DISTANCE LEARNING CENTRE

AHMADU BELLO UNIVERSITY

ZARIA, NIGERIA

COURSE MATERIAL

FOR

Course Code & Title: BUAD 723: Research Methodology

Programme Title: Post Graduate Diploma in Management (PGDM)

ABU DLC COURSE MATERIAL

Revised 2020 By: Dr. AUWALU INUSA

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QUOTE

"Open and Distance Learning has the exceptional ability of meeting the challenges of the three vectors of dilemma in education delivery – Access, Quality and Cost"

– Sir John Daniels

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Preamble

Welcome to BUAD 723 (Research Methodology). A class that will prepare you to be able to conduct an independent research. I look forward to a rewarding semester with you. This course is a three-part process from concepts to applications, delivery and implementation; and each part consists of several central concepts and steps in research, investigations and analysis. The following is a description of the stages and steps for your development. This document is our work in progress based on the past practices and current directions of research into current course design and quality assurance practices. All of you are expected to feel free to compare what is here with what obtains in other academic institutions and contact me for any possible input into this document or the course for its development process based on current best academic practices.

Course Study Guide

i. COURSE INFORMATION

Course code: BUAD 723

Course Title: Research Methodology

Credit units: 2

Year: 1

Semester: 1st

ii. COURSE INTRODUCTION AND DESCRIPTION

Introduction:

This course will introduce you to the theory and practice of qualitative and quantitative research. You will learn how to approach qualitative and quantitative research as an iterative process revolving around research problems and issues of interest to modern business executives. The course is also design to deepen your thinking about the qualitative and quantitative research data, problems, interests, questions as well as developing your competence in both theory and application of research methodology as commonly used in business research. You will be acquainted with varying procedures of sampling design, data collection, hypothesis testing and analysis required for carrying out your independent PGDM/MBA research project.

Description:

This Course is design to expose you to the theory and practices of qualitative and quantitative researches as applied in business/management researches. Emphasis will be to understanding and application of basic research concepts and principles

as applied in business and management researches and activities. The course will draw your attention to important but usually neglected ethical issues in business research.

iii. COURSE PREREQUISITES

You should note that although this course has no subject pre-requisite, you are expected to have:

1. Satisfactory level of English proficiency
2. Basic Computer Operations proficiency
3. Online interaction proficiency
4. Web 2.0 and Social media interactive skills
5. Others

iv. COURSE LEARNING RESOURCES

i. Course Textbooks

You should note that there are no compulsory textbooks for the course. Notwithstanding, you are encouraged to consult some of those listed for further reading at the end of each study session and the ones listed below:

Salkind, N. J. (2017). *Exploring Research (9th Ed.)*. Boston, MA: Pearson.

Gliner, J. A., Morgan, G. A. & Leech, N. L. (2016). *Research Methods in Applied Settings: An Integrated Approach to Design and Analysis*, (3rd Ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Berg, B. L. (2016). *Qualitative Research Methods for the Social Sciences* (9th Ed.). Boston, MA: Pearson.

Glesne, C. (2016). *Becoming Qualitative Researchers: An Introduction* (5th Ed.). Boston, MA: Pearson.

Silverman, D. (Ed.). (2016). *Qualitative Research: Theory, Method and Practice* (4th Ed.). Thousand Oaks, CA: Sage Publications.

Dillman, D. A. (2014). *Mail to Internet Surveys: The Tailored Design Method* (4th Ed.). New York: Wiley.

Krueger, R. A. & Casey, M. A. (2014). *Focus Groups: A Practical Guide for Applied Research* (5th Ed.). Thousand Oaks, CA: Sage Publications.

Flick, U. (2014). *An Introduction to Qualitative Research* (5th Ed.). Thousand Oaks, CA: Sage Publications.

Christensen, L. B., Johnson, R. B. & Turner, L. A. (2014). *Research Methods, Design, and Analysis* (12th Ed.). Boston, MA: Allyn and Bacon.

Stangor, C. (2014). *Research Methods for the Behavioral Sciences* (5th Ed.). Boston, MA: Houghton Mifflin.

ii. Course Journals

Social and Management Research Journals

ABU Business School Journal/Review

iii. Other Resources

Any other relevant materials that will help in understanding the course.

v. COURSE OBJECTIVES AND LEARNING OUTCOMES

After studying this course, you are expected to be able to:

1. Discuss the basic concepts and principles of research methodology, as applied in social and management fields.
2. Conduct independent research of all kinds,
3. Use appropriate research methods and conduct your researches either as a student of PGDM/MBA or as independent business entrepreneur or researcher and integrate knowledge in the area into core areas of social or management,
4. Collect appropriate data using relevant research design,
5. Analyse the data and bring out useful research implications needed for solving day-to-day business problems.

These objectives will be achieved through presentations, discussions and group work. The effectiveness at achieving these objectives will be assessed through tests and the evaluation of your performance with regard to presentations, discussions, written work, and performance measured in your ability to tackle the relevant questions.

Getting somewhat more specific, the primary aim of this course is to review, deepen, and broaden your understanding of research methodology concepts and frameworks, and to allow you to gain experience in applying these to real business research problems as decision maker, since the overriding objective of PGDM/MBA programme is to develop decision-makers.

vi. ACTIVITIES TO MEET COURSE OBJECTIVES

Specifically, this course shall comprise of the following activities:

1. Studying courseware
2. Listening to course audios

3. Watching relevant course videos
4. Field activities, industrial attachment or internship, laboratory or studio work (whichever is applicable)
5. Course assignments (individual and group)
6. Forum discussion participation
7. Tutorials (optional)
8. Semester examinations (CBT and essay based).

vii. TIME (TO COMPLETE SYLABUS/COURSE)

To cope with this course, you would be expected to commit a minimum of 2 hours daily for the Course.

viii. GRADING CRITERIA AND SCALE

Grading Criteria

A. Formative assessment

Grades will be based on the following:

Individual assignments/test (CA 1,2 etc)	20
Group assignments (GCA 1, 2 etc)	10
Discussions/Quizzes/Out of class engagements etc	10

B. Summative assessment (Semester examination)

CBT based		30
Essay based		30
	TOTAL	**100%**

C. Grading Scale (*as appropriate for the course*):

A = 70 -100

B = 60 - 69

C = 50 - 59

F = 0 - 49

D. Feedback

Courseware based:

1. In-text questions and answers (answers preceding references)

2. Self-assessment questions and answers (answers preceding references)

Tutor based:

1. Discussion Forum tutor input

2. Graded Continuous assessments

Student based:

1. Online programme assessment (administration, learning resource, deployment, and assessment).

ix. LINKS TO OPEN EDUCATION RESOURCES

OSS Watch provides tips for selecting open source, or for procuring free or open software.

SchoolForge and SourceForge are good places to find, create, and publish open software. SourceForge, for one, has millions of downloads each day.

Open Source Education Foundation and Open Source Initiative, and other organisation like these, help disseminate knowledge.

Creative Commons has a number of open projects from Khan Academy to Curriki where teachers and parents can find educational materials for children or learn about Creative Commons licenses. Also, they recently launched the School of Open that offers courses on the meaning, application, and impact of "openness."

Numerous open or open educational resource databases and search engines exist. Some examples include:

- OEDb: over 10,000 free courses from universities as well as reviews of colleges and rankings of college degree programmes
- Open Tapestry: over 100,000 open licensed online learning resources for an academic and general audience
- OER Commons: over 40,000 open educational resources from elementary school through to higher education; many of the elementary, middle, and high school resources are aligned to the Common Core State Standards
- Open Content: a blog, definition, and game of open source as well as a friendly search engine for open educational resources from MIT, Stanford, and other universities with subject and description listings
- Academic Earth: over 1,500 video lectures from MIT, Stanford, Berkeley, Harvard, Princeton, and Yale
- JISC: Joint Information Systems Committee works on behalf of UK higher education and is involved in many open resources and open projects including digitising British newspapers from 1620-1900!

Other sources for open education resources

Universities

- The University of Cambridge's guide on Open Educational Resources for Teacher Education (ORBIT)
- OpenLearn from Open University in the UK

Global

- Unesco's searchable open database is a portal to worldwide courses and research initiatives

- African Virtual University (http://oer.avu.org/) has numerous modules on subjects in English, French, and Portuguese
- https://code.google.com/p/course-builder/ is Google's open source software that is designed to let anyone create online education courses
- Global Voices (http://globalvoicesonline.org/) is an international community of bloggers who report on blogs and citizen media from around the world, including on open source and open educational resources

Individuals (which include OERs)

- Librarian Chick: everything from books to quizzes and videos here, includes directories on open source and open educational resources
- K-12 Tech Tools: OERs, from art to special education
- Web 2.0: Cool Tools for Schools: audio and video tools
- Web 2.0 Guru: animation and various collections of free open source software
- Livebinders: search, create, or organise digital information binders by age, grade, or subject (why re-invent the wheel?

X. ABU DLC ACADEMIC CALENDAR/PLANNER

	PERIOD																																			
Semester	**Semester 1**																**Semester 2**																	**Semester 3**			
Activity	**JAN**				**FEB**				**MAR**				**APR**				**MAY**				**JUN**				**JUL**				**AUG**				**SEPT**				**OCT**				**NOV**				**DEC**			
Registration																																															
Resumption																																															
Late Registn.																																															
Facilitation																																															
Revision/ Consolidation																																															
Semester Examination																																															

N.B: - All Sessions commence in January

- 1 Week break between Semesters and 6 Weeks vocation at end of session.

