

**KUNTHAVAI NAACCHIYAAR GOVT ARTS COLLEGE FOR WOMEN, THANJAVUR**

**DEPARTMENT OF BUSINESS ADMINISTRATION**

**18K5BB09 - RESEARCH METHODOLOGY**

**Unit-I**

Research- Definition, Objectives of research, Types of Research, Significance of Research, Research process, Criteria of good Research, Problems faced by researchers in India.

**Research- Definition**

- Research is a systematic investigation to find the answer to a problem.
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- **Research** is defined as the creation of new knowledge and/or the use of existing knowledge in a new and creative way so as to generate new concepts, methodologies and understandings.
- **Research** is a systematic inquiry to describe, explain, predict, and control the observed phenomenon.

**Objectives of research**

- Academic objectives related to development of new concept and addition to old concepts. Urge for knowledge will be the main factor
- Utility objectives relate to utility of research to the society or accepted by the society.

- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

## **1. Decision Making Objectives**

Decision making is now influenced by research. The project identification and implementation is based on the research conducted. There cannot be any business policy which is not affected by research findings. Controlling, which is the main function in the management, can effectively be organized through research study.

## **2. Environmental Objectives**

All the decisions in the business are taken in relation to the environment in which business operates. All the factors affecting business like State, Investor, worker, customer and the competition requires systematic investigation before any decision is to be taken.

## **3. Market Objectives**

The market objectives of research are defined as market research. This includes the market share of products, profit margin of the organization and total sales volume of the company. On the basis of the careful investigation of the available market information, relevant market strategies can be drawn regarding new product development, product selling approach and product modification.

## **4. Customer Objectives**

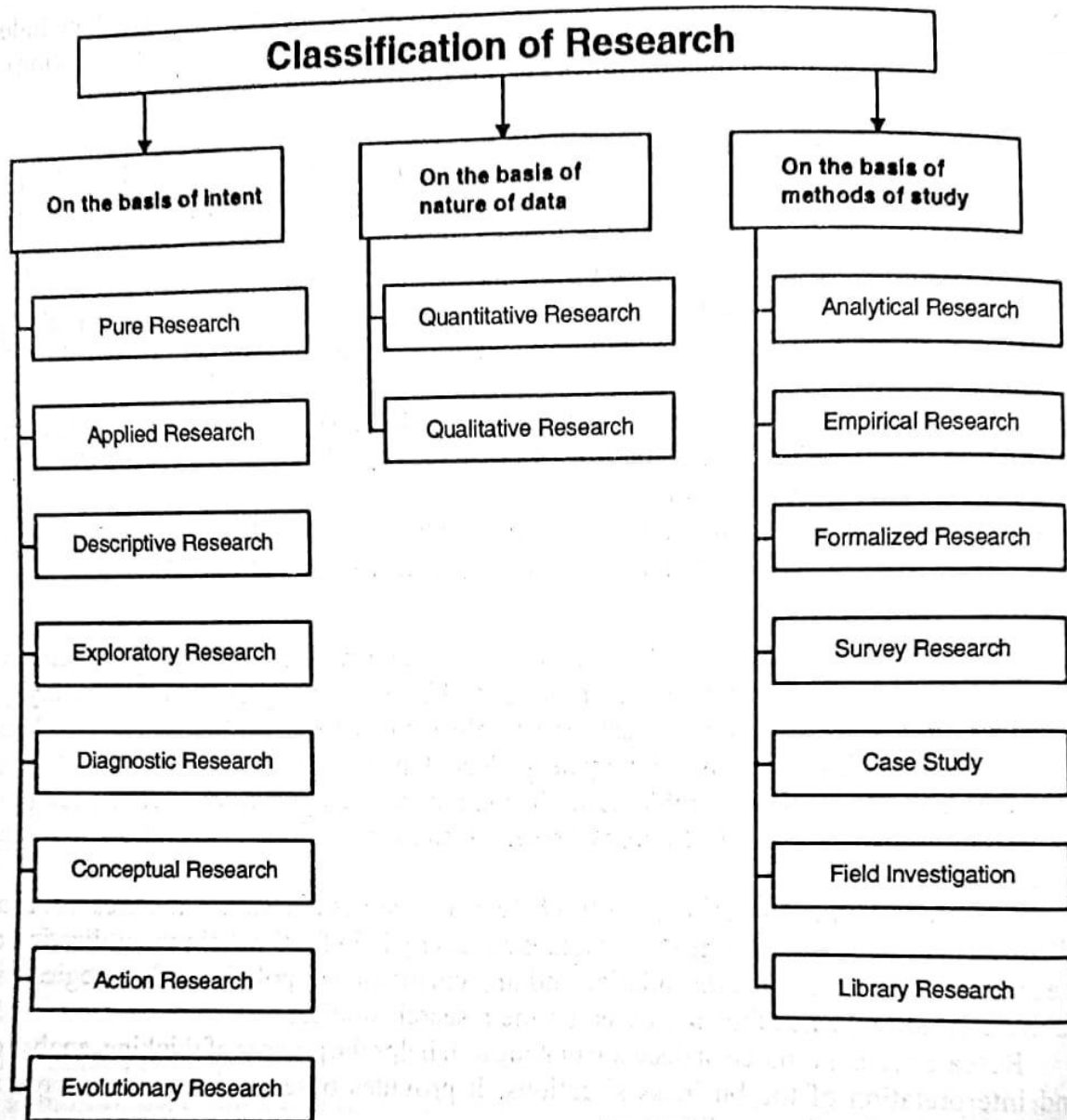
The need of the customer is assessed, well in advance even before product is planned. The utilities of product is decided on the basis of the quality of the product, in relation to the requirements of the customers. It is in this respect that the inquiry is conducted to find out the level of satisfaction of customers.

