

Q1. Distinguish between basic and applied Research?

Ans: Define research: Research means a calculated investigation or knowledge that provides a base for decision making.

Research means together information about something.

Research has main two types.

Basic research and applied research.

Basic research:

Basic research means to add further knowledge to the actual knowledge. It means that you have already some knowledge about something but you search again and again and go through the depth and provide more information and to the actual knowledge.

- Basic research provides scientific knowledge.
- Basic research means to expand the existing scientific knowledge.
- Basic research provides understanding of topic or natural phenomena in natural sciences.
- Basic research means fundamental research.
- Basic research is completely theoretical and it focuses on principles of research.
- It understands the basic laws of research.
- In short, when knowledge is required for the sake of knowledge is called Basic research.

Applied Research:

Applied research can be defined as a research that can applied in a real life situation.

It provides a particular set of circumstances, so as to relate the result of its corresponding circumstances.

- Applied research means to apply on practical life and make some experiment.
- Applied research is fully practical.
- Applied research is designed to solve some practical problems and give answer some questions.

Difference between Basic research and Applied research.

- Basic research provides extra knowledge for the expanding of actual knowledge and Applied research are related to the real life situation and problems.
- Basic research are fully theoretical while applied research are fully practical.
- Basic research fully concerned to develop the basic scientific knowledge and prediction while applied research with the help of basic science stresses on the development of technology and technique.

- Basic research adds some more knowledge to the existing knowledge and Applied research direct toward to finding the solution of problem.

Q2. What are the basic steps for conducting a research? Explain with a schematic diagram.

Ans: Scientific research involves a systematic process that focuses on being objective and gathering a multitude of information for analysis so that the researcher can come to a conclusion. The process goes through various stages which may include the following:-

Step-I Problem Identification:

The first step in the process is to identify a problem or develop a research question. At this stage we have to find that what is the main problem or what is the market demand. A detailed list of relevant questioner should be prepared which may help to make a meaningful DFDs and flowcharts of our proposed work.

Step-II Literature Review:

Now that the problem has been identified, the researcher must learn more about the topic under investigation. To do this, the researcher must review the literature related to the research problem. By doing such, we get knowledge that at what extent work has been done in the proposed area of research and what methods/algorithms have been tested.

Step-III Elucidate the Problem:

Many times the initial problem identified in the first step of the process is too large or broad in scope. In step 3 of the process, the researcher clarifies the problem and narrows the scope of the study. These means that we eliminate the un-necessaries questions and data and pickup the very specific and most relevant questions.

Step-IV clearly describes conditions and Concepts:

Terms and concepts are words or phrases used in the purpose statement of the study or the description of the study. These items need to be specifically defined as they apply to the study. Terms or concepts often have different definitions depending on who is reading the study.

Step-V Define the Population:

Research projects can focus on a specific group of people, facilities, park development, employee evaluations, programs, financial status, marketing efforts, or the integration of technology into the operations. For example, if a researcher wants to examine a specific group

of people in the community, the study could examine a specific age group, males or females, people living in a specific geographic area, or a specific ethnic group. Literally thousands of options are available to the researcher to specifically identify the group to study.

Step-VI Develop the Instrumentation Plan:

The plan for the study is referred to as the instrumentation plan. The instrumentation plan serves as the road map for the entire study, specifying who will participate in the study; how, when, and where data will be collected; and the content of the program.

Step-VII Data Collection

Once the instrumentation plan is completed, the actual study begins with the collection of data. The collection of data is a critical step in providing the information needed to answer the research question. Every study includes the collection of some type of data—whether it is from the literature or from subjects—to answer the research question. Data can be collected in the form of words on a survey, with a questionnaire, through observations, or from the literature. In the obesity study, the programmers will be collecting data on the defined variables: weight, percentage of body fat, cholesterol levels, and the number of days the person walked a total of 10,000 steps during the class.

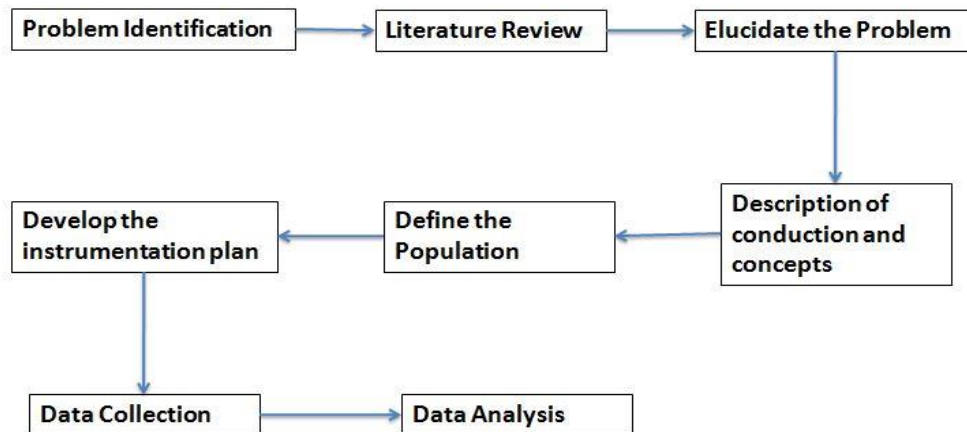
Step-VIII Data Analysis

All the time, effort, and resources dedicated to steps 1 through 7 of the research process culminate in this final step. The researcher finally has data to analyze so that the research question can be answered. In the instrumentation plan, the researcher specified how the data will be analyzed. The researcher now analyzes the data according to the plan. The results of this analysis are then reviewed and summarized in a manner directly related to the research questions.