- Semester 3 is OPTIONAL (Fast-tracking, making up carry-overs & deferments)

XI. COURSE STUDY GUIDE AND OUTLINE

Course Study Guide

WEEK	MODULES	STUDY SESSIONS	ACTIVITY
Week 1	**MODULE 1**	**Study Session 1:** Introduction to Research **Pp.21**	1. Read Courseware for the corresponding Study Session. 2. Listen to the Audio on this Study Session 3. View any other Video/U-tube (https://goo.gl/E7iYAb) 4. View referred Animation (https://goo.gl/Bbr96J)
Week 2		**Study Session 2:** Types of Research **Pp.32**	1. Read Courseware for the corresponding Study Session. 2. Listen to the Audio on this Study Session 3. View any other Video/U-tube (https://goo.gl/fWkoHj) 4. View referred Animation (https://goo.gl/CkyoCY)
Week 3		**Study Session 3:** Ethical Issues in Research **Pp.44**	1. Read Courseware for the corresponding Study Session. 2. Listen to the Audio on this Study Session 3. View any other Video/U-tube (https://goo.gl/BrZn9j) 4. View referred Animation (https://goo.gl/tDGyHy)
Week 4		**Study Session 4:** Qualitative Research **Pp.59**	1. Read Courseware for the corresponding Study Session. 2. Listen to the Audio on this Study Session 3. View any other Video/U-tube (https://goo.gl/zaGd3a) 4. View referred Animation (https://goo.gl/xaLw6x)
Week 5		**Study Session 1:** Identifying and	1. Read Courseware for the corresponding Study Session. 2. Listen to the Audio on this Study Session 3. View any other Video/U-tube (https://goo.gl/RVknVc)

		Formulating Research Problem **Pp.73**	4. View referred Animation (https://goo.gl/SP54pN)
Week 6	**MODULE 2**	**Study Session 2:** Literature Review and Theoretical Framework **Pp.88**	1. Read Courseware for the corresponding Study Session. 2. Listen to the Audio on this Study Session 3. View any other Video/U-tube (https://goo.gl/BFgs7j) 4. View referred Animation (https://goo.gl/2LnXdo)
Week 7		**Study Session 3:** Research Objective and Measurement of Variable **Pp.97**	1. Read Courseware for the corresponding Study Session. 2. Listen to the Audio on this Study Session 3. View any other Video/U-tube (https://goo.gl/VdQRrM) 4. View referred Animation (https://goo.gl/9fjBGz)
Week 8		**Study Session :4** The Research Design **Pp.108**	1. Read Courseware for the corresponding Study Session. 2. Listen to the Audio on this Study Session 3. View any other Video/U-tube (https://goo.gl/FZYMyS) 4. View referred Animation (https://goo.gl/vj74F7)
Week 9		**Study Session 1:** Sample Design and Instrument For Data Collection **Pp.122**	1. Read Courseware for the corresponding Study Session. 2. Listen to the Audio on this Study Session 3. View any other Video/U-tube (https://goo.gl/NX8orT) 4. View referred Animation (https://goo.gl/cBrt16)

Week 10	**MODULE 3**	**Study Session 2:** Data Collection and Analysis **Pp.133**	1. Read Courseware for the corresponding Study Session. 2. Listen to the Audio on this Study Session 3. View any other Video/U-tube (https://goo.gl/FxJL54) 4. View referred Animation (https://goo.gl/diq3Jh)
Week 11		**Study Session 3:** Reporting Research Findings **Pp.146**	1. Read Courseware for the corresponding Study Session. 2. Listen to the Audio on this Study Session 3. View any other Video/U-tube (https://goo.gl/aV4awT) 4. View referred Animation (https://goo.gl/BJm97p)
Week 12 &13		**Study Session 4:** The Research Hypothesis **Pp.157**	1. Read Courseware for the corresponding Study Session. 2. Listen to the Audio on this Study Session 3. View any other Video/U-tube (https://goo.gl/diAWzq) 4. View referred Animation (https://goo.gl/1azFzc)
Week 14 & 15		**PRACTICAL/STUDIO/FIELS ACTIVITIES/REVISION/TUTORIALS**	
Week 16 & 17		**EXAMINATION**	

Course Outline:

Module 1: An Overview of Research

Study Session 1: Introduction to Research

Study Session 2: Types of Research

Study Session 3: Ethical Issues in Research

Study Session 4: Qualitative Research

Module 2: The Research Process

Study Session 1: Identifying and Formulating research problem

Study Session 2: Literature Review and Theoretical Framework

Study Session 3: Research objective and Variable Measurement

Study Session 4: The Research Design

Module 3: Data Presentation and Analysis

Study Session 1: Sample Design and Instrument for Data Collection

Study Session 2: Data Collection and Analysis

Study Session 3: Reporting Research Findings

Study Session 4: The Research Hypothesis

XII. STUDY MODULES

MODULE 1:

An Overview of Research

Contents:

Study Session 1: Introduction to Research

Study Session 2: Types of Research

Study Session 3: Ethical Issues in Research

Study Session 4: Qualitative Research

STUDY SESSION 1

Introduction to Research

Section and Subsection Headings

Introduction

1.0 Learning Outcomes

2.0 Main Content

- 2.1 - Meaning of Research
- 2.2 - Definition of Research
- 2.3 - Objectives of Research
- 2.4 - Importance of Research

3.0 Tutor Marked Assignments

4.0 Study Session Conclusion/Summary

5.0 Self-Assessment Questions

6.0 Additional Activities (Videos, animations and outdoor activity)

7.0 References/Further Readings

Introduction

Research is a logical and systematic search for new and useful information on a particular topic. If you remember the saying in our well-known nursery rhyme “twinkle twinkle little star, how I wonder what you are”. The use of the words “how and what” essentially summarises what research is. It is an investigation of finding solutions to scientific and social problems through objective and systematic analysis. It is a search for knowledge, that is, a discovery of hidden truths. Here knowledge means information about matters.

The information might be collected from different sources like experience, human beings, books, journals, nature, etc.

In this study session, you will learn more about the general meaning and various definitions of research. You will also learn the objectives of research as well as the importance for conducting a research. Please, do stay tune as we will start with the learning outcome of this study.

1.0 Learning Outcomes

At the completion of this study session, I expect you to be able to:

1. Explain the meaning of research
2. Define research in various forms
3. Highlight the objectives of research
4. Explain the importance of research

2.0 Main Content

2.1 Meaning of Research

You are welcome to session one of this course. You see my dear, when you say that you are undertaking a research study to find answers to a question, you are implying that the process must be undertaken within a framework of a set of philosophies (approaches), the process must use procedures, methods and techniques that have been tested for their validity and reliability and the process must be designed to be unbiased and objective. Thus, you should know that adherence to the three criteria mentioned above enables the process to be called 'research'.



Figure 1.1.1: Meaning of Research

Now that you have noted the processes of a research, it is important for you at this point to learn the key terms mentioned in explaining the processes. They include:

Philosophies: this means approaches used in conducting research which can either be qualitative, quantitative or academic discipline in which you have been trained and it can be a combination of all these approaches.

Validity: this simply means that correct and standard procedures have been applied to find answers to question. **Reliability** refers to the quality of a measurement procedure that provides repeatability and accuracy of a given phenomenon.

Unbiased and objective: this connotes that you have taken each step in an unbiased manner and drawn each conclusion to the best of your ability and without introducing your own vested interest. **Bias** is defined as a deliberate attempt to either conceal or highlight something.

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However, you should also know that the degree to which these criteria are expected to be fulfilled varies from discipline to discipline and so the meaning of 'research' differs from one academic discipline to another. The difference between research and non-research activity is, in the way we find answers. That is, the process must meet certain requirements to be called research. We can identify these requirements by examining some definitions of research.

2.2 Definition of Research

Now that you have learnt what constitute a research, let us now see the definition of research. The word research is composed of two syllables, re and *search. 're-'*is a prefix meaning again, anew or over again while *search* is a verb meaning to examine closely and carefully, to test and try, or to probe. Together they form a noun called research.

It can be defined as a structured enquiry that utilises acceptable scientific methodology to solve problems and create new knowledge that is generally applicable. Scientific methods consist of systematic observation, classification and interpretation of data. Although we engage in such process in our daily life, the difference between our casual day-to-day generalisation and the conclusions usually recognised as scientific method, lie in the degree of formality, rigorousness, verifiability and general validity of latter.



Figure 1.1.2: Definition of Research

According to Aromolaran (1998), research is seen as the process of arriving at dependable solution to problem, through the planned and systematic collection of data, analysis and interpretation of data collected for promoting progress and enabling man to relate more effectively to his environment, in order for him to accomplish his purpose and resolve his conflicts.

According to Kerlinger (1973), research can be viewed as systematic, controlled, empirical and critical investigation of hypothetical propositions about presumed relations among phenomena. Osuala (2001), sees research as the process of arriving at dependable solution to a problem through a planned and systematic collection, analysis and interpretation of data.

According to Ngu (2005), research is the process of looking into a problem or a multiple of problems with an ultimate aim of proffering solution or a set of solutions. Research Methodology therefore, deals with identifying the available strategy or framework to generate, collect, organise and analyse data on a problem which has been identified as crucial either to the individual, group, society, institution or the nation or the international system at large.

Research is seen as the process of finding solution to a problem, exploring an idea, probing an issue, accepting or rejecting an assumption, concept, point of view or an argument by gathering data and using materials beyond our personal intuitions and experiences. Research is also defined as the scientific investigation of phenomena which includes collection, presentation, analysis and interpretation of facts that lines an individual's speculation with reality or to answer a certain question or solve a problem.

Since you have now understood the concept of research, it is important you know the purpose for which research is conducted. Study that in the next subheading please.

