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AN OVERVIEW OF RESEARCH PROCESS : FROM INCEPTION TO END

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ABSTRACT

It is very important to know the important steps of the research process for all research scholars before initiating the research work. These main steps are briefly described in this present paper.

Research is considered a very creative, systematic and innovative work, so it should be done in systematic way. The main objective of research is to discover or find out the truth or some new thing which is hidden and still not discovered. It should be useful for society, policy makers or individual etc.

Research process consists of multiple steps necessary to effectively conduct the research and they are interlinked with each other. These main steps are : (1) Discussion, (2) Identify the Research Problems, (3) Review of Literature, (4) Formulating Hypothesis, (5) Research Design, (6) Research Result and (7) Reporting Research Findings. These steps are described in this paper.

The research should made the framework of his research study and methodology of research before starting the research work. In this way, this paper illustrates the various important steps of research process from beginning to end. It will be helpful to all research scholars irrespective of their field, area or problem.]

(1) Introduction

All important steps of research process are briefly described in this paper which are very important for all research scholars to know before initiating the research work irrespective of their area or topic.

Research is creative and systematic work and is undertaken to increase the existing stock of knowledge. It involves the collection of data, organisation and analysis of information to increase the understanding of the topic or issue, so research work especially in social sciences, is an expansion on past work in the field with own creativity. Research is defined as "Research is a careful investigation or inquiry specially through search for new facts in any branch of knowledge."

Dictionary defination "Research comprises defining and redefining problems, formulating hypothesis, collecting, organizing and evaluating data and making conclusions." Clifford Woody.

(2) Objective of Research

The main objective of research is to find out the truth which is hidden and which has not been discovered as up till now; it is a new discovery. Each research study has its own specific purpose to make it more meaningful and helpful. Research may differ in nature according to its objectives like:

(i) The studies which are done for gaining new dimensions into the topic or problem are included in Exploratory or Formulating research. It explores in less reached area. Exploring research helps in formulating problems.

(ii) The research studies are descriptive in nature, especially in social sciences to portray the characteristics of a particular individual, situation or a group and their detailed account of part, present and future with the help of appropriate data and statistics.

(iii) Diagnostic research tell us about the frequency with which something event or situation occurs or it is associated with something else. It helps to identify the problem and give solutions for it.

(iv) Some researches are based on hypothesis testing. Hypothesis testing is done to test a casual relationship between variables that are dependent. This give accuracy of the findings of research. Research are of different kinds and natures. Research is broadly classified as:

(a) **Descriptive V/s Analytical** :

Surveys and fact finding enquiries are done in descriptive research. It describes what has happened or what is happening and explore the causes behind any situation. In analytical research, researcher uses secondary data and information that are already available and critically evaluate the facts.

(b) **Applied V/s Fundamental** :

Applied research is a scientific study that seeks to solve practical problems, that is facing a society or an industry/ business organization. But in fundamental research, aim is to formulate a theory or improve existing theories for better understanding and prediction of natural phenomena.

(c) **Quantitative V/s Qualitative Research** :

Quantitative research is based mainly on data analysis. It aims at collecting and analysing numerical data, so it is applicable on the measurable phenomenon while qualitative research is concerned with studies related to human behaviour. So it is more important in the behavioural sciences.

(d) **Conceptual V/s Empirical Research** :

Conceptual research deals with abstracts, ideas or already existing theory and improve its shortcomings. It is useful for philosophers or thinkers to develop new concepts. Empirical research based on observations and experiments done by researchers. It includes hypothesis testing to prove the results.

Significance of Research

The main objective and significance of research is to gain and produce knowledge and it is useful in many ways such as :

(i) Research provides appropriate data and basis for all government policies meant for economic development.

(ii) It helps in solving various operational and planning problems of business or industry.

(iii) It is helpful in studying social relationship and solving various social problems.

(iv) It is useful for students, professionals, scientists, literary men and intellectuals.

(3) Research Process

Generally, a researcher conducts research work in few steps. Research process consists of series of steps necessary to effectively carry out research. Each steps are interlinked with other steps. It is very necessary for a researcher to know these various steps of research process to conduct a quality study and planned them in proper sequence.

Steps of Research Process :

1. Discussion
2. Identify the Research Problem
3. Review of Literature
4. Formulating Hypothesis
5. Research Design
6. Research Result
7. Reporting Research Findings

1. Discussion

Research work should be begin with discussion. Research problem formulation is based on discussion and discovery. Discussion should be done with guide, experts and

colleagues as it will help to discover the appropriate area and problem. This step is interlinked with all steps.