## **5. Profit and Promotional Objectives**

In most of the companies profit maximization is the main objective to be attended by them. This requires investigations and consultations to be conducted. Surveys are also conducted to work out the variables in support of the promotional activities. The research provide strong base for these activities. The development of business entity is based on corporate image which is outcome of the relationship between internal and external factors of the companies.

- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

## Types /Classification of Research



### 1. Pure and Applied Research

Pure research is also called as fundamental research. This is conducted with view for the sake of the knowledge having no intention of its application. This study is conducted for generalization which will help us to form certain theory. In pure research if study is conducted to assess human behavior, it may provide us generalization in relation to normal human behavior.

Pure research offer solutions to many practical problems. It helps us to find out various crucial factors. It develops many alternative solutions.

- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

### **3. Quantitative and Qualitative Research**

Quantitative denotes methods that generate data comprising of numbers. This research is conducted for the measurement of quantity and it is applicable to the work which can be expressed in terms of quantity only.

Qualitative research relates to quality involved in assessment. It generates the data that is verbal. Assessment of human behavior is a qualitative research.

It is very difficult to find out which research is quantitative and which one is qualitative. There are four main methods for these types of research work namely – interview, questionnaires, observations and documents analysis. On the basis of their explanation none of this can be exclusively labeled as quantitative or qualitative. Accordingly, the labels of quantitative and qualitative should be applied to data rather than to methods.

Motive research is important type of qualitative research, which is conducted to assess the motive or desire of human behavior. Likewise Opinion research is also qualitative research conducted to know how people feel about particular subject.

### **4. Conceptual and Empirical Research**

Conceptual research is conducted by the thinkers and philosophers for developing new theories or for reinterpreting old one.

Empirical research is based on observation or experience without due regards to theories. In this type of research working hypothesis is provided and then data is collected to prove or disprove this. Researcher here sets up the design for desired results.

### **5. Exploratory and Formalized Research**

The research study in which hypothesis is developed is called exploratory research, where as when hypothesis is tested in the research study it is known as formalized research.

### **6. Survey Research**

A survey is conducted with an object to understand specific aspect in defined population. Usually the population in study is so large that the access to all the elements is impossible.

- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

Applied research is carried out when any real-life problem or social problem requires immediate solution which can be helpful in policy formulation by the concerned agency. This is considered problem oriented and action directed activity in which immediate and practical results are required.

There is vast scope for applied research in the field of technology, management, commerce and economics, as it contributes to the development of new facts or testing of new theory.

Applied research can put theory to the test, it may add to conceptual clarification and integrate previous existing theories.

## **2. Descriptive and Analytical Research**

Descriptive research is term as Ex-post- facto research. This type of research are mainly concerned with description of facts only. It is an expiation of state of affairs as they exists. This includes surveys and facts findings enquiries.

The main important aspect of this type of the study is that researcher has no control on the variables under investigation, he can only describe things as they exist and discover the causes.

Analytical research relates to critical evaluation of the existing facts and information which is used in order to draw certain conclusions.

## 7. Case study

It is very difficult to define, when the phenomena under investigation are not readily form its context in such situation case study becomes appropriate. It is characterized by in depth study of organization. It is a concept and intensive study of business situation.

Case study is method of investigation for exploring a live situation, it is a in-depth study of situation as whole. It is in the form of qualitative and quantitative analysis where careful observation of situation is done.

A case study uses various methods for collecting information may be in form of interview, questionnaires, observation and documentary analysis. By this, wide variety of relevant data is collected.

A case is report containing facts and opinion expressed by the people. The cases are designed to acclimatize the situation to participant. This provides the description of the decision taken in particular situation.

- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

## 11. Library Research

When secondary data is reliable enough to be used for drawing conclusions than library research is very useful. This type of research is based on the assessment of the data available from books, periodicals and journals available in the library.

