. INTRODUCTION TO RESEARCH METHODOLOGY

Hello, it is my pleasure to take you through the first lecture in Research Methodology. In this lecture session, you will be introduced to the terms research, research methods, research methodology and scientific method. As we define these terms, we shall gain an understanding of why research is referred to as scientific. Finally, we will discuss the characteristics of research, as well as the purpose of research and types of research

2.1. Learning Outcomes

At the end of this lecture, you should be able to:

1. Define the terms research, research methods, research methodology, and scientific method
2. Outline the characteristics of research
3. List the purposes of research
4. Differentiate the types of research

2.2. Definition of Research terms

Lesson Activity

How do you think researchers get solutions to the problems?

Good thinking. I believe you have said that they do it to solve a problem, you carry out a systematic process to come up with a solution. This process can involve either reading about how others have solved similar problems, collect data from people, doing experiments in a laboratory, among many other activities. This investigative process that you engage in is what is referred to as research. However, we need to add that for this process to qualify to be referred to as research, it needs to be carried out in a systematic and objective manner.

Research is therefore the process of arriving at effective solutions to problems through systematic collection, analysis and interpretation of data.

With this clarification of the term the research, we can now compare some definitions of research as follows:

Best (1977) defined research as “a systematic and objective analysis and recording of controlled observations that may lead to development of generalizations, principles or theories resulting in prediction and ultimate control of events”.

John W. C., (2014) defines research as “a systematic process of collecting, analyzing and interpreting data in order to increase the understanding of the phenomenon about which we are interested or concerned”. A phenomenon in this case refers to an object of investigation which could be a person, an event, a process or an institution.

Paul D.L., Jeanne E.O., (2015) define research as “a scientific and systematic search for pertinent information on a specific topic”.

Peter P., (2016) defines research as “a systematic, objective and scientific investigation of a problem”.

From the above definitions, it can be noticed that there are three repeating terms. These terms are systematic, objective and scientific.
Take Note

The term systematic implies that research is a carefully planned search and discover mission clearly outlined in advance. Objective means that research is bias free. Scientific implies that the process of research is conducted carefully following specific steps and with specific objectives to solve the problem under consideration
Having discussed the terms above, we are now in a position to discuss the characteristics of research.

Let us now look at some of the closely related terms used with research.

Research methods: are strategies processes or techniques used in the collection of data or evidence for analysis in order to uncover new information or create better understanding of a topic.

Research methodology: are the various steps that are generally adopted by a researcher in studying a research problem along with the logic behind them.

Scientific method: The scientific method involves the application of the rules of science in the search for knowledge

2.3. Characteristics of Research

We will now learn about outstanding characteristics of research. These include;

Purposive – Any good scientific research must have a definite aim or purpose, i.e. it must be focused otherwise it will fail to be systematic and directed

Controlled - this implies that, in exploring causality in relation to two variables (factors), one sets up the study in a way that minimizes the effects of other factors affecting the relationship. This can be achieved in the physical sciences since most of the research is done in a laboratory. However, in

the social sciences it may be difficult since research is carried out on issues related to human beings living in society, where such controls are not possible. Attempts are made to quantify their impact.

Rigorous - This refers to the carefulness and the degree of exactitude in research. This means answers to research questions are relevant, appropriate and justified. The degree of rigor varies markedly between the physical and social sciences and within the social sciences.

Systematic - This implies that the procedures adopted to undertake an investigation follows a certain logical sequence, i.e., some procedures must follow others.

Critical - Critical scrutiny of the procedures used and the methods employed is crucial to a research enquiry. The process of investigation must be fool proof and free from drawbacks. The process adopted and the procedures used must be able to withstand critical scrutiny.

Empirical - Any conclusions drawn are based upon hard evidence gathered from information obtained through real life experiences or observations. Results of data analysis should be objective and based on facts resulting from the interpretation of the data.

Verifiability - Whatever the conclusion, the basis of the findings should be correct and can be verified by oneself and others. The scientific research should blend itself whether or not the data supported the proposed.

Having looked at the characteristics of research, we shall now focus on understanding the purpose of research. Before discussing this, let's engage in the activity presented below:

Activity 2

List at least six reasons for undertaking research
Good attempt. You have been able to list the purposes of research. This leads us to our second last subsection in this lecture which is about the purposes of research.