In-Text-Question 1

What is research?

In-Text-Answer 1:

Research is seen as the process of finding solution to a problem, exploring an idea, probing an issue, accepting or rejecting an assumption, concept, point of view or an argument by gathering data and using materials beyond our personal intuitions and experiences.

2.3 Objectives of Research

The prime objectives of research you need to know are:

(1) To discover new facts;

(2) To verify and test important facts;

(3) To analyse an event or process or phenomenon to identify the cause and effect relationship;

(4) To develop new scientific tools, concepts and theories to solve and understand scientific and nonscientific problems;

(5) To find solutions to scientific, nonscientific and social problems and

(6) To overcome or solve the problems occurring in our everyday life.

So far, we have learnt the concept of research, the objectives and the reason why people conduct a research. This will enlighten us on why we must conduct a research. Research is important both in scientific and nonscientific fields. In our lives new problems, events, phenomena and processes occur every day. Practically, implementable solutions and suggestions are required for tackling new problems

that arises. Scientists have to undertake research on them and find their causes, solutions, explanations and applications. Precisely, research assist us to understand



Figure 1.1.3: Objectives of Research

nature and natural phenomena. Some important avenues of research we need to know are:

(1) A research problem refers to a difficulty which a researcher or a scientific community or an industry or a government organisation or a society experience. It may be a theoretical or a practical situation. It calls for a thorough understanding and possible solution.

(2) Research on existing theories and concepts help us identify the range and applications of them.

(3) It is the fountain of knowledge and provides guidelines for solving problems.

(4) Research provides basis for many government policies. For example, research on the needs and desires of the people and on the availability of revenues to meet the needs, helps a government to prepare a budget.

(5) It is important in industry and business for higher gain and productivity and to improve the quality of products.

(6) Mathematical and logical research on business and industry optimise the problems in them.

(7) It leads to the identification and characterisation of new materials, new living things, and new stars among others.

(8) You see dear, it is only through research that inventions can be made; for example, new and novel phenomena and processes such as superconductivity and cloning have been discovered only through research.

(9) Social research helps find answers to social problems. They explain social phenomena and seek solution to social problems.

(10) Research leads to a new style of life and makes it delightful and glorious.

Emphasising the importance of research, let us listen to what Louis Pasteur said: I beseech you to take interest in these sacred domains called laboratories. Ask that there be more and that they be adorned for these are the temples of the future wealth and well-being. It is here that humanity will learn to read progress and individual harmony in the works of nature, while humanity's own works are all too often those of barbarism, fanaticism and destruction. (Louis Paster –article by S. Mahanti, Dream 2047, (May 2003:29-34)).

In order to know what it means to do research one may read scientific autobiographies like Richard Feynmann's-Surely you are joking, Mr. Feynmann! Jim Watson's - The double helix and Science as a way of life – A biography of C.N.R. Rao by Mohan Sundararajan.

ITQ 2

Why is research important?

ITA 2

Research is important both in scientific and nonscientific fields because, in our lives, new problems, events, phenomena and processes occur every day. Practically, implementable solutions and suggestions are required for tackling new problems that arise.

3.0 Tutor Marked Assignments

1. Explain the reason why people conduct research in the local communities, organisations and the world at large.

4.0 Study Session Conclusion/Summary

The word research is made up of two syllables, *re* and *search. Re*-is a prefix meaning again, anew or over again while *search* is a verb meaning to examine closely and carefully, to test and try, or to probe. Together they form a noun called research. It can be defined as the scientific investigation of phenomena which includes collection, presentation, analysis and interpretation of facts that lines an individual's speculation, with reality or to answer a certain question or solve a problem. In this session, you have learnt the various definition of research, the objectives of research and the importance of research, the processes of research were also discussed.

5.0 Self-Assessment Questions

1. Discuss the concept of research in social and physical science.
2. Discuss the importance of research to our communities, organisations and the world at large.
3. What are the processes that make a study to be called research?
4. Discuss in detail, the objectives of research.
5. List out at least ten (10) methods which you have learnt in your UG and PG courses and write their purpose or application.
6. Distinguish between research methods and research techniques.
7. Distinguish between research methods and research methodology with an example of your own choice.

6.0 Additional Activities (Videos, animations and outdoor activities)

a. Visit U-tube **https://goo.gl/E7iYAb** . Watch the video & summarise in 1 paragraph

b. View the animation on **https://goo.gl/Bbr96J** and critique it in the discussion forum

7.0 References/Further Readings

Salkind, N. J. (2017). *Exploring Research (9th Ed.)*. Boston, MA: Pearson.

Gliner, J. A., Morgan, G. A. & Leech, N. L. (2016). *Research Methods in Applied Settings: An Integrated Approach to Design and Analysis*, (3rd Ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

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Glesne, C. (2016). *Becoming Qualitative Researchers: An Introduction* (5th Ed.). Boston, MA: Pearson.

Silverman, D. (Ed.). (2016). *Qualitative Research: Theory, Method and Practice* (4th Ed.). Thousand Oaks, CA: Sage Publications.

Dillman, D. A. (2014). *Mail to Internet Surveys: The Tailored Design Method* (4th Ed.). New York: Wiley.

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Stangor, C. (2014). *Research Methods for the Behavioral Sciences* (5th Ed.). Boston, MA: Houghton Mifflin.

STUDY SESSION 2

Types of Research

Section and Subsection Headings

Introduction

1.0 Learning Outcomes

2.0 Main Content

2.1 - Application of Research Study

2.2 - Objectives in undertaking the Research

2.2.1 - Descriptive research:

2.2.2 - Correlational research:

2.2.3 - Explanatory research:

2.2.4 - Exploratory research:

2.3 - Inquiry Mode

2.3.1 - Structured approach

2.3.2 - Unstructured approach

2.4 - Quantitative and Qualitative Methods

2.5 - Normal and Revolutionary Researches

2.6 - Characteristics of Research

3.0 Tutor Marked Assignments

4.0 Study Session Conclusion/Summary

5.0 Self-Assessment Question

6.0 Additional Activities (Videos, animation and outdoor activity)

7.0 References/Further Readings

Introduction

So far, we have learnt the general meaning and importance of research. This session will introduce you to the various types of research. Fundamentally,

research can be classified into two perspectives; the purpose for which it is being conducted and the method by which it is conducted. More specifically, you will learn pure research, applied research, descriptive research, correlational research, explorative research, experimental research as well as qualitative and quantitative research in this session. Before we continue with our discussion on the various types of research, it is important we highlight the learning outcome of this study session. They are spelt out as shown below.

1.0 Learning Outcomes

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

1. Explain application of research study,
2. Discuss the objectives in undertaking a research,
3. Highlight inquiry mode employed for a research, and
4. Distinguish between quantitative and qualitative research.

2.0 Main Content

2.1 Application of Research Study

From the point of view of application, there are two broad categories of research you need to learn. They are pure research and applied research.

Pure Research: This involves developing and testing theories and hypotheses that are intellectually challenging to the researcher but may or may not have practical application at the present time or in the future. The key thing you should note here is that the knowledge produced through pure research is sought in order to add to the existing body of research methods.

Applied research: this type of research is conducted to solve specific, practical questions; for policy formulation, administration and understanding of a phenomenon. It can be *exploratory*, but is usually *descriptive*. It is almost always done on the basis of basic research. Applied research can be carried out by academic or industrial institutions. Often, an academic institution such as our universities ought to have a specific applied research programme funded by an industrial partner interested in that programme.

2.2 Objectives in Undertaking the Research

Our first discussion on the types of research has enlightened you on pure and applied research. Our next focus is the purpose for which a research is been conducted. From the viewpoint of objectives, a research can be classified as descriptive, correlation, explanatory and exploratory.



2.2 Figure 1.2.1: Objectives in Undertaking the Research

Descriptive research: This type of research attempts to describe systematically a situation, problem, phenomenon, service or programme, or provide information about , say, living condition of a community, or describe attitudes towards an issue.

Correlational research: This type of research attempts to discover or establish the existence of a relationship/ interdependence between two or more aspects of a situation.

Explanatory research: This type of research attempts to clarify why and how there is a relationship between two or more aspects of a situation or phenomenon.

Exploratory research*:* This is a type of research that is undertaken to explore an area where little is known or to investigate the possibilities of undertaking a particular research study (feasibility study or pilot study). However, in practice most studies are a combination of the first three categories.

2.3 Inquiry Mode

The last type of research we are going to look at is the process adopted to find answers to research questions. The two approaches are structured approach and unstructured approach. Now, let us learn the structured approach.

Structured approach

The structured approach to inquiry is usually classified as *quantitative research.* Here everything that forms the research process such as objectives, design, sample, and the questions that you plan to ask of respondents is predetermined. It is more appropriate to determine the *extent* of a problem, issue or phenomenon by quantifying the variation. E.g. how many people have a particular problem? How many people hold a particular attitude?

Unstructured approach

You have now seen how the structured approach works. The unstructured approach to inquiry is usually classified as qualitative research. This approach allows flexibility in all aspects of the research process. It is more appropriate to explore the *nature* of a problem, issue or phenomenon without quantifying it. You see dear, the main objective of unstructured approach is to describe the variation in a phenomenon, situation or attitude. For example, description of an observed situation, the historical enumeration of events, an account of different opinions

different people have about an issue, description of working condition in a particular industry.

