LECTURE 36

RESEARCH APTITUDE

BY

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Research Aptitude is an attitude of inquiry/search/investigation, a scientific and objective effort made to uncover facts, hence, requires the application of scientific methods.

Research, according to Creswell, "is a procedure of procedures used to obtain and analyze information to expand our understanding of a certain topic or situation."

Characteristics Of Research

- ✓ **Reliability:** Consistency is what reliability means in terms of research. It makes reference to how predictable the results of an examination are.
- ✓ **Accuracy:** It is unmistakably linked to legitimacy. It also refers to how closely study techniques, tools, and equipment are related to one another.
- ✓ **Objectivity:** Objectivity is the quality of conducting research without bias. Typically, scientists steer clear of the possibility that their own character, behaviour, and attitude might not have an impact on the results. To prevent bias, they critically evaluate the research methodology.
- ✓ **Credibility:** Credibility is achieved by using the greatest data sources and investigational methodologies. Using optional information reduces cost and saves time.

Objectives Of Research

- ➢ Look into a current issue or condition.
- ➢ Create or create a new framework or method.
- ➢ make fresh discoveries.
- ➢ Investigate and examine broader topics.
- ➢ Provide an answer to a question.
- ➢ Evaluate and combine the knowledge already in existence

Research Ethics

Decision about right or wrong

True or false

Good or bad

Different Types of Research

There are different types of research. The basic ones are as follows.

Descriptive Versus Analytical

Descriptive research consists of surveys and fact-finding inquiries of different types. The main objective of descriptive research is to describe the state of affairs as it prevails at the time of the study. The term 'ex-post facto research' is quite often used for descriptive research studies in social sciences and business research. The most distinguishing feature of this method is that the researcher has no control over the variables here. He/she has to only report what is happening or what has happened. The majority of the ex-post facto research projects are used for descriptive studies in which the researcher attempts to examine phenomena, such as the consumer's preferences, the frequency of purchases, shopping, etc.

Despite the inability of the researchers to control the variables, ex-post-facto studies may also comprise attempts by them to discover the causes of the selected problem. The methods of research adopted in conducting descriptive research are survey methods of all kinds, including correlation and comparative methods. Meanwhile, in Analytical research, the researcher has to use the already available facts or information and analyze them to make a critical evaluation of the subject.

Applied Versus Fundamental

Research can also be applied or fundamental. An attempt to find a solution to an immediate problem encountered by a firm, an industry, a business organization, or society is known as applied research. Researchers engaged in such research aim at drawing certain conclusions confronting a concrete social or business problem.

On the other hand, fundamental research mainly concerns the generalizations and formulation of a theory. In other words, "Gathering knowledge for knowledge's sake is termed 'pure' or 'basic' research" (Young in Kothari, 1988). Researches relating to pure mathematics or concerning some natural phenomenon are instances of Fundamental Research. Likewise, studies focusing on human behavior also fall under the category of fundamental research.

Thus, while the principal objective of applied research is to find a solution to some pressing practical problem, the objective of basic research is to find information with a broad base of application and add to the already existing organized body of scientific knowledge.

Quantitative Versus Qualitative

Quantitative research relates to aspects that can be quantified or can be expressed in terms of quantity. It involves the measurement of quantity or amount. Various available statistical and econometric methods are adopted for analysis in such research. This includes correlation, regressions and time series analysis, etc

On the other hand, Qualitative research is concerned with qualitative phenomena, or more specifically, the aspects related to or involving quality or kind. For example, an important type of qualitative research is 'Motivation Research', which investigates the reasons for certain human behavior. The main aim of this type of research is to discover the underlying motives and desires of human beings by using in-depth interviews. The other techniques employed in such research are story completion tests, sentence completion tests, word association tests, and other similar projective methods.

Qualitative research is particularly significant in the context of behavioral sciences, which aim at discovering the underlying motives of human behavior. Such research helps to analyze the various factors that motivate human beings to behave in a certain manner, besides contributing to an understanding of what makes individuals like or dislike a particular thing. However, it is worth noting that conducting qualitative research in practice is considered a difficult task. Hence, while undertaking such research, seeking guidance from experienced expert researchers is important.