The observations and conclusions drawn in these cases may be bias if data is not used carefully.

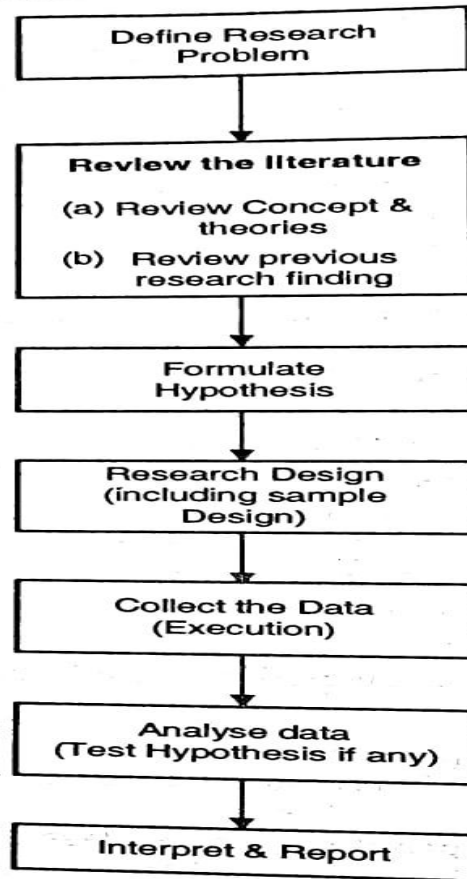
As this is only compilation of available data it is not considered as actual research work. If systematic investigation is made it can also be very useful research study.

### **Significance of Research**

- Helps in predicting future prospects
- Helps to solve various problems of business
- Helps to find out solution for social and political issues
- Helps in forecasting and planning
- Helps in decision making
- It is the base for innovations and developments
- Research inculcates scientific and inductive thinking and it promotes the development of logical habits of thinking and organization.
- The role of research in several fields of applied economics, whether related to business or to the economy as a whole, has greatly increased in modern times. Research provides the basic for nearly all government policies in our economic system. Research provides the basis for nearly all government policies in our economic system. Research has its special significance in solving various operational and planning problems of business and industry. In several ways, operations research, market research and motivational research are vital and their results assist in taking business decisions. Research is equally important for social scientists in studying social relationships and in seeking answers to various social problems. It gives intellectual satisfaction of knowing things for the sake of knowledge. It also possesses the practical utility for the social scientist to gain knowledge so as to be able to do something better or In a more efficient manner.
- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

## Research process

### Flow Chart on Research Process



- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende



Therefore researcher is suppose to have proper knowledge of later stages before be perform the earlier stages. Research process is system of interdependent related stages. Before giving brief description of the various stages involved in research process it is necessary to understand the difference between research method and research process.

**Difference between Research Method and Research Process.**

Research Method	Research process
1. Formulation, Analysis of information needed	1. Chose broad topic. Get overview of topic, narrow down the topic
2. Identification and Appraisal of the likely resources.	2. Formulate question to guide research plan for research
3. Tracing and locating individual resources.	3. Find analyze and evaluate the resources
4. Examining and selecting individual resources.	4. Evaluate, evidence take notes, compile the bibliography.
5. Recording and storing of information	5. Established conclusions and organized information.
6. Interpretation and analysis	6. Interpretation and analysis.
7. Shape Presentation and communication of information.	7. Creat and present final project
8. Evaluation of assignment	8. Reflection- satisfactory presentation.

**Stages in Research Process**

1. Chossing of Research Problem, Review of Literature and Hypothesis.
2. Research Design.
3. Sample Design and Collection of Data.
4. Analyzing of Data and Testing of Hypothesis.
5. Interpretation and Report writing

As explained above research process consists of various series of action, which are necessary to conduct research work effectively. Therefore research process includes all such steps necessary to carry out research activities. Research process also includes desired sequencing of all the steps involved in the research work.

Let this thing be very clear that there is no such specific sequence which is recommended any where in the research methodology regarding steps for the research process, where as there are certain guidelines, as to how to organize steps in the research process, which are described as under -

1. Formulation of research problem
2. Review of the existing literature
3. Formation and development of working hypothesis
4. Preparation of research design
5. Determining sample design
6. Data collection
7. Project execution

8. Data analysis
9. Testing of hypothesis
10. Data interpretation
11. Report of the research work

In order to understand the research process perfectly brief description of each of the stages will be of more help to researchers.

### **1. Formulation of the research problem**

The research problem relates to statement of problem and relationship between two variables under study. Research has to identify the problem first and later on its required to single out the problem.

This will give scope to researcher to decide general area of interest or subject matter of the research study. It means researchers will have to narrow down scope of the study by formulating general topic of research study in to specific problem under study.