However, both approaches have their place in research. Both have their strengths and weaknesses. In many studies, you have to combine both qualitative and quantitative approaches. For example, suppose you have to find the types of cuisine / accommodation available in a city and the extent of their popularity. The types of cuisine is the qualitative aspect of the study as finding out about them entails description of the culture and cuisine while the extent of their popularity is the quantitative aspect as it involves estimating the number of people who visit restaurants serving such cuisine and calculating the other indicators that reflect the extent of popularity. Do you understand, if you do not please, read it over again before we continue?

In-Text-Question 1

What are the types of research?

In-Text-Answer 1

Based on applications, we have pure and applied research. From the viewpoint of objectives, we have descriptive, correlation, explanatory and exploratory and based on enquiry mode, we have structured approach and unstructured approach

2.4 Quantitative and Qualitative Methods

The basic and applied researches can be quantitative or qualitative or even both. Quantitative research is based on the measurement of quantity or amount. Here a process is expressed or described in terms of one or more quantities. The result



Figure 1.2.2: Quantitative and Qualitative Methods

of this research is essentially a number or a set of numbers. Some of the characteristics of qualitative research method are:

i. It is numerical, non-descriptive, applies statistics or mathematics and uses numbers;
ii. It is an iterative process whereby evidence is evaluated;
iii. The results are often presented in tables and graphs;
iv. It is conclusive;
v. It investigates the what, where and when of decision making.

Statistics is the most widely used branch of mathematics in quantitative research. It finds applications not only in physical sciences but also in economics, social sciences and biology. Quantitative research using statistical methods often begins with the collection of data based on a theory or hypothesis or experiment, followed by the application of descriptive or inferential statistical methods.

Qualitative research is concerned with qualitative phenomenon involving quality. Some of the characteristics of qualitative research method are:

i. It is non-numerical, descriptive, applies reasoning and uses words;
ii. Its aim is to get the meaning, feeling and describe the situation;
iii. Qualitative data cannot be graphed;
iv. It is exploratory;
v. It investigates the why and how of decision making.

We measure and weigh things in the study of substance or structure. Can we measure or weigh patterns? We cannot measure or weigh patterns. But to study patterns we must map a configuration of relationships. That is, structures involve

quantities whereas patterns involve qualities. If one wishes to investigate why certain data are random then it is a qualitative research. If the aim is to study how random the data is, what is the mean, variance and distribution function then it becomes quantitative. Explaining how digestion of food takes place in our body is a qualitative description. It does not involve any numbers or data and quantities.
The detection of a particular compound is a qualitative analysis. This can be done by carrying out physical or chemical tests.

Determination of exact amount of a particular compound present in a volume is essentially quantitative analysis. This can be done by volumetric, gravimetric and colorimetric methods or instrumental methods. Experimental and simulation studies are generally quantitative research.

In fact, qualitative methods can be used to understand the meaning of the numbers obtained by quantitative methods.

2.5 Normal and Revolutionary Researches

Basic and applied researches are generally of two kinds: normal research and revolutionary research. In any particular field, normal research is performed in accordance with a set of rules, concepts and procedures called a paradigm, which is well accepted by the scientists working in that field. Normal research is something like puzzle-solving: interesting, even beautiful, solutions are found but the rules are the same. In this normal research sometimes, unexpected novel results and discoveries are realised which are inconsistent with the existing paradigm. Among the scientist, a tense situation then ensures, which increase in intensity until a scientific revolution is reached. This is marked by a paradigm shift and a new paradigm emerges under which normal scientific activity can be resumed.

2.6 Characteristics of Research

I believe you have clearly understood that research is a process of collecting, analysing and interpreting information to answer questions. But, you need to know that the process must have certain characteristics to qualify as research: it must, as far as possible, be controlled, rigorous, systematic, valid and verifiable, empirical and critical. Let us now see how each of this characteristic contributes to research.



Figure 1.2.3: ***Characteristics of Research***

Controlled: In real life there are many factors that affect an outcome. The concept of control implies that, in exploring causality in relation to two variables(factors), you set up your study in a way that minimise the effects of other factors affecting the relationship. This can be achieved to a large extent in the physical sciences (cookery, bakery), as most of the research is done in a laboratory. However, in the social sciences (Hospitality and Tourism) it is extremely difficult as research is carried out on issues relating to human beings living in society, where such controls are not possible. Therefore; in hospitality and tourism, as you cannot control external factors, you attempt to quantify their impact.

Rigorous: You must be careful in ensuring that the procedures you follow to find answers to questions are relevant, appropriate and justified. Again, the degree of

rigour varies markedly between the physical and social sciences and within the social sciences.

Systematic: This implies that the procedure adopted to undertake an investigation follows a certain logical sequence. What we mean here is that the different steps cannot be taken in a haphazard way. Some procedures must follow others.

Valid and verifiable: This concept implies that whatever you conclude on the basis of your findings is correct and can be verified by you and others.

Empirical: This means that any conclusion drawn is based upon hard evidence gathered from information collected from real life experiences or observations.

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

For a process to be called research, it is imperative that it has the above characteristics. Are we following? Now, let us continue.

What Makes People do Research

This is a fundamentally important question. You as a person would not like to do research unless there are some motivating factors. Some of the motivations are the following:

(1) To get a research degree (Master in Business Administration, MBA) along with its benefits like better employment, promotion, increment in salary among others.
(2) To get a research degree and then to get a teaching position in a college or university or become a scientist in a research institution.

(3) To get a research position in countries like U.S.A., Canada, Germany, England, Japan, Australia, among other countries.
(4) To solve the unsolved and challenging problems.
(5) To derive joy for doing some creative work.
(6) To acquire respectability.
(7) To get recognition.
(8) Curiosity to find out the unknown facts of an event.
(9) Curiosity to find new things.
(10) To serve the society by solving social problems.

However, some people undertake research without any aim, possibly because they not being able to think of anything else to do. Such people can also become good researchers by motivating themselves toward a respectable goal. As pointed out by Prof. Rajesh Kasturirangan (NIAS, IISc) even if you work in a company or run a company, a mind inclined towards research would do better than a mind not trained for it and it is like the story of the hare and the tortoise. If you have a mind trained for research, you will be the tortoise – the climb would be slow and steady, but eventually you would win the race

ITQ 2

What is the difference between qualitative and quantitative research?

ITA 2

A qualitative research is concerned with qualitative phenomenon involving quality while quantitative research is based on the measurement of quantity or amount. Here a process is expressed or described in terms of one or more quantities.

3.0 Tutor Marked Assignments

1. Distinguish between theory and experiment.

4.0 Study Session Conclusion/Summary

This session has introduced you to the various types of research. Fundamentally, research can be classified into two perspectives; the purpose for which it was conducted and the method by which it is conducted. More specifically, you have learn pure research, applied research, descriptive research, correlational research, explorative research, experimental research as well as qualitative and quantitative research in this session. Structured and unstructured approaches to research have also been discussed.

5.0 Self-Assessment Questions

(1) List out at least 10 theoretical and applied methods which you have learned in your UG, PG courses and write their features in two or three sentences.

(2)Write at least 20 questions in your course, the investigation of which forms basic research. Then point out how many of them have already been solved and how many were found in applications.

(3) Distinguish between theory and experiment.

(4) Write a note on importance of theory in basic and applied researches.

(5) Bring out the importance of inter-disciplinary research.

(6) Discuss the various methods by which a research is conducted and explain the appropriate design in each case.

(7) Discuss 10 characteristics of basic and applied research and highlight the distinguishing characteristics.

(8) Differentiate between structured and unstructured approaches to research.

(9) List five research topics that is suitable for qualitative research and another five research topics that is suitable for quantitative research.

6.0 Additional Activities (Videos, animation and outdoor activity)

a. Visit U-tube **https://goo.gl/fWkoHj** . Watch the video & summarise in 1 paragraph

b. View the animation on **https://goo.gl/CkyoCY** and critique it in the discussion forum

7.0 References/Further Readings

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STUDY SESSION 3

Ethical Issues in Research

Section and Subsection Headings

Introduction

1.0 Learning Outcomes

2.0 Main Content

2.1 - Research Involving Human Participants

2.1.1 - Therapeutic research:

2.1.2 - Non-therapeutic research:

2.2 - Why does Research with Human Participants require Ethical approval?

2.3 - Ethical Principles underpinning Research

2.3.1 - Veracity:

2.3.2 - Respect for Vulnerable Persons:

2.3.3 - Privacy and Confidentiality:

2.3.4 - Justice and Inclusiveness:

2.3.5 - Harms and Benefits:

2.4 - Participant- Centred Perspective

2.5 - Ethical Issues within the Research Process itself

3.0 Tutor Marked Assignments

4.0 Study Session Conclusion/Summary

5.0 Self-Assessment Questions

6.0 Additional Activities (Videos, animation and outdoor activities)

7.0 References/Further Readings

Introduction

Welcome to study session three. Our previous sessions have grounded you with detailed knowledge of research and its various types. This session will further

enhance your understanding of research as you will learn the ethics of research. Research is primarily driven by the desire for new knowledge and understanding and may have a number of benefits. It may, for example, benefit research participants (e.g. improved treatments for disease/illness); research may also benefit both group(s) and society as a whole.

That said, we must be careful to ensure that the benefits outweigh the risk of harm to research participants and it is for this reason – amongst others – that ethical frame work shave been developed to underpin research practice. Ethical frameworks are, however, developed within a continuously evolving social context which include the need for research, moral imperatives and ethical principles. They are, however, subject to frequent change.

You as a researcher must ensure that you are up-to-date and aware of legal requirements; one useful source of information is the Central Office for Research Ethics (COREC) (**www.corec.org.uk**). They are guided by one over-riding principle – the need to acknowledge and respect human dignity. Acquaint yourself with the learning outcome of this session before we continue with the main content of this topic. Thank you as you do staying.

