidable, its use must be ensured with proper definition of the terms.

To Follow Research Procedure Step by Step

The research procedure should be described in sufficient details. Care should be taken to handle subject under study following scientific and logical methods step by step. To begin with first step is to define a research problem, observe it & compare it with past records, form hypothesis, design a method of research and set forth for collection and analysis of data.

Right Use of Research Approaches

Research approaches to a given problem must be clearly identified and applied. For eg., if the problem under study requires quantitative approach which is based on the quantity or amount or qualitative approach which is based on the certain phenomenon, it should be correctly approached. Again, conceptual approach related with some special theory and empirical approach related with observation must be rightly distinguished.

Assumptions Fixed for the Research Work should be Clearly Defined

The researcher should have no preconceptions about the subject under study. He should go to his research with absolutely clean slate. He should maintain an open mind to test his findings and assumptions.

Research Work should be Economical

The cost to be incurred on the research work should be worked out in advance in order to avoid financial crises. Prior arrangement of its funding becomes possible if it budget out in advance. It should not fall economically very heavily on the researcher.

Research Work should be Time-Bound

Research work should be completed within scheduled time frame. Sometimes due to delay in it, the data already collected becomes outdated and the very purpose of the research will be killed.

Research should be Result Oriented

Research work should be conclusive and result oriented. It should be able to probe into the given problems scrutiny of various data and drawing out the inferences from the research work must be perfect and meaningful. Thus research should be realistic and understandable.

Conclusion

A Scientific Method has two important bases, one that deals with method employed and the other with the result achieved. A scientific inquiry starts with the selection of a problem and selection of the problem is a very difficult task. The subject selected for research work should be easy, workable, informative, economical and useful. Detail information about the subject chosen should be clearly stated. A survey of the available information would be of great help in understanding. The subject of the research Conclusions and inferences drawn out should be able to take shape of Principles and logics. Findings of the research subject should be approachable and of practical use.

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