Therefore in relation to the formulation of research problem two steps are involved basic understanding of the research problem and rephrasing the research problem in to meaningful terms.

### **2. Review of the existing literature**

Research can not be conducted without reviewing of existing literature which is available. The existing literature may be conceptual or empirical in nature. Conceptual literature is concerned with concept or theories. Empirical literature is concerned with earlier studies of similar nature already conducted. This review of existing studies provides base to understand how to plan for the study.

The review of the existing literature will help researcher to define his research problem of general nature into analytical terms or onto operational terms.

If the problem is properly defined on the basis of the review of the literature, this will help the researcher to discriminate the relevant data from collection of irrelevant data and confusion at this level can be avoided.

### **3. Formation and development of working hypothesis**

After the formation of the research problem and reviewing of the available existing literature now hypothesis is required to be explained by the researcher. The normal assumptions which are the base of the study which may be tentative in nature are considered as hypothesis.

These assumptions are drawn to test its logical sequence.

The researcher should try to avoid vagueness in these assumptions. Therefore hypothesis should be as clear as possible, it should be very specific.

Hypothesis is a guiding force of the researchers, it is helpful in sharpening his thinking process and by this he will be in a position to focus his attention on the important facts of the research.

It is an outcome of researchers deep thinking about the subject matter of the research, that he is able to settle on formation and development of hypothesis.

### **4. Preparation of Research Design**

The research design is prepared by the researcher after the formulation of research problem, reviewing of literature and developing of hypothesis. It is an outline or a conceptual

structure within its limit research work is suppose to be carried on.

The research design is prepared with an object of collecting relevant data with the minimum efforts and with minimum of expenditure, just to control wasteful expenditure.

There are several methods for preparation of the research design. The important amongst them are experimental and non-experimental one. Experimental design can further be classified into formal or informal one.

It is left to the researcher to work out for selecting a proper design for research. Depending upon the utility and requirement a specific design should be selected.

The research design has to take in to consideration the purpose of the research study, which may be exploration, description, diagnosis and experimentation. The researcher has to make careful choice in selecting research design.

The research design requires certain facts to be considered like ability of the researcher along with his staff to be employed for research work. Time and cost available for research work is another factor to be considered. Data collection is the most important factor, in which methods for data collection and organization of collection is to be specified.

The research can be conducted for all the items under investigation which constitute universe. The census of population conducted by the Government of India is an example of such studies. This type of the study is very time consuming and has been very costly also. Therefore in place of the study of the whole universe sample study can be conducted for the purpose of the research.

### 5. Determining Sample Design

The success of the research study is largely based on proper identification of the sample to be selected for the study. The method for selecting is normally known as sample design. It is a sample plan already decided before data is collected from given population.

The samples can be classified as probability or non-probability one. In probability sample item of the population is likely to be selected through simple random sampling, systematic sampling, stratified sampling, cluster or area sampling. Where as non-probability sampling is conducted through convenience sampling, judgment sampling and quota sampling.

A brief description of these techniques of various sampling are given below-

#### A. Deliberate Sample

It is one of the non-probability sampling, also known as purposive sampling. This technique involved deliberate selection of sample which represent the whole universe. In case of data of LPG user, researcher may select few gas distribution centers to conduct interview of gas users. But in case of judgment sampling researcher's judgment is used for selecting sample.

#### B. Simple Random Sampling

This is one of the techniques of probability sampling, also known as chance sampling. As this sample is controlled by probability, there is every and equal chance for all the items of the universe to get selected.

#### C. Systematic Sampling

This is most simple and practical way of sampling. It is covered under the techniques of probability sampling, in which every 5<sup>th</sup> or 10<sup>th</sup> item of the universe is selected. If study of

the sampling students of specific class is conducted then every 5<sup>th</sup> student on the roll is selected for the purpose of the study in systematic sampling. This study is possible only when source list for the sample is available.

#### **D. Stratified Sampling**

This is also a technique of probability sampling, which is used for the population not having homogeneous group. In this technique population is classified in small strata, which should not be overlapping and sample unit is selected from such strata. So in this process of sampling first stratification is made then simple random sampling is done.

#### **E. Quota Sampling**

This is an important form of non-probability technique of sampling. Quota sampling is considered as judgment sampling. If the study stratified sampling is becoming costly on account of sample from individual strata than the enumerators are given specific quota to be filled in from different strata. It is left to the judgment of the enumerators to decide on selecting the quota for the study. The size of the quota is based on the size of the strata.

#### **F. Cluster Sampling**

This is a probability sampling technique. Cluster refers to a group and in this sampling technique first the population is grouped, then specific group is selected for the study.

It is a group sampling rather than individual sampling and cluster is selected from random sampling. Suppose bank wants to sample its credit cards issued by them. It has issued cards to 30,000 customers, if sample size to be kept 900 cards so for the cluster sampling of 30,000 cards holder could be formed in to 100 cluster of 300 card holder each.