Testing and Measurements

2.4. Purpose of Research

1.5.1 Discovery of new knowledge

This involves the discovery of new facts, their correct interpretation and practical application.

1.5.2 Exploration

This is mainly applied in social research which is conducted to explore a topic. Exploratory studies are more typically done for three reasons;

- To satisfy the research curiously and desire for better understanding,
- To test the feasibility of understanding a more careful study, and

- To develop the method to be employed in a further study.

1.5.3 Explanation

This involves accurate observation and measurement of a given phenomenon

1.5.4 Description

The major purpose of many studies is to describe situations and events for accurate identification e.g. size, shape, age, weight, colour and height change over time e.t.c. Descriptive studies try to discover answers to the questions Who? What? When?, sometimes how?

1.5.5 Prediction

This is the ability to estimate occurrences of phenomena. If we can provide a plausible explanation of an event after it has occurred, we are able to predict when and what situations that event will occur.

1.5.6 Theory development

This involves formulation of concepts and generalizations about a given phenomenon. Research is also conducted in an attempt to confirm or validate existing theories this is sometimes referred to.

Finally, we cannot conclude this lesson without understanding the various ways of carrying out research. First, let's engage our minds in the activity given below.

Activity 3

Explain the various ways commonly used in carrying out research

Good attempt. You have been able to list some of the types of research. This leads us to our final last subsection in this lecture on the types of research.

2.5. Types of Research

There are many types of research based on the criteria one uses. Some of the types of research are explained below;

1.6.1 Basic or Fundamental research

The main purpose of this type of research is to obtain empirical data which can be used to formulate, expand or evaluate a theory. It is not actually directed in design or purpose towards the solution of practical problems. The main aim is to expand the frontiers of knowledge without the intention of having practical applications. However, the results may be eventually applied to practical problems that have social values. Let us use hotel management as an example. You will see that all the advances made in this area are dependent upon basic researches in foods and nutrition, catering and hospitalities. In the same way, the progress made in business administration practices has been related to progress in the discovery of economic theories, administrative theories and management theories. However, you have to bear in mind that the primary concern of basic

research is to create knowledge solely for the sake of knowledge. Its design is not in any way hampered by considerations of special usefulness of the findings.

1.6.2 Applied Research

Unlike basic research, this is directed towards the solution to an immediate, specific and practical problem. It is the type of research which you can conduct in relation to actual problems and under the conditions in which they are found in practice. You can use applied research to solve problems at the appropriate level of complexity. Take for instance in the area of business management or administration or even your own area of specialization, you can depend on basic research for discovering the more general laws of management or administration, but you have to employ applied research to determine how these laws operate in the real situation if scientific changes are to be affected in our lives, this approach will continue to be very essential.

At this juncture, you have to note that there is no sharp line of demarcation between basic and applied research. This is because applications of theory help in solving practical problems. For instance, you always apply the theories of administration or organization in business management. On the other hand, basic research can also depend upon the findings of applied research to complete the theoretical formulations; for example, an organizational experiment could shed some light on a learning theory. At the same time, observations in a practical situation serve to test theories and may lead to the formulation of new theories.

When research is classified according to methodology, it can also be classified according to Creswell (1994) into two broad areas - quantitative and qualitative approaches.

1.6.3 Action Research

This is small scale intervention in the functioning of the real world and involves close examination of effect of such intervention. It is normally situational and concerned with diagnosing a problem in a specific context and attempting to solve it in that context. Normally, action research is conducted with the primary intention of solving a specific, immediate and concrete problem in a local setting. It is not concerned with whether the results of the study are generalized to other settings since the goal is to solve a given problem. It is limited in its contribution to theory development, but it is useful because it provides answers to problems that cannot wait for theoretical solutions.

1.6.4 Descriptive Research

This is usually involves surveys and studies that aim to identify facts. It mainly deals with the “description of the state of affairs as it is at present”; there is no control over variables in descriptive research. This is undertaken in order to ascertain and describe the characteristics of variable in a situation. It enables one to learn about and describe characteristics of a phenomenon e.g. education level, job status, length of service etc.

The most prevalent method of gathering information in a descriptive study is the questionnaire. Other methods include interview, job analysis, documentary analysis etc.

Descriptive statistics such as the mean, standard deviation, frequencies are used on the analysis of descriptive research.