2. Identify the Research Problem and Area

The most important step in research process is to identify a problem and selection of the research area or develop a question. The research problem should be based on current issues and some problems related to relationship between variables. Some points are necessary to have in mind while formulating research problems such as:

1. Research can start as a general idea or a specific question statement.
2. Know what you want to focus on before you begin.
3. A research problem is a statement about an area of concern.
4. An existing condition to be improved.
5. A difficulty to be eliminated and give solution to a problem.
6. Question that exists in scholarly literature, in theory.
7. In some social science discipline the research problem is in form of a question, when there is uncertainty.

3. Review the Literature

Once the research problem is identified and defined, the next step is to review the existing literature. To learn more about the topic, the researcher must review the literature related to the research problem. For this purpose, the abstracting and indexing journals, published or unpublished bibliographies, academic journals, government reports, books are the best source. A good library is very helpful for researcher and now we live in the era of internet, it is quite easy to research scholarly articles and published research works with the help of 'google' or 'google scholars'.

The review of literature educates the researcher about what studies have conducted in the past, how these studies were conducted and the conclusions in the problem area. This literature survey should discover the gap in existing knowledge. The researcher should

try to fill up this gap and try to make some new, original and meaningful discovery in the form of research.

4. Formulating A Hypothesis

The research work is topic focused and sophisticated. The nature of research problem can decide to formulate a definite hypothesis. A hypothesis will be tested. A hypothesis is a tentative conclusion logically drawn. The research work is conducted to examine the truth of hypothesis. So effective research work formulate a hypothesis in such a way that collected data will provide evidence that either supports or disproves them. Various statistical tests, t-test, F-test are done to see the significance of hypothesis. Hypothesis in research make the researcher more expert. For developing working hypothesis researcher may adopt the following approach :

(1) Discussion with colleagues and experts about the problem.

(2) Examination of data.

(3) Review of similar type of studies in the area.

(4) Personal investigation, field survey/interview to get more knowledge of the practical aspects of the problems. Formulating a good hypothesis is very necessary because result of thesis is based on it.

5. Research Design

The researcher makes a proper research design to conduct research work. The research design is a plan that specifies the sources and type of information relevant to the research problem. Research design decides how the research materials will be collected. So it is related to research methodology, researcher uses various methods/ techniques for performing research operations, that come under methodology. Every researcher has a list of research questions that need to be assessed that can be done with research design. In other words, the function of research design is to provide for the collection of relevant data with minimum expenditure of efforts, time and money. But how all these can be achieved depends mainly on the research purpose. Thus a research design provides a rational

approach to the research, under this researcher decides in advance what to do, how to do, in investigating the subjects. There are several research designs, such as :

5.(i) Experimental Design can be either informal design (like before and after without control, after only with control, before and after with control variable) or formal designs.

(ii) Non-Experimental Design mainly done in social sciences with hypothesis testing and it is based on sample analysis. The researcher must select one sample for data collection of his project according to the objective, time available and cost factor.

Sample Design

Now the researcher decides the way of selecting a sample, before collecting data. Sample size should be based on percentage of whole population and truly representative of the whole population. Some important sample designs are following :

(i) Deliberate Sampling :

This sampling process involves purposive or deliberate selection of particular units of the universe as a sample. Elements are selected on the basis of ease of access, it is also called convenience sampling.

(ii) Random Sampling :

In this type of sampling each and every item in the population has an equal chance or same probability of inclusion in the sample, like lottery.

(iii) Systematic Sampling :

In this type of sampling, random numbers is used to pick up the unit after sampling. This procedure is useful when sampling frame is available in the form of list. Such as, every 15th house on the side of street or every 10th man on a list.

(iv) Stratified Sampling :

In this type of sampling, the population is stratified into a number of non-overlapping sub-populations and sample items are selected from each spratum, if

this selection of items is based on random sampling the entire procedure is called stratified random sampling and it is the best way.

(v) Quota Sampling :

It is another form of stratified sampling in which items are selected on the basis of interview taken from different strata according to fix number of quota. It is less expensive method than stratified sampling.

(vi) Cluster Sampling :

In this sampling method, whole population is divided into groups or the clusters and then selecting some groups or clusters randomly rather than individual element for inclusion in the sample. Suppose for a study a bank wishes to take sample of his credit card holders. It has issued its cards to 20,000 customers. The sample size should be 400, so for cluster sampling 20,000 card holders could be groups into 200 clusters of 100 card holders each, then four clusters will be selected randomly for the sample.