#### **G. Area Sampling**

The area sampling is just like a cluster sampling. When geographical area under the investigation is very large than the total area is divided in to non-overlapping small area. This division of total area in to a small one is called geographical cluster.

These small area so divided are selected randomly, in which efforts are made to select all the units in the sample.

#### **H. Multistage Sampling**

When the geographical area under investigation is very large, then development to area sampling is required. Therefore area sampling is developed to a multistage sampling.

In this sampling technique total geographical area is divided into small area. Such classification may be first region as State, which is further sub classified into district, then in taluka/ thehasil or further to a block of village lastly to group of families. In all the stages random sampling is applied in order to have multistage sampling.

#### **I. Spot Sampling**

When sample can not be decided at the time of the investigation and if it becomes very difficult to assess what type of information will be generated, in such complex situation no sampling technique is pre decided.

In spot sampling technique, sample design is decided as the survey progresses based on the information collected. The researcher must take into consideration all the factors like nature of inquiry and other related aspects to work out sample design.

## 6. Data Collection

The data is collected as per the requirement of the study. This may be primary or secondary in nature. If the secondary is sufficient enough to assess the research problem then there is no necessity for primary data to be collected.

When it is found that data in hand ie secondary data, is not sufficient to draw conclusions then there is no alternative except to for primary data to be collected by the researcher.

As per the requirement of the research study appropriate data is a basic need of researcher. This primary data can be collected by observation, interview, questionnaire and schedule. Each of this source of information of primary nature is describe in brief here.

### A. By Observation

It is only by the observation of certain facts required information is collected. The observer is trained to record the necessary information, which will be used for analyzing the data.

The limitation of this method is that it can collect only current information. There is no provision as to how past or future information will be ascertained.

### B. Through Interview

**i. Through Personal Contact** - This is second important method for collecting primary data. The investigator in this method will come in direct contact of the person from whom this information is to be collected.

This interview may be structured or unstructured one. In most of these cases the structured method is used for conducting interview. The investigator is suppose to collect information on the basis of the pre determine set of questions. Some times when enquiry is very simple then unstructured method is used, where the question are developed as the discussion progress. The utility of the information collected in this method is largely based on the skill of the investigator.

**ii. Through Telephone** - When the personal contact with person is not possible than in order to contact person telephone is normally used. Through this method maximum people can be contacted in very short time, but telephonic conversion has its own limitations. It is expensive and only few questions can be asked and it is very difficult to establish the identity of a person giving answers.

Now with the development of mobile and internet, information collected through this method has changed substantially.

### C. By Questionnaires

When it is not possible for the researcher to contact the respondent directly or indirectly through telephone, than it is through the questionnaires he can be contacted. Questionnaire is a set of questions to which a respondent response. This questionnaire are made available to respondent either by enumerators or by mailing them. The respondent is requested to return them dully filled in within a reasonable time period.

This method is normally used in survey and before adopting this a pilot testing is conducted. The success of this method is based on proper and careful questionnaire, so as to get required and relevant information.

- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

#### **D. By Schedules**

There is hardly any difference in schedules and questionnaires in relation to their structure. Both are the set of questions for the purpose of response to be taken from respondent. The difference lies only in method of sets getting filled in.

In questionnaire respondent himself record his answers to the question as per his understanding. Where as in schedules the enumerators are made responsible to record the answers given by the respondent.

#### **7. Project Execution :**

The project execution is very important stage in the research process. It should be executed in a systematic manner. Therefore periodical and occasional check is essential for verification of the data collected.

A careful watch should be kept on the authenticity of the collected data. It should also be verified to find out whether respondent has given the proper response. The efforts should be made to organize the proper response by the respondent.

#### **8. Data Analysis**

In research process after the data is collected it is required to analyze the meaning of objective. The collected data is processes through various operations. So in order to make raw data meaningful these operations will help us to draw proper conclusions.

The raw data will be processes by establishing categories, through coding and tabulation. Before the advancement of computers all these processing operations were conducted manually. Now with the technological advancement all these operations are conducted through computer applications.

Now researcher who want to analyze the collected data with the help of certain statistical measures, can make the use of computers.

#### **9. Testing of Hypothesis**

It is only after the analyzing data, researcher can go further in testing of his hypothesis, in which he can ascertain the facts to support or disagree with the hypothesis.

There are various methods of testing of hypothesis, researcher can select any of them depending upon the subject matter of his research study. It may be possible that in some cases the researcher does not have hypothesis in the beginning. So the general assumptions on the basis of data can be considered as hypothesis, which can be tested by the prospective researchers.

#### **10. Data Interpretation**

After hypothesis is tested than researcher can go further for drawing of general inferences so that he can arrive at making of a statement. The ability of any research is largely based on its capacity of making general statement.