1.6.5 Analytical Research

The researcher uses facts or information already available and analyses the facts in order to make a critical evaluation of the material.

1.6.6 Qualitative Research

This is an enquiry process of understanding a social or human problem, based on building a complex, holistic picture formed with words, reporting detailed views of information, and conducted in a natural setting. Qualitative research is used to answer questions about the nature of phenomena with the purpose of describing and understanding the phenomena from the participant's points of view. The qualitative research is sometimes referred to as the interpretative, the naturalistic, the constructivist or the postpositive approach.

1.6.7 Quantitative Research

Unlike qualitative research, this type of research (sometimes referred to as the traditional, the positivist, the experimental or the empiricist approach), is typically used to answer questions about the relationships among measured variables with the purpose of explaining, predicting and controlling phenomena.

According to Leedy (1995), quantitative research is an inquiry into a social or human problem, based on testing a theory composed of variables measured with numbers or figures and analyzed with statistical procedures in order to determine whether the predictive generalizations of the theory hold true.

1.6.8 Evaluative Research

As the name applies, this is concerned with the evaluation of such occurrences as social and organizational programs or intervention. The essential question that is typically asked by such studies is: Has the response (e.g., a new policy initiative or an organizational change) achieved its anticipated goals?

A typical design used for the evaluation may consist of one group that is exposed to the treatment (i.e., the new initiative) and a control group that is not. Since it is often not possible or ethical to randomly assign research participants to the two groups, such studies are usually quasi-experimental.

Very often, health and family planning activities are implemented for years but never assessed. In such cases, evaluative research can be a valuable approach for examining retrospectively or cross-sectionally the effect of the program activities.

These studies attempt to;

i. assess the implemented activities and examine the short-time effects of these activities,

ii. determine the impact of a program and

iii. evaluate the success of the intervention.

1.6.9 Conceptual research

Conceptual research focuses on the concept or theory that explains or describes the phenomenon being studied. What causes disease? How can we describe the movements of the planets? What are the basic components of matter? The conceptual researcher sits at his desk with a pen in hand and tries to solve these problems by thinking about them. He does not do experiments, but he can make use of the observations of others, since this is the mass of data he is trying to make sense of. Until relatively recently, conceptual research methodology was considered the most honorable form of research: it required the use of the brain, not the hands.

1.6.10 Experimental research

This involves experimentation where the investigator deliberately controls and manipulates the conditions which determine the events of interest. It involves making a change in the value of one variable (the independent variable) and observing the effect or change in another variable (dependent variable). The independent variable is a stimulus, i.e., it is stimulated while the dependent variable is the response. If all extraneous factors can be successfully controlled, then the researcher can presume that changes in the dependent variable are due to the independent variables.

7 Summary

We have come to the end of session one. This session has been laid the foundation for this course by defining the term research and its related terms. We have said that research refers to the systematic search for solutions to human problems. We have discussed characteristics of research. They include, that research should have a purpose, should not be biased, in other words research should be objective and should be generalizable. We have also looked at the purposes of research, such as, discovery of new knowledge, Exploration Explanation and Prediction, just to mention a few. Lastly we have studied the various types of research, some of which are: fundamental, Applied, Action and Descriptive research. We have noted that these and various other types of research that one can select depends on field of study the research is based on.

Review Activity

1. In your words, define the concept of research and explain the importance of research in your field of study

2. Explain the application of research the modern society

3. Explain why research is considered an iterative process

4. What is the criteria by which scientific research (and therefore the knowledge that is generated through it) commonly evaluated?

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2.7. Review Activity

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2. Explain the application of research the modern society
3. Explain why research is considered an iterative process
4. What is the criteria by which scientific research (and therefore the knowledge that is generated through it) commonly evaluated?

2.8. CAT 1

This is an online CAT. It is supposed to test your understanding on the material covered so far. Kindly attempt the CAT. It accounts for 10 % of your continuous assessment. I wish you the best.

2.9. References and Further Reading

1. John W. C., (2014). Research design: Qualitative, Quantitative, and Mixed Methods Approaches, SAGE Publications Ltd, United Kingdom, ISBN 9781452226095, ISBN 9781452226101

2. Paul D.L., Jeanne E.O., (2015). Practical Research: Planning and Design, Pearson Education Limited, ISBN 9780133741322.

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