1.0 Learning Outcomes

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

1. Identify ethical issues involving participants,
2. Explain why research require ethical approval,
3. Highlight the ethical principles underpinning research, and
4. Discuss ethical issues within the research process.

2.0 Main Content

2.1 Research Involving Human Participants

The conduct of researchers is under close scrutiny, largely due to the potential for mistreatment of research participants and the demand for high quality and ethically appropriate research (Department of Health, 2001/2005, ESRC 2005). As a researcher, you have a clear responsibility to ensure that you recognise and protect the rights and general well-being of your participants, regardless of the nature of your research. Codes of practice in research provide guidelines that reinforce the basic principles of both human rights and ethics; many aspects are legally enforceable (Eby, 1985).



Figure 1.3.1: ***Research Involving Human Participants***

The Nazi atrocities during the Second World War significantly violated the basic principles of human rights as a result of which, the first code of practice for ethical research was developed (Dempsey and Dempsey, 1992) (The Nuremburg Code of Ethical Practice). This provided the basis for the development of the recommendations involving Human Subjects (Declaration of Helsinki) adopted by the World Medical Assembly in 1964. This clearly differentiates between therapeutic and non-therapeutic research (Levine, 1979) viz:

2.1.1 Therapeutic research: Research which offers participants an opportunity to receive an experimental treatment that may have beneficial effects (e.g. treatment with an experimental drug)

2.1.2 Non-therapeutic research: Research which permits the generation of knowledge that may benefit future generations but which is unlikely to benefit those involved.

The majority of researches we carried out in the university as either staff or students, fall into the on-therapeutic category.

The Declaration of Helsinki illustrates the ethical issues that must be considered in undertaking research involving human participants. Such issues are based on respect for human dignity, autonomy (self-determination), truth (veracity) and justice. There must be no preferential advantage to potential participants and there must be no inducement to participate.

These considerations have been defined as reflecting the conflict between the protection of human rights and the generation of knowledge (Ford and Reuter, 1990). This means that researchers must take particular care to ensure that people are not exploited or harmed in anyway by the conduct of research. This can be difficult to achieve since it is possible that work designed to generate knowledge that will ultimately have many benefits may, in the short term at least, have, at best, no effect and, at worst, be clearly deleterious to those concerned.

Thus involving human participants in research places a significant emphasis on the principles of autonomy and informed consent and stresses the need for truth and disclosure of relevant information. Respect for human dignity is, therefore, the cardinal ethical principle underlying research ethics and is intended to protect the interests and the physical, psychological or cultural integrity of the individual. This

in turn reflects a number of important ethical principles which should underpin all research involving human beings.

2.2 Why does Research with Human Participants Require Ethical approval?

Ethics approval for research with human participants is needed for the following reasons:



Figure 1.3.2: Why does Research with Human Participants Require Ethical approval

i. to protect the rights and welfare of participants and minimise the risk of physical and mental discomfort, harm and/or danger from research procedures

ii. to protect your rights as a researcher to carry out any legitimate investigation as well as the reputation of the university for research conducted and/or sponsored by it

iii. to minimise the likelihood of claims of negligence against individual researchers, the university and any collaborating persons or organisations.

iv. since Research Funding bodies and refereed journals increasingly require a statement of ethical practices in applications for research funds and/or as a condition for publication.

2.3 Ethical Principles Underpinning Research

Now that you have learnt the need for ethic in research, it is time for us to delve into the guiding principles that underpin a research study. Such principles are designed to guide researchers in the planning and conduct of research and are based on a number of central and important ethical principles which reflect the common standards, values and aspirations of the research community.

We will now consider those factors and take them into account in all ethical reviews whether this is carried out internally or externally.

2.3.1 Autonomy: This describes acknowledgement of the right of the individual to determine their own course of action, in accordance with their own wishes and plans. Respect for individuals is expressed by recognising that their autonomy and right to self-determination underpin their ability to make judgments and decisions for themselves. Autonomy therefore underlies the need for informed consent.

2.3.2 Free and Informed Consent: Informed consent comprises three major elements which you must know. They include; information, voluntariness and comprehension. When you are providing information as a researcher, you must ensure that participants are given sufficient detail about the nature of the research and the procedures involved; this should highlight the objectives of the study, potential risks and benefits and any alternative treatments must be made clear.

The concept of voluntariness has important implications. Consent must be freely given and may be withdrawn at any time. Undue influence may take the form of inducement, deprivation or the exercise of control, or authority over prospective participants. This is particularly important in research involving vulnerable people, and is absent if consent is secured by the order of authorities or as a result of coercion or manipulation.

Voluntary participation implies that participants make an informed choice while informed consent assumes that the information given is accurate. In practical terms, within an ethics review process, this translates into scrutiny of the process,

rights, duties and requirements for free and informed consent by the research participant.

2.3.3 Veracity: Truthfulness is also central to obtaining informed consent since, without this, participants cannot exert their right to informed consent, justice or fairness.

2.3.4 Respect for Vulnerable Persons: Vulnerable individuals, such as the old, the young, the sick or the mentally impaired, are entitled, on grounds of human dignity, caring, and fairness, to special protection against abuse, discrimination, deception or exploitation. Ethical obligations to vulnerable individuals in the conduct of research will often necessitate special procedures to protect their interests; these must be demonstrated where appropriate.

2.3.5 Privacy and Confidentiality: Each individual is entitled to privacy and confidentiality both on ethical grounds and in terms of the protection of their personal and sensitive data under the Data Protection Act (1998). Each person therefore has the freedom to decide the time, extent and circumstances under which they will withhold or share information. Standards of privacy and confidentiality protect the access, control and dissemination of personal information; such standards also help to protect mental or psychological integrity.

All proposals must demonstrate that these principles will be upheld and the procedure to be followed in data storage and retention. Further details are available in the Code of Conduct: Practice for Research Involving Human Participants (CCCU, 2006), and Data Protection in Research (CCCU 2006).

2.3.5 Justice and Inclusiveness: In this context, justice connotes fairness and equity for all participants in research. In procedural terms, justice requires that ethics review processes involve methods that are fair and transparent, that established standards and procedures for reviewing research protocols are in place, and that the process be effectively independent. Justice also concerns the distribution of benefits and burdens of research.

On the one hand, distributive justice is directed towards ensuring that no segment of the population is unfairly burdened with the harms of research and, on the other, towards ensuring that no individual or group is neglected or discriminated against. The principle of justice thus imposes particular obligations toward individuals who are vulnerable and unable to protect their own interests in order to ensure that they are not exploited for the advancement of knowledge.

2.3.6 Harms and Benefits: The analysis, balance and distribution of harms and benefits are central to research ethics. Modern research ethics requires a favourable harms-benefit balance so that the foreseeable harms should not outweigh anticipated benefits. Harms benefits analysis thus affects the welfare and rights of research participants, the informed assumption of harms and benefits, and the ethical justifications for competing research approaches.

It is acknowledged however, that, because research involves advancing the frontiers of knowledge, its undertaking often involves uncertainty about the magnitude and/or kind of benefits or harms associated with individual research projects. This imposes particular ethical obligations on researchers to ensure the scientific validity, design and conduct of their research.

a. **Minimising Harm (Non-maleficence):** This reflects the duty to avoid, prevent or minimise harm to others. In practice it means that research participants must not be subjected to any unnecessary risks of harm; their participation in research must be essential to achieving scientifically and socially important aims that cannot be achieved without the participation of human participants. The principle of minimising harm also requires that the research involve the smallest number of human participants and the smallest number of tests on these participants that will ensure scientifically valid data.

b. **Maximising Benefit (Beneficence):** The principle of beneficence impose a duty to benefit others and, in research, a duty to maximise net benefits. Care must be taken to ensure that the intention of research is to generate new knowledge that will produce benefits for participants themselves, for other individuals or for society as a whole, or for the advancement of knowledge.

In-Text-Question 1

List out the ethical principles that underpin research.

In-Text-Answer 1

They are autonomy, free and informed consent, harms and benefits, privacy and confidentiality, respect for vulnerable persons, veracity.

2.4 Participant- Centred Perspective

To ensure that these principles are adhered to, it is essential that we look at participant-centred approach. You must not forget that research participants make a significant contribution to the progress and promise of research in advancing knowledge. Collaboration between participants and researchers is important and help to ensure that the interests of the participants are central to the work; that they

will not be treated simply as objects and that their concerns will be listened to. It is recognised that in some situations, a more formal separation between subject and researcher is needed due to the nature of a specific research design; this must, however, be clearly justified in any research proposal.

However, a participant-centred approach must also acknowledge that researchers and research participants may not always see the harms and benefits of a research project in the same way. Indeed, individual participants within the same study may respond very differently to the information provided in the free and informed consent process; this can be important and these individual perspectives must be considered. It is for this reason that lay members are included in all Research Ethics Committees.

This can have important practical implications. For example, researchers must recognise that those who are asked to participate in research by, for example, their caregiver (e.g., nurse, midwife or therapist) or teacher, may be persuaded to participate by factors unrelated to the research itself, rather than by any true assessment of the benefits and harms of participation. Care must be taken to ensure that this does not occur thus placing additional demands on the researcher for accuracy, candor, objectivity and sensitivity in informing potential participants about proposed research.

Therefore, researchers and Research Ethics Committees must also recognise that there are legitimate situations in which research may be opposed to the interests of the research participants. This is particularly true of research in the social sciences and the humanities that is seeking to investigate policy or organisations. For example; it may also apply to experimental studies involving a controlled group

and/or the use of placebos. While it is crucial that such research is carried out according to professional standards, it should not be blocked through the use of harms/benefits analysis, because it may not involve collaboration with the research participants or because of the potentially negative nature of the findings; negative findings may be as important as positive ones in determining future policy.