Researchers having no hypothesis in the beginning, can take help of the any established theory to explain the concept through a process of interpretation.

#### **11. Report Writing**

Report writing is final job to be done by the researcher. Research work which is conducted by him is finally presented in form of research report. Report must be written in systematic manner, which normally should have following parts.

- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

## **Criteria of good Research**

- Purpose should be clearly defined
  - Research process should be followed
  - Address an important question.
  - Advance knowledge.
  - The scope and limitations of the work to be clearly defined.
  - The process to be clearly explained so that it can be reproduced and verified by other researchers.
  - A thoroughly planned design that is as objective as possible.
  - Highly ethical standards be applied.
  - All limitations to be documented.
  - Data be adequately analyzed and explained.
  - All findings be presented unambiguously and all conclusions be justified by sufficient evidence.
- 
- **Problems faced by researchers in India**
  - Lack of a scientific training in the methodology of research.
  - Insufficient interaction between the university research departments on one side and business establishments, government departments and research institutions on the other side
  - The concept of secrecy seems to be sacrosanct to business organisations in the country so much so that it proves an impermeable barrier to researchers.
  - Research studies overlapping one another are undertaken quite often for want of adequate information. This results in duplication and flutters away resources.
  - There does not exist a code of conduct for researchers
  - Researchers in our country also face the difficulty of adequate and timely secretarial assistance, including computerial assistance
  - Library management and functioning is not satisfactory at many places and much of the time and energy of researchers are spent in tracing out the books, journals, reports, etc., rather than in tracing out relevant material from them.
  - There is also the problem that many of our libraries are not able to get copies of old and new acts/rules, reports and other government publications in time.
  - There is also the difficulty of timely availability of published data from various government and other agencies
  - Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

## Questions

1. Define Research
2. What are the objectives of research?
3. Explain the types of Research
4. Write a note on significance of Research
5. Explain the Research process in detail
6. What are the criteria of good Research?
7. Enumerate the problems faced by researchers in India

Source: research Methodology – Dr.Vijay Upagade & Dr. Arvind shende

## UNIT II

- Research problem-Meaning, factors to be observed by a researcher while selecting a research problem, Techniques involved in defining a problem. Research design-Definition Features of a good design Steps in Research design Exploratory design-Descriptive design.

### INTRODUCTION

- A Research problem is a question that a researcher wants to answer or a problem that a researcher wants to solve.

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- **Factors to be observed by a researcher while selecting a research problem**
- Avoid selection of monotonous problem
- Avoid controversial topics
- Avoid narrow and vague topic
- Resources Availability. During the selection, a researcher will see to the resources available. If these resources like money, time, accommodation and transport are available to the selection place, then the selection of the problem is easy.
- Select after doing primary study of the subject.

### **Techniques/ steps involved in defining a research problem**

- Statement of problem
- Nature of Research Problem
- Review of available literature
- Discussions to enrich the subject matter
- Source: Research Methodology – Dr.Vijay Upagade & Dr. Arvind shende



- Redesigning of research problem
- Utility of research.

**STEPS/TECHNIQUES IN DEVELOPING RESEARCH PROBLEM**

20 **1. Statement of problem** Research Methodology  
 general manner. This will provide the clarity of understanding of the problem and then only researcher will be able to state his problem properly.

Even before deciding the problem for the study, pilot study can be conducted. When researcher makes general description of his subject there may be lot many ambiguities in the beginning, which requires rethinking of the subject.

So the problem stated should be suitable for necessary changes or if needed it can be redesigned.

### **2. Nature of Research Problem**

After defining the research problem and making proper statement of the problem, it is necessary to understand the origin of the problem for its clarity. In order to make topic of the research further more clear researcher can undergo in discussion on this topic with the persons having good knowledge of the similar problem. With the help of this discussion problem can be properly assessed.

### **3. Review of the Available Literature**

What ever literature is available in relation to the proposed study, it must be carefully examined before selecting problem. This exercise will be very useful which can provide many suggestions and later on required additions can be made in the research problem.

### **4. Discussion to enrich the subject matter**

The research topic should always be open to the discussion with experts. It is through this discussions only new ideas can be developed. This is known as experience surey. The discussion should be healthy one which must lead to general approach to the problem. This should also lead to enrichment in the subject matter of the study.

### **5. Re-designing of the Research problem**

Research study requires the ability of the researcher to put his research ideas on the right track then only he will be able to convert his ideas in to working hypothesis. This will make his research problem operationally viable. This will create the base for finding out working hypothesis for the research study.

### **6. Utility of Research**

Research studies are conducted not only for academic satisfaction of the researcher, but it is also conducted for utility of the society. The findings of the research study should reach to the concerned section of the society. Therefore research study with social relevance and utility should normally be selected for the study.