Conceptual Versus Empirical

The research related to some abstract idea or theory is known as Conceptual Research. Generally, philosophers and thinkers use it for developing new concepts or for reinterpreting the existing ones. Empirical Research, on the other hand, exclusively relies on observation or experience with hardly any regard for theory and system. Such research is data-based, which often comes up with conclusions that can be verified through experiments or observation.

Empirical research is also known as the experimental type of research, in which it is important to first collect the facts and their sources and actively take steps to stimulate the production of desired information. In this type of research, the researcher first formulates a working hypothesis and then

gathers sufficient facts to prove or disprove the stated hypothesis. He/she formulates the experimental design, which according to him/her would manipulate the variables, to obtain the desired information. This type of research is thus characterized by the researcher's control over the variables under study. In simple terms, empirical research is most appropriate when an attempt is made to prove that certain variables influence the other variables in some way. Therefore, the results obtained by using experimental or empirical studies are considered to be the most powerful evidence for a given hypothesis.

Other Types Of Research

The remaining types of research are variations of one or more of the above-mentioned types of research.

They vary in terms of the purpose of research, the time required to complete it, or maybe based on some other similar factor. Based on time, research may either be like one-time or longitudinal time-series research. While the research is restricted to a single period in the former case, it is conducted over several time periods in the latter case.

Depending upon the environment in which the research is to be conducted, it can also be laboratory research

or field-setting research, or simulation research, besides being diagnostic or clinical. Under such research, in-depth approaches or case study methods may be employed to analyze the basic causal relations. These studies usually undertake a detailed in-depth analysis of the causes of certain events of interest and use very small samples and sharp data collection methods.

The research may also be explanatory. Formalized research studies consist of substantial structure and specific hypotheses to be verified. As regards historical research, sources like historical documents remain, etc. Are utilized to study past events or ideas. It also includes the philosophy of persons and groups of the past or any remote point in time.

Types of research can be looked at from three different perspectives

Fundamental or basic research

Basic research is an investigation of basic principles and reasons for the occurrence of a particular event or process or phenomenon. It is also called theoretical research. The study or investigation of some natural phenomenon or relating to pure science is termed basic research.

Basic research sometimes may not lead to immediate use or application. It is not concerned with solving any practical problems of immediate interest. But it is original or basic. It provides a systematic and deep insight into a problem and facilitates the extraction of scientific and logical explanations and conclusion on it.

It helps build new frontiers of knowledge. The outcomes of basic research form the basis for much-applied research. Researchers working on applied research have to make use of the outcomes of basic research and explore their utility of them.

Research on improving a theory or a method is also referred to as fundamental research. For example, suppose a theory applies to a system provided the system satisfies certain specific conditions.

Attempts to find answers to the following questions from basic research.

Why are materials like that

What are they?

How does a crystal melt?

Why is the sound produced when water is heated?

Why do we feel difficult when walking on the seashore?

Why are birds arrange them in '>' shape when flying in a group

Examples of Fundamental or Basic Research :

All Famous Theorems of Physics

All Laws of Maths and science we studied from childhood

Applied research

In applied research, one solves certain problems by employing well-known and accepted theories and principles. Most of the experimental research, case studies and inter-disciplinary research are essentially applied research.

Applied research is helpful for basic research. Research, the outcome of which has immediate application is also termed as applied research.

Such research is of practical use to current activity. For example, research on social problems has immediate use. Applied research is concerned with actual life research such as research on increasing efficiency of a machine, increasing gain factor of production of a material, pollution control, preparing vaccination for the disease, etc. They have immediate potential applications.

Differences between Fundamental and Applied Research

Differences between applied and fundamental research have been specified in a way that fundamental research studies individual cases without generalizing, and recognizes that other variables are in constant change.