2.5 Ethical Issues within the Research Process Itself

While many of the issues highlighted below will be central to peer review they will also be considered by Research Ethics Committees, as a judgement must be made as to whether the research is justified and whether it will contribute to the generation of knowledge. This aspect of our study will, therefore, focus on the balance between the level of intrusion into the lives of the participants and the need for the new and potentially valuable information that may be obtained.

When you consider research involving human participants' issues, you need to take into account will include consideration of whether the research has been done before and whether there are consistent results in this area. This will be based on examination of the literature review and the justification of the need for the study.

Research design: Within the design of any study it is imperative that you as a researcher ensure that potential harm to participants is reduced to the minimum possible level, whether such harm is physical, psychological or social in nature. You must also acknowledge that when experimental designs are adopted, some participants may act as controls and so not receive a potentially beneficial intervention. This should be taken into account in the consent process.

Sample: Decisions related to sampling may have a significant impact on the meaning that can be attributed to the findings. The size of your sample must therefore be considered and justified to ensure that it is sufficient to provide valid and generalisable results. Where your research is designed to enhance understanding, as in the case in some qualitative studies, you must satisfactorily explain it.

Data collection: The research design largely depends on the nature of the research question(s) and/or hypothesis (es) to be tested; you must be careful to ensure that these are appropriate. Your design, in turn, will determine the methods of data collection you are to use; these must be clearly described.

A number of ethical problems can arise in determining data collection techniques, for example in studies that are reliant on covert methods of data collection (e.g. participant observation); such approaches should be used only in rare circumstances where data simply cannot be collected in any other way. Similarly, within any interview, you as the researcher must be able to demonstrate the awareness of the power relation that may exist between you and your participants and take steps to ensure that this is overcome.

Unforeseen needs: Clear plans must be in place to address particular needs that

may arise during the course of any research but which may lie outside the researcher's knowledge, skills or expertise, bearing in mind the need for confidentiality. The subject's permission must be obtained before disclosing any information to a third party.

ITQ 2

List out the ethical issues relating to research process.

ITA 2

They include research design, sample, data collection and unforeseen needs.

3.0 Tutor Marked Assignments

1. Elucidate the guiding ethical principles underpinning research

4.0 Study Session Conclusion/Summary

Research is primarily driven by the desire for new knowledge and understanding and may have a number of benefits. It may, for example, benefit research participants (e.g. improved treatments for disease/illness); research may also benefit both particular groups and society as a whole. In this study, you have learnt ethical issues relating to researcher and the research participant. The ethical principles that underpin research as well as ethical issues relating to research process have also been discussed in this session.

5.0 Self-Assessment Questions

1. Discuss the ethical issues in research that relates to the researcher.
2. Why does research with human participants require ethical approval?
3. Elucidate the guiding ethical principles underpinning research.
4. Discuss ethical issues within the research process itself.
5. Explain how ethical principles in research can be put into practice.
6. Discuss the ethical issues in research that relates to research participants?
7. How does law affect ethical issues in Nigerian academic research?
8. An attempt to draw the debit and credit side of balance sheet of ethics in research is misleading. Discuss the pros and cons of ethics in research.

9. How can a researcher adhere to ethics of the following terms while conducting a research: research design, sample, data collection, unforeseen needs?

6.0 Additional Activities (Videos, animation and self-assessment questions)

a. Visit U-tube **https://goo.gl/BrZn9j** . Watch the video & summarise in 1 paragraph

b. View the animation on **https://goo.gl/tDGyHy** and critique it in the discussion forum

7.0 References/Further Readings

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STUDY SESSION 4

Qualitative Research

Section and Subsection Headings

Introduction

1.0 Learning Outcomes

2.0 Main Content

2.1 - The Nature of Qualitative Research

2.2 - Approaches to Qualitative Research

2.2.1 - *Qualitative Approaches*

2.2.2 - Ethnography

2.2.3 - Grounded Theory

2.2.4 - Interpretative Phenomenological Analysis (IPA)

2.2.5 - Discourse Analysis

2.2.6 - Conversation Analysis

2.2.7 - Content Analysis

2.2.8 - Narrative Analysis

3.0 Tutor Marked Assignments

4.0 Study Session Conclusion/Summary

5.0 Self-Assessment Question

6.0 Additional Activities (Videos, animation and outdoor activities)

7.0 References/Further Readings

Introduction

You are welcome to study session four. Session two of this course have briefly enlightened you with the basic understanding of qualitative research. This session will further enhance your understanding of qualitative research.

Researchers working in the social sciences: psychology, sociology, anthropology etc., interested in studying human behavior and the social world inhabited by human beings, found increasing difficulty in trying to explain human behavior in quantifiable, measurable terms. Measurements tell us how often or how many people behave in a certain way, so if a research question involves exploring how much or how often something happens, it's probably appropriate to use quantitative methods.

Qualitative research attempts to broaden and/or deepen our understanding of how things came to be the way they are in our social world. If the research question involves exploring how people experience something, or what their views are, exploring a new area where issues are not yet understood or properly identified (e.g. before developing questionnaire items), assessing whether a new service is implementable, looking at 'real-life' context, or a sensitive topic where you need flexibility to avoid causing distress, your team probably needs to discuss using qualitative methodology. Acquaint yourself with the learning outcome of this session before we continue with the main content of this topic. Thank you as you do so.

1.0 Learning Outcomes

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

1. Explain what qualitative research is,
2. Know how qualitative research is undertaken,
3. Identify the appropriateness of a qualitative approach to your chosen field of investigation, and
4. Guide yourself on the collection, analysis and presentation of data.

2.0 Main Content

2.1 The Nature of Qualitative Research

All research, whether quantitative or qualitative, must involve an explicit (i.e. auditable), disciplined, systematic approach to finding things out, using the method most appropriate to the question being asked. You should give consideration to these common goals, although the differences between qualitative and quantitative research have often been exaggerated in the past. The table below summarises some of the ways in which qualitative and quantitative research do differ:



Fig 1.4.1: The Nature of Qualitative Research

Table 1.4.1: qualitative and quantitative research

Qualitative research	Quantitative research
tends to focus on how people or groups of people can have (somewhat) different ways of looking at reality (usually social or psychological reality)	tends to focus on ways of describing and understanding reality by the discovery of general “laws”
takes account of complexity by incorporating the real-world context – can take different perspectives on board	takes account of complexity by precise definition of the focus of interest and techniques that mean that external “noise” can be discounted
studies behavior in natural settings or uses people’s accounts as data; usually no manipulation of variables	involves manipulation of some variables (independent variables) while other variables (which would be considered

	to be extraneous and confounding variables) are held constant
focuses on reports of experience or on data which cannot be adequately expressed numerically	uses statistical techniques that allow us to talk about how likely it is that something is “true” for a given population in an objective or measurable sense
focuses on description and interpretation and might lead to development of new concepts or theory, or to an evaluation of an organizational process	focuses on cause & effect - e.g. uses experiment to test (try to disprove) an hypothesis
employs a flexible, emergent but systematic research process	requires the research process to be defined in advance

Source: *Field Work*

Now that you have learnt the distinction between qualitative and quantitative research, let us focus on the topic of this study session.

Qualitative research is concerned with developing explanations of social phenomena. That is to say, it aims to help us to understand the social world in which we live and why things are the way they are. It is concerned with the social aspects of our world and seeks to answer questions about:

1. Why people behave the way they do,
2. How opinions and attitudes are formed,
3. How people are affected by the events that go on around them,
4. How and why cultures and practices have developed in the way they have.

In a business or management setting, qualitative research is particularly useful where the research question involves one of the situations below and people's experiences and views are sought:

i. exploration or identification of concepts or views,
ii. exploration of “implementability”
iii. the real-life context,
iv. sensitive topics where flexibility is needed to avoid causing distress.

In the past the distinguishing features of qualitative and quantitative research have been used as criticisms by proponents of the “other” methodology. For example, one common criticism leveled at qualitative research has been that the results of a study, may not be generalizable to a larger population because the sample group was small and the participants were not chosen randomly.

However, if the original research question sought insight into a specific subgroup of the population, not the general population, because the subgroup is “special” or different from the general population and that specialness is the focus of the research, the small sample may have been appropriate. An example is the label of reductionism, based on the requirement of the experimental method to eliminate all but one measurable variable, which is used to imply criticism of quantitative methodology.

The rig our involved in a well-designed and executed experiment is a strength of quantitative research just as an alternative approach which engages with context is a strength of qualitative methodology. Look at the research projects listed below. In which projects would you expect to see a qualitative approach used and in

which projects would you expect to see a quantitative approach? What features of each research question lead to your decision?

A) A comparison of the effectiveness of drug A versus drug B in the treatment of migraine.

B) An exploration of the role of the Practice Manager in the primary health care team: a study of four practices.

C) An examination of young people's and parents' accounts of communication about cancer in childhood.

D) A national survey of the public's knowledge of the nature and extent of abuse of older people.

2.2 Approaches to Qualitative Research

One source of potential confusion is that there are many different approaches to doing qualitative research. This is because not all qualitative research questions are of the same type, and because different qualitative researchers come from a wide range of research traditions. It is important you understand this because different approaches imply different "world views", and adopting a particular approach can influence how or where you disseminate your findings (e.g. publication).