In order to provide the benefit of the research to the society, its findings should be made public by way of publishing the results of the research.

### **7. Practicability of the Research Study**

The factor of the practicability should be considered well before the research problem is selected for the study. Unless the feasibility of the study is properly tested research problem can not be selected. Personal whims and unrequited imagination of the researcher will spoil the practicability of the study. There should be rationality and manageability in the research study.

Normally research study is tested and judged by the contributions of the researcher, observations made by him in relation to the study conducted and his analytical approach for the study.

- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

### **Research design- Meaning & Definition**

- Research design means a process by which researcher will be in a position to understand the structure of the research and various steps to be taken in the process of research.
- “The design is the plan of study as such it is planned in every study uncontrolled as well as controlled and subjective as well as objective”

### **Features of a good Research design**

- It should have minimum bias and maximum reliability,
- It should have flexibility,
- Should be accurate,
- Reliable,
- Should involve testing of hypothesis,
- Objectivity,
- Validity, Generalization

- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

## 1. Objectivity

When a phenomena is observed in its true form without being affected by observer's own views it may be termed as objective observation. For example when we say that milk is white it is an objective statement. But if we say that - milk is the most useful drink - the statement may not be purely objective. The objectivity of the findings pertains to either collection of data or scoring of the responses or both. It may be judged by the degree of agreement between the final scores assigned to different individuals by more than one independent observer. Any research design should permit the use of measuring instruments which are fairly objective in which every observer or judge seeing a performance arrives at precisely the same report. Objectivity seems very easy to achieve but in actual practice it is not so.

## 2. Reliability

Reliability refers to consistency throughout a series of measurements. The investigator should frame his items in such a way that the respondent cannot but give only one genuine response. That is to say, if a respondent gives out a response to a particular item, he is expected to give the same response to that item whenever he is asked subsequently. Check items, administering the same test repeatedly, using a series of parallel forms are methods used in determining the reliability of the responses given out by a respondent.

## 3. Validity

The researchers must make sure that any measuring instrument selected by him is said to be valid when it measures what it purports to measure. For instance a originality test, constructed for measuring originality should measure only originality and nothing else. There are a good number of procedures for establishing the validity of test. Some such procedures are : validating the present data against a concurrent criterion or a future criterion on a theory etc.

## 4. Generalisation

Most research is concerned not only with the effect of one variable upon another under the particular setting studied, but also with its effect in a natural setting and on a larger population. That is how best the data collected from a sample can be utilised for drawing certain generalisations, applicable to a larger group (population) from which the sample is drawn. However, complete generality is only a myth and it is true only under given conditions.

- Source : Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

## Steps in Research design

- Formulation of research problem
- Review of existing literature
- Formation and development of working hypothesis
- Preparation of research design
- Determining sample design
- Data collection
- Project execution
- Data analysis
- Testing the hypothesis
- Data interpretation
- Report of the research work

### Steps In Research Design

A research design usually comprises of the following major steps.

- A. Formulation of the objective of the study (why the study is conducted and means to indentify the problem and problem area).
- B. Designing the method of data collection (what should be the technique of data collection).
- C. Selecting Sample.
- D. Collecting data - availability and its time period to findout
- E. Review of the literature
- F. Hypothesis selection
- G. Designing of the experiment.
- H. Data analysing process.
- I. Report on findings of the study.

The above stages are normally, seen in any of the research design. In order to make design purposeful action the entire activity of design is required to be carried out with proper sequence right from indentifying problem to the end of design process report writing. In relation to the stages explained above, plan of the research design can be undertaken in the following steps.

#### 1. Title of the Research

The title of the research should be properly worded. It should throw the light on the entire activity to be conducted. It should be easy for anybody to draw proper meaning of the proposed study to be undertaken.

The title so selected for the study should not be biased. It should not be emotional. It must be scientific in approach to its indication of the subject matter.

#### 2. Statement of Problem

It is an expression of the title statement which relates to explanation of the problem. It should contain main aspect of problem identification and specify the research area. This should include scope and limitation of the study. This should be related to the object of the study by providing earlier studies conducted. Plan for the study should be properly defined in this stage.

#### 3. Review of the literature

The researcher must review existing available literature with an object of developing hypothesis from it. In some research studies hypothesis may have been stated by previous researchers. In this stage stock of various hypothesis should be evaluated for its usefulness.

- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

This review of existing literature will provide base for proposed study insight for the study which will make researcher able to formulate correct plan for investigation.

#### 4. Sources of Information

This indicates the outline of methods and procedures for collection of data. This may be from primary or secondary source. The design should indicate the choice of the type of data to be collected based on the nature of the study.

The out come of the study is totally dependent on proper and reliable data. The methods to collect such data is required to be specified in this stage.