Applied research, on the contrary, seeks generalizations and assumes that other variables do not change. The table below summarizes the differences between the two types of research in terms of purpose and context:

	Fundamental research	Applied research
Purpose	Expand knowledge of processes of business and management Results in universal principles relating to the process and its relationship to outcomes Findings of significance and value to society in general	Improve understanding of particular business or management problem Results in solution to the problem New knowledge limited to problem Findings of practical relevance and value to the manager(s) in an organization(s)
Context	Undertaken by people based in universities Choice of topic and objectives determined by the researcher Flexible time scales	Undertaken by people based in a variety of settings including organizations and universities Objectives negotiated with the originator Tight time scales

Source – Differences between fundamental and applied research

Discuss various qualities of a researcher

A researcher needs to possess certain qualities to conduct research.

First of all, the nature of a researcher must be of the temperament that vibrates in unison with the theme which he is searching. Hence, the seeker of knowledge must be truthful with the truthfulness of nature, which is much more important, much more exacting than what is sometimes known as truthfulness. Truthfulness relates to the desire for accuracy of observation and precision of statement. Ensuring facts is the principal rule of science, which is not an easy matter.

The difficulty may arise due to an untrained eye, which fails to see anything beyond what it has the power of seeing and sometimes even less than that. This may also be due to the lack of discipline in the method of science. An unscientific individual often remains satisfied with the expressions like approximately, almost, or nearly, which is never what nature is. Real research cannot see two things that differ, however minutely, as the same.

A researcher must possess an alert mind. Nature is constantly changing and revealing itself in various ways. A scientific researcher must be keen and watchful to notice such changes, no matter how small or insignificant they may appear. Such receptivity has to be cultivated slowly and patiently over time by the researcher through practice.

An individual who is ignorant or not alert and receptive during his research will not make a good researcher. He will fail as a good researcher if he has no keen eyes or mind to observe the unusual changes in the routine. Research demands a systematic immersion into the subject matter by the researcher grasping even the slightest hint that may culminate into significant research problems. In this context, Cohen and Negal cited by (Selltiz et al, 1965; Wilkinson and Bhandarkar, 1979) state that “the ability to perceive in some brute experience the occasion of a problem is not a common talent among men… it is a mark of scientific genius to be sensitive to difficulties where less gifted people pass by untroubled by doubt”.

Scientific inquiry is pre-eminently an intellectual effort. It requires the moral quality of courage, which reflects the courage of steadfast endurance. The process of conducting research is not an easy task. There are occasions when a research scientist might feel defeated or completely lost. This is the stage when a researcher would need immense courage and a sense of conviction. The researcher must learn the art of enduring intellectual hardships.

A researcher should cultivate the habit of reserving judgment when the required data are insufficient.

Different types of research design

There are different types of research designs. They may be broadly categorized as:

(1) Exploratory Research Design;

(2) Descriptive and Diagnostic Research Design; and

(3) Hypothesis-Testing Research Design.

Exploratory Research Design

The Exploratory Research Design is known as the formative research design. The main objective of using such a research design is to formulate a research problem for an in-depth or more precise investigation, or for developing a working hypothesis from an operational aspect.

The major purpose of such studies is the discovery of ideas and insights. Therefore, such a research design

suitable for such a study should be flexible enough to provide the opportunity for considering different

dimensions of the problem under study. The inbuilt flexibility in research design is required as the initial research problem would be transformed into a more precise one in the exploratory study, which in turn may necessitate changes in the research procedure for collecting relevant data.

Usually, the following three methods are considered in the context of a research design for such studies. They are

a survey of related literature;

experience survey; and

analysis of 'insight stimulating' instances.

Descriptive And Diagnostic Research Design

A Descriptive Research Design is concerned with describing the characteristics of a particular individual or a group. Meanwhile, a diagnostic research design determines the frequency with which a variable occurs or its relationship with another variable.

In other words, the study analyzing whether a certain variable is associated with another comprises a diagnostic research study. On the other hand, a study that is concerned with specific predictions or with the narration of facts and characteristics related to an individual, group or situation, are instances of descriptive research studies.

Hypothesis-Testing Research Design

Hypothesis-Testing Research Designs are those in which the researcher tests the hypothesis of the causal relationship between two or more variables.

These studies require procedures that would not only decrease bias and enhance reliability, but also facilitate deriving inferences about the

causality.

Generally, experiments satisfy such requirements. Hence, when research design is discussed in such studies, it often refers to the design of experiments.