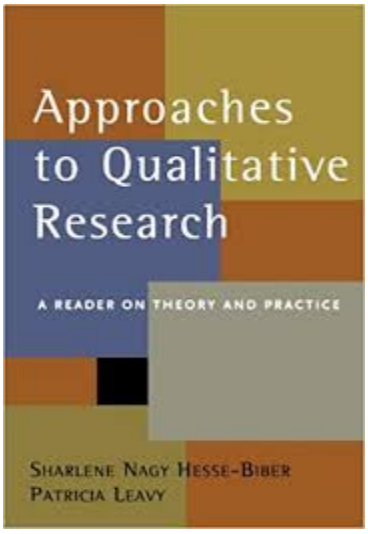


Fig 1.4.2: Approaches to Qualitative Research

Qualitative approaches

The research process will reflect the methodological approach which a team of researchers decides to adopt. Many methodological approaches are described in

terms of the type of analysis they imply, as can be seen from the list of approaches below. Different approaches also involve different sets of assumptions about what sorts of information (or knowledge) are important.

This diversity often gives rise to lively discussion among qualitative (and other) researchers. The list below gives examples, and is followed by more information about the first two on the list, plus brief details about others for those who are interested. At this stage, the most useful message to remember from this section is that there are many different types of qualitative research.

i. Ethnography,
ii. grounded theory,
iii. interpretative phenomenological analysis,
iv. discourse analysis,
v. conversation analysis,
vi. content analysis (this term can refer to a quantitative technique),
vii. narrative analysis,
viii. and others.

Ethnography

Ethnography has a background in anthropology. The term means “portrait of a people” and it is a methodology for descriptive studies of cultures and peoples.

The cultural parameter is that the people under investigation have something in common. Examples of parameters include:

i. geographical - a particular region or country
ii. religious
iii. social/familial
iv. shared experience

In health care settings, researchers may choose an ethnographic approach because they suspect that learning about the prevailing culture will help us to understand the state of patient care (or its lack). For example, the culture which prevails on a hospital ward, in the way that staff habitually carry out their roles, may contribute to errors or other factors which affect patient safety. Ethnography helps researchers to elucidate the situation, uncovering practices and developing cultural awareness and sensitivity, thereby allowing the delivery of safer patient care. An ethnographic approach was adopted in example (b) above.

Ethnographic studies entails extensive fieldwork by the researcher. Data collection techniques include both formal and informal interviewing, often interviewing individuals on several occasions, and participant or non-participant observation.
Ethnography is extremely time-consuming because it involves the researcher spending long periods of time in the field.

The researcher attempts to interpret data from the perspective of the participants(this is known as a *phenomenological* approach), at the same time as acknowledging that it is difficult to know just how far it is possible to give a “true "account of a perspective other than one’s own. This could be particularly challenging when working in a setting where the researcher has difficulty understanding the language or accent.

Grounded theory

This methodology originated with the work of Glaser and Strauss on the interactions between health care professionals and dying patients. The main feature is the development of new theory through the collection and analysis of data about a phenomenon. It is phenomenological (this means it attempts to understand how

participants make sense of their experiences and does not assume that participants' accounts refer to some verifiable reality); but it goes beyond phenomenology because the explanations that emerge are used to develop new theories. In management and social settings, the new theories can then be applied enabling us to approach existing problems in a new way.

Various data collection techniques are used to develop grounded theory, particularly interviews and observation. Literature review and relevant documentary analysis also make important contributions. Some key features of grounded theory are:

Its focus on "emergence": in theory, research should start from a position where the researcher knows nothing about what they are studying, so that all concepts truly "emerge" from the data. However, in reality, you are more likely to have specific objectives for a project, although these are unlikely to be formulated as hypothesis.

Theoretical sampling: sampling is based on theoretically relevant constructs.

Data collection and analysis proceed concurrently: in theory, data analysis should occur at the same time as data collection to allow researchers to refine the research question and data collection procedures in the light of new findings, but in reality, this is hard to achieve (e.g. because transcribing recorded interviews takes time, and analysis takes even more time).

However it is important to review transcripts as they are transcribed and to undertake informal modification of prompt guides.

Constant comparative method: this is a useful formulation of how to do qualitative analysis, and can be used separately from the other elements of grounded theory.

In-Text-Question1
List out the ethical issues relating to research process

In-Text-Answer 1
Aqualitative research is useful where the research question involves one of the situations below and people's experiences and views are sought:
Exploration or identification of concepts or views, exploration of "implementability", the real-life context and Sensitive topics where flexibility is needed to avoid causing distress.

Interpretative phenomenological analysis (IPA)

IPA has two components. It is *phenomenological,* attempting to understand how participants make sense of their experiences (it does not assume that participants 'accounts refer to some verifiable reality) but it recognizes that this involves a process of *interpretation* by the researcher. It is an approach popular in psychology and in some areas of nursing. It looks at subjective states so takes an insider perspective. It is interpretative – it recognizes negotiation between researchers and researched to produce the account of the insider's perspective, so both researcher and researched are "present".

The data are accounts, which researchers then code for emergent themes, look for connections, and construct higher order themes e.g., "depersonalization" arises as a consequence of illness. IPA is often combined with the constant comparison method and elements of content analysis.

Discourse analysis

Some of its main exponents are based in Loughborough, but there are a number of different versions. It focuses on text and talk as *social practices*. Researchers from this tradition are interested in how discourses are organized to be persuasive, or to present a particular 'world view', and would search for these patterns in the words that are used (linguistic repertoire) and the way that they are utilized (rhetorical strategies).Discourse analysis is the study of language in use, and any language use (detailed transcripts of recorded speech for example, but also texts such as newspapers, policy documents, etc.) can be considered in this way. Researchers would also be interested in the *function* of discourse as well as its content.

Discourse analysts might for example study the different ways that people view eating chocolate – do we adopt a discourse which encourages us to see ourselves as helpless chocoholics who are victims of our cravings, or one which emphasizes our ability to control the amount of chocolate we eat?

Conversation analysis

This involves studying the social organization of conversation and is concerned with establishing how that organization is achieved; as such conversation analysis might only be used with 'naturally occurring' speech and it is not an appropriate way of considering interview data (where the organization of talk is established by the formal interview process).

Conversation analysis explores how social interactions are structurally organized and does this by analyzing detailed transcripts of tape recordings, examining such things as turn-taking, lengths of pauses, inflections and so on.

Content analysis

This term often refer to a technique rooted in quantitative approaches (although seethe warning at the end of this section). The emphasis in conventional content analysis is on *counting*/*frequency* (usually absent from most other methodologies), where researchers would count occurrences of a word, phrase or theme. They would devise much specialized rules for coding (usually of a form that can be used by computers).This approach is particularly suitable when analyzing documents e.g. newspaper texts, responses to open-ended questions.

Narrative analysis

This focuses on people's narratives/stories either about themselves or a set of events. Instead of looking for themes that emerge from an account, it concentrates on the sequential unfolding of someone's story so there is an emphasis on characters. It is time-consuming and usually includes a very small number of cases.

ITQ 1

Explain content Analysis.

ITA 1

This term often refer to a technique rooted in quantitative approaches (although seethe warning at the end of this section). The emphasis in conventional content analysis is on counting/frequency (usually absent from most other methodologies), where researchers would count occurrences of a word, phrase or theme.

3.0 Tutor Marked Assignments

1. Discuss the nature of qualitative research.

4.0 Study Session Conclusion/Summary

Several types of qualitative research approaches have been outlined in this session. They do not form an exhaustive list and some research methods can be applied with either a qualitative or a quantitative orientation. Many qualitative approaches

involve looking for themes, unfortunately this means that when you are describing or reading about qualitative research, you will often come across the term "thematic analysis" without knowing exactly what type of thematic analysis was involved – it covers a very wide range of possible methodologies. Similarly, you may find that researchers use the phrase "content analysis" to refer to any sort of analysis of the content of e.g. an interview; because of this potential confusion it is good practice to report exact details.

5.0 Self-Assessment Questions

1. Explain the approaches to qualitative research.
3. You are conducting a research that requires you to use a qualitative data. Explain the methods you will employ to collect data.
4. An undergraduate student approaches you to guide him on how to draw sample on qualitative research. Discuss how you will go about it.
5. An undergraduate student approaches you to guide him on how to analyze a qualitative data. How can you aid him or her?
6. Discuss the differences between qualitative and quantitative analysis.

6.0 Additional Activities (Videos, animation and outdoor activities)

a. Visit U-tube **https://goo.gl/zaGd3a** . Watch the video & summarise in 1 paragraph

b. View the animation on **https://goo.gl/xaLw6x** and critique it in the discussion forum

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MODULE 2:

The Research Process

Content:

Study Session 1: Identifying and Formulating research problem

Study Session 2: Literature Review and Theoretical Framework

Study Session 3: Research objective and Variable Measurement

Study Session 4: The Research Design

STUDY SESSION 1

Identifying and Formulating research problem

Section and Subsection Headings

Introduction

1.0 Learning Outcomes

2.0 Main Content

- 2.1 - Identification of a Research Topic and Problems
- 2.2 - Definition of the problem
- 2.3 - Steps in formulation of a research problem
  - *2.3.1 - Statement of the Problem*
  - *2.3.2 - Operationalization of variables*
  - *2.3.3 - Evaluation of the Problem*
  - *2.3.4 - Is the problem significant?*
  - *2.3.5 - Is the problem feasible for the particular research?*

3.0 Tutor Marked Assignments

4.0 Study Session Conclusion/Summary

5.0 Self-Assessment Questions

6.0 Additional Activity (Videos, animation and outdoor activities)

7.0 References/Further Readings

Introduction

Welcome to study session one of module 2. There are practical steps through which you must pass in your research journey, in order to find answers to your research questions. The path to finding answers to your research questions constitute what we call research methodology. At each operational step in the research process, you are required to choose from a multiplicity of methods, procedures and models of research methodology which will help you to best achieve your objectives.