(vii) Multi-stage Sampling :

This technique is used in big inquiries and in large geographical area like a whole country. In this process, sampling is done in different stages; such as states- then districts - then towns and finally certain families in towns. Like when a researcher study demographic situation of India, multi-stage sampling is the best way for comparative study.

(viii) Sequential Sampling :

In this method, sample size is not fixed in advance but it is determined according to mathematical decisions on the basis of information taken as survey progresses. For statistical quality control it is good and useful.

Thus the sampling size and method to be used in study must be decided by the researcher taking into consideration the nature of research study and other related factors

like cost, time and efficiency. They can use mixed sampling also. Random sampling are mostly preferred because it is bias-free.

Collection of Data

After selecting appropriate sample design, for further proceeding the research work, it becomes necessary to collect appropriate data. For collection of data mainly two methods are used : (1) Primary and (2) Secondary. Primary data can be collected through survey or experiment. Experiment can be done in laboratory or with quantitative measurement, especially in science. In survey method, data can be collected by any one or more of the following ways :

(i) **By Observation :**

Researcher can collect data by own observation. It is not suitable for large samples or areas and expensive for small area. The merit of this technique is data collected from this is highly reliable and pure.

(ii) **Personal Interview :**

This is a direct method for collecting data in which take interview of the people and the people connected to them for obtaining data. This method is expensive and suitable for limited area, data purity depends on ability of interviewer so its scope is less.

(iii) **Telephone Interview :**

As its name suggests in this technique, the researcher takes interview or asked questions from people by telephone. This is not very widely used technique but it is useful in industrial surveys in developed regions. But problem arises as it is used in limited time and when respondents are not cooperating.

(iv) **By Mailing Questionnaires :**

Researcher makes questionnaire of the problem and is mailed to respondents and they return it after answering the questions. This technique is used in various economic and business surveys. The questionnaire can be filled through correspondents or researcher. The questions in questionnaire should be direct and easy and respondents cooperation is also needed. This is cost and time efficient and considered as good method.

(v) **Through Schedules :**

In this method, enumerators are appointed and schedules containing relevant questions are given to them. They fill the schedules on the basis of replies of respondents. It should be taken care that enumerators should not be biased, but they should be helpful and sincere. This method of collecting data is cost efficient and used in large surveys.

Selection of any method for collecting data should be based on nature of research, objective and scope of the study, financial resources available, time and desired degree of accuracy. As accuracy of result and findings is largely depends on method of collecting data.

Analysis and Interpretation of Data

After collecting data, the processing of data consists of classification, tabulation and coding. By classification and tabulation, the unorganised data can be condense into few manageable groups and tables for further analysis. Coding converts the data into symbols or small figures so that the data can be dealt easily and clearly. Editing improves the quality of data because at this stage irrelevant data can be dropped.

Now, the researcher uses mechanical devices like computers (laptops) for tabulation and further analysis. Computer saves times, enhances accuracy and make it possible to study large number of variables at a time. Now researcher can use SPSS or other advance statistical techniques for analysis and interpretation of data.

Hypothesis Testing

Analysis of data enables the researcher to test the hypothesis, if it is formulated earlier. Various tests such as chi-square test, t-test- F-test can be done for this purpose.

Testing of hypothesis will result in either accepting it or rejecting it. This will either contribute to existing theory or make new theory.

(6) Preparing Research Results :

After interpretation of data, the researcher prepare the results and implications of his findings. When the result supports the hypothesis, then researcher can arrive at result for generalisation i.e. to build a theory. when the result rejects the hypothesis, the researcher approves the alternative hypothesis. When there is no hypothesis made, then he explains his findings on the basis of some theory, it is known as interpretation. The real value of research lies in ability to arrive at certain generalisation.

(7) Reporting Research Findings :

The final step of the research process outline is to report the research findings and discuss the significance of the research study. A report is a detailed description of what has been done by the researcher and how it has been done. The report contains three sections - (i) The preliminary section (ii) The main body and (iii) The end matter.

The preliminary section includes title, acknowledgement and content table. The main body is important section of the report. It contains introduction, methodology, analysis, findings, conclusion, recommendations. The end matter includes appendix, literature selected, bibliography.

The report should be written with great care. This is the last stage of the individual research project.