Conclusion:

As you have probably concluded, conducting studies using the eight steps of the scientific research process requires you to dedicate time and effort to the planning process. You cannot conduct a study using the scientific research process when time is limited or the study is done at the last minute. Researchers who do this conduct studies that result in either false conclusions or conclusions that are not of any value to the organization.

Schematic Diagram of the Research Process



Q 3. Differentiate between any two types of research methodology?

Ans: Research methodology is a systematic way to figure out a problem. It is a science of studying how research is to be carried out. Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena are called research methodology. It is also defined as the study of methods by which knowledge is gained. Its aim is to give the work plan of research.

Research methodologies vary in many ways. Two main methodologies of research are qualitative and quantitative. These two methodologies can be differentiated in the following way:

Qualitative Research:

Qualitative Research is primarily exploratory research. It is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research. Qualitative Research is also used to uncover trends in thought and opinions, and dive deeper into the problem. Qualitative data collection methods vary using unstructured or semi-structured techniques. Some common methods include focus groups (group discussions), individual interviews, and participation/observations. The sample size is typically small, and respondents are selected to fulfill a given quota.

Qualitative research is expressed in words. It is used to understand concepts, thoughts or experiences. This type of research enables you to gather in-depth insights on topics that are not well understood.

Common qualitative methods include interviews with open-ended questions, observations described in words, and literature reviews that explore concepts and theories.

Quantitative Research:

Quantitative Research is used to quantify the problem by way of generating numerical data or data that can be transformed into usable statistics. It is used to quantify attitudes, opinions, behaviors, and other defined variables – and generalize results from a larger sample population. Quantitative Research uses measurable data to formulate facts and uncover patterns in research. Quantitative data collection methods are much more structured than Qualitative data collection methods. Quantitative data collection methods include various forms of surveys – online surveys, paper surveys, mobile surveys, face-to-face interviews, telephone interviews, longitudinal studies, website interceptors, online polls, and systematic observations.

Quantitative research is expressed in numbers and graphs. It is used to test or confirm theories and assumptions. This type of research can be used to establish generalizable facts about a topic.

Common quantitative methods include experiments, observations recorded as numbers, and surveys with closed-ended questions.

Q 4. Give an introduction to Mixed Methods Research and identify situations in which mixed methods research can be applied.

Ans: Mixed method research is an approach where the researchers used to integrate different core concepts of qualitative as well as quantitative research approaches. For example, a researcher wants to collect data from people that have obesity problem and the risks associated with it. The Researcher will use survey or questionnaires for data gathering where both open ended (qualitative) and closed ended (quantitative) questions will be used.

There are basically four major types of mixed method research design. These types are designs are the Triangulation Design, the Embedded Design, the Explanatory Design, and the Exploratory Design.

Mixed method Research is used when the integration of both methods is needed for better understanding of a problem. The mixed research will provide more in depth investigation of any problem.

When to use it:

When one wants to validate or corroborate the results obtained from other methods.

When one needs to use one method to inform another method. For instance, when little is known about a topic and it is necessary to first learn about what variables to study through qualitative research, and then study those variables with a large sample of individuals using quantitative research.

When one wants to continuously look at a research question from different angles, and clarify unexpected findings and/or potential contradictions.

When one wants to elaborate, clarify, or build on findings from other methods. For instance, if a causal relationship has been established through experimental research but one wants to understand and explain the causal processes involved through qualitative research.

Q 5. Give a brief overview of your final research project?

Ans: In my final year research project, I had developed a sentiment lexicon for Roman Urdu. The lexicon was created on the basis of Roman Urdu data sets that we had extracted from Twitter using the Twitter API.

In the first step after data extraction, we applied preprocessing steps for noise and stop words removal. The refined data we're then kept in a database table where we added a primary key, and equivalent standard Urdu word and An English word for each of the Roman Urdu words. All the words of the three languages were associated with each other and then the table was connected with another table having English words and it's sentiment score. Remember that the sentiment score was taken from Senti word net.

Our proposed lexicon was developed in aim of finding Senti score for each Roman Urdu word, and we made possible such achievement. We hope that if the developed lexicon is installed with Twitter package, then it will be easy for people to have sentiment score of Roman Urdu language

The frontend of our proposed system was developed using php while in the backend, we had used MySQL database server. The experimental results has proven that our developed sentiment lexicon have 100 % accuracy for positive sentiment and 83% accuracy on detecting negative sentiments over the Twitter.