#### 5. Nature of Study

The researcher must specify the nature of the study, whether it relates to statistical experimental or comparative or combination of any of these.

Defining proper nature of study will reduce the complexity of the problem and will lead to accurateness in the study.

#### 6. Object if the study

The object of the study should be stated in clear terms. With specific goals to be attained the research study should aim at descriptive study exploratory study or testing of hypothesis. This should be clearly, worked out along with relationship of this study with previous research study.

#### 7. Socio-cultural context of the study

The utility of the study is proved for its socioculture context. If study is conducted with reference to investigation made which relates to the human behaviour of the person to be ascertained. The usefulness of the study will be based on now they as here, deviate or withdraw in relate to their behaviour for the purpose of the subject under study.

#### 8. Geographical Area

The research study is confined to specific geographical area in which study is fo be conducted. The area of the study may block, district, region division state or nation depending upon the nature of the study.

#### 9. Time Dimension of the study

The research study can not be conducted for any unlimited period. The success of the research study is based on reachable time period selected. It may be ranging for 5-10-15 or 20 yrs.

The study can also be confined to specific area i.e. pre independence or post-independent period British period mugal period etc.

This will help researcher to attribute the conclusions related to specific period.

#### 10. Assumption of the Study

Basic assumptions of the studies should be clearly and properly stated. This may be in relations to defining new concept. This also specifies the terms to be used. It means common word usage having recurrence of its applicability. The interpretation is largely based on explanation to these terms in relation to the research study.

#### 11. Basic of Selecting Data

This relates to the choice of samples to be selected for the purpose of the study. The proper care should be taken regarding the choice of the samples.

- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende

## Research Design

1. It must represent the universe.
2. It must be unbiased.
3. It must be adequate in size to produce results.
4. It must be designed to be effective.

### 12. Techniques of the study

The preparation of the outline of the research work decides the suitable techniques for collection of data. Which of the method will be used in this reference is required to be specified.

It is possible that only observation method may be used for information, or it can be collected through questionnaire or even both the methods can be commonly used or any other method is likely to be used should be specified here.

### 13. Control of Error

This is applied in experimental study. The researcher must know what variables are operating in the given situation. It is possible to control error in the laboratory or in field investigation. Normally key variables can be controlled. In all the cases it is necessary that variables and their control needs to be described.

### 14. Establish the reliability and validity of Instruments

The reliability and validity of instrument of data collection is necessary in case of impartial study unless these factors are established it is very difficult to evaluate such data collected.

### 15. Scheme of Chapterisation

It is part of the entire research study that there should be proper plan of study to be classified into various chapters.

According to the sub classification and head of particular chapter entire study will be divided in various chapter right from introduction to the final chapter of conclusions.

### 16. Development of Bibliography

The bibliography refers to resource of the study material used. If reference can be made to use of published and unpublished books, research papers articles reports or study conducted All these reference should be properly mentioned in the study in relation to their author, publisher, year of publication and page reference.

### Types of research design

- **Exploratory Research design:** Just as the word implies, it explores, that is to find out about something by answering the question in “what” or “How” manner.
- It is a lot like exploration or detective work fuelled by curiosity. Researchers should use their instincts to find clues and venture into new territories in search of information. Flexibility is important in exploratory research and it is bound to result in new ideas, revelations and insights.
- **Descriptive Research design:** This is more in-depth research, that answered the question of what and how. Descriptive research as the name suggests is used for description or to describe phenomenon or idea.
- **Explanatory Research:** This seeks to explain the subject matter being researched and tries to answer the question of what, how, and why.
- **Evaluation Research:** This is quite extensive as it measures the effectiveness of a program.
- <https://notesmatic.com/2018/07/research-design-and-its-types-exploratory-descriptive-and-causal/>

## DIFFERENCE BETWEEN EXPLORATORY AND DESCRIPTIVE RESEARCH DESIGN

Research design	Exploratory or Formulative	Descriptive or Diagnostic
Overall design	Flexible design	Rigid design
Sampling design	Non-probability sampling design	Probability sampling design
Statistical design	No pre-planned design for analysis	Pre-planned design for analysis
Observational design	Unstructured instruments for collection of data	Structured or well thought out instruments for collection of data
Operational design	No fixed decisions about the operational procedures	Advanced decisions about operational procedure

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- Source: Research Methodology – Dr. Vijay Upagade & Dr. Arvind shende



### **Questions**

- Define Research problem
- Explain the factors to be observed by a researcher while selecting a research problem.
- What are the Techniques involved in defining a problem?
- Define Research design
- What are the Features of a good design?
- What are the steps in Research design?
- Differentiate Exploratory design- Descriptive design.
- Source: Research Methodology – Dr.Vijay Upagade & Dr. Arvind shende

- Source: Research Methodology – Dr.Vijay Upagade & Dr. Arvind shende