This session will take you through the first step of research process. More specifically, you will learn how to identify and formulate research problem and what you are to consider when you want to choose a research topic for your project. Before we begin, let us consider the learning outcome of this study session as specify below.

1.0 Learning Outcomes

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

1. Formulate your MBA research problem,
2. Discuss what to consider when choosing a research problem,
3. Highlight the steps in formulating a research problem, and
4. State the research problem of your project.

2.0 Main Content

2.1 Identification of a Research Topic and Problems

When carrying out your PGDM/MBA research project, you can identify your research topic and problems through the following:



Figure 2.1.1: Identification of a Research Topic and Problems

(1) Theory of one's own interest

(2) Daily problems

(3) Technological changes

(4) Recent trends

(5) Unexplored areas

(6) Discussion with experts and research supervisor

Suppose you are interested in the theory of nonlinear differential equations or quasi-crystals or fullerenes. Then you can find a research guide who is working in this field or interested to work in this field and then choose a problem for research. Our daily experiences and day to day affairs have rich openings on various aspects such as the daunting tasks of AIDS, air pollution, afforestation and deforestation, child labor, problems of aged citizens, etc.

Technology in various branches of science, business and marketing changes rapidly. For example, in the early years, computers were built in larger sizes with vacuum tubes. Then evolution in electronic technology replaced them by integrated circuits. Recently, scientists have developed quantum dots. Now the interest is in developing efficient, super-fast and miniaturized computing machine made up of materials whose particle size of the order of Nano (10−9) meter or even smaller. Similarly, another fascinating topic namely, thin film has multiple fields of applications. Recent research on fullerenes resulted in many practical applications.

Choosing a topic of current interest or recent trends provides bright and promising opportunities for young researchers to get post-doctoral fellowship, position in leading institutions in our nation and abroad. In each subject there are several topics which are not explored in detail, even though the topic was considered by scientists' long time ago. For example, string theory, quantum computing, Nano-particles, and quantum cloning and quantum cryptography and gene immunology are fascinating topics and are in preliminary stages.

The supervisors and experts are working on one or few fields over a long time and they are the specialists in the field considered and well versed with the development and current status of the field. Therefore, a researcher like you can make use of your expertise in knowing various possible problems, in the topic the solving of which provide better opportunities in all aspects. Do not choose a topic simply because it is fascinating. In choosing a topic you should take care of the possibility of data collection, quantity of gain, breadth of the topic and so on.

The topic should not be too narrow. For example, the study of social status and sexual life of married couples of same sex (man-man marriage and woman-woman marriage) is interesting and of social relevance. But the intricate problem here is that we do not find enough number of such couples to study. This is a very narrow topic, at the same time we will not get enough data to analyze. On the other hand, the changes in the social life of caravans in recent times are valuable social problems and one can collect enough data.

Further, you have to study advanced level text books and latest research articles to identify problems.

Is it necessary to know all the methods, techniques, concepts in a research topic before identifying a problem for investigation? This is not necessary. After learning some fundamental concepts, recent developments and current trends of a topic, you can identify a problem for research. Then you can learn the tools necessary to solve it.

In-Text-Question 1

How can we identify a research problem?

In-Text-Answer 1

We can identify your research topic and problems through the following: Theory of one's own interest, daily problems, technological changes, recent trends, unexplored areas and discussion with experts and research supervisor.

2.2 Definition of the Problem

After a problem has been selected, the next task for you is to define it in a form amenable to research. The definition of a problem amounts to specifying it in detail and narrowing it down to workable size. Each question and subordinate questions to be answered are specified at this stage and the scope and limits of investigation are determined. Usually, it is necessary to review previous studies in order to determine just what is to be done. Sometimes, while defining the problem, it is necessary to formulate the point of view or educational theory on which the research study is to be based. In case certain assumptions are made, they must be explicitly stated. Formulation of the problem includes:



Figure 2.1.2 *Definition of the Problem*

i) Stating the problem in the form of statements or questions which makes the problem clear and understandable.

ii) Identification and operationalisation of the variables concisely, and

iii) Evaluating the problem in terms of its significance, novelty and feasibility.

2.3 Steps in Formulation of a Research Problem



Figure 2.1.3: ***Steps in Formulation of a Research Problem***

Our last discussion enlightens us on the things we need to consider when selecting a research problem. This session will familiarize us on how we can formulate research problem. Working through these steps presupposes a reasonable level of knowledge in the broad subject area within which the study is to be undertaken.

If you do not have such knowledge it will be difficult for you to clearly and adequately 'dissect' a subject area.

Step 1- Identify a broad field or subject area of *interest* to you.

Step 2-*Dissect* the broad area into sub areas.

Step 3-*Select* what is of most interest to you.

Step 4- Raise research questions.

Step 5- Formulate objectives.

Step 6- Assess your objectives.

Step 7- Double check.

So far we have focused the research problem on the basis of your study, but every study in social sciences has a second element, that is the study population from which the required information to find answers to your research questions is

obtained. As you narrow the research problem, similarly you need to decide very specifically who constitutes your study population, in order to select the appropriate respondents.

Formulation of a problem

After identifying a problem, in order to solve it, it has to be defined and formulated properly. For this purpose, you can execute the following.

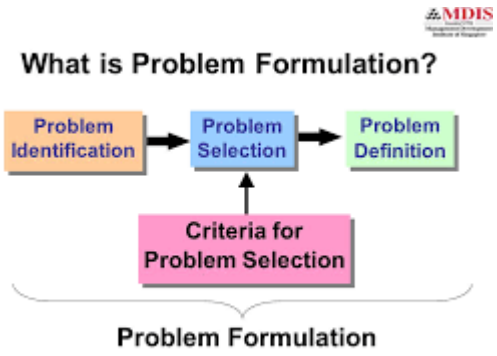


Figure 2.1.4: Formulation of a problem

i. State the problem in questionnaire form or in an equivalent form.
ii. Specify the problem in detail and in precise terms.
iii. List the assumptions made.
iv. Remove the ambiguities, if any, in the statement of the problem.
v. Examine the feasibility of a particular solution.

Let us study each step and see how we can apply them in our practical MBA research.

Defining your research problem is more important than its solution. It is a crucial part of the research study and should not be defined in a hurry. But, how do you assess whether the defined problem is a good problem? A problem in its first definition may not be appealing. It may require redefinition in order to make it a good problem. That is, by suitably rewording or reformulating the chosen problem, it can be made to meet the criteria of a good problem. This is also important to

solve the problem successfully. To this end you as a researcher can ask a series of questions on your problem. Some are:

(1) Is the problem really interesting to me and to the scientific community?

(2) Is the problem significant to the present status of the topic?

(3) Is there sufficient supervision/guidance?

(4) Can the problem be solved in the required time frame?

(5) Are there necessary equipment, adequate library and computational facilities among others?

If the answers to these questions are satisfactory, then you can initiate work on the chosen problem. In addition, discuss the problem with the current doctoral candidates and obtain the scope of the problem and other related aspects.

Statement of the problem

A good statement of a problem must clarify exactly what is to be determined or solved or what is the research question. It must restrict the scope of the study to specific and workable research questions. So, you are required to describe the background of the study, its theoretical basis and underlying assumptions, and specify the issues in concrete, specific, and workable questions. All questions raised must be related to the problem. Each major issue or element should be separated into its subsidiary or secondary elements, and these should be arranged in a logical order under the major divisions.



Figure 2.1.5: Statement of the problem

Operationalisation of variables

In stating a problem, the researcher should make sure that it is neither stated in terms so general as to make it vague nor specified so narrowly as to make it insignificant and trivial. The most important step in this direction is to specify the variables involved in the problem and define them in operational terms. To illustrate; suppose you state that you want to study the "Effectiveness of Television on the Performance of Students in Course One of Post Graduate Diploma in Distance Education offered by the Indira Gandhi National Open University". This statement is broad and it communicates in a general way what you want to do. But it is necessary to specify the problem with much greater precision. For this the first step is to specify the variables involved in the problem and define them in operational terms.

The variables involved in the problem are, "effectiveness" and "performance", please not that these expressions are to be understood beyond their dictionary meanings. For example, the dictionary meaning of "effectiveness" is "producing the desired effect". This meaning is not sufficient for research purpose. It is important for you to specify exactly what indicator of effectiveness you will use or what you will do to measure the presence or absence of the phenomenon denoted by the term "effectiveness". Similarly, you have to define the other variable "performance" also in terms of the operations or processes that will be used to measure them. In this study, you might choose to define "effectiveness" as the improvement made by the diploma students in scores on a standardised achievement test in Course One. The term 'performance' might refer to the scores on the achievement test in Course One.

It is worth nothing that the problem should be stated in a way that it indicates a relationship between two or more variables. It should involve neither philosophical issues, values nor questions of judgement that cannot be answered by scientific investigations. For example, should television be more effective in increasing performance level of students? Such value questions cannot be answered through research. Similarly, the question "what is there in television teaching that enhance performances" is a philosophical question which cannot be probed easily.

Evaluation of the problem

It is worthwhile for you to ask yourself a series of questions before you undertake the research. The questions should be helpful in the evaluation of the problem on various criteria. All such questions must be answered affirmatively before the study is undertaken. What are the questions that we should ask?

i) Is the problem researchable?

There are certain problems that cannot be effectively solved through the process of research. A researchable problem is always concerned with the relationship existing between two or more variables that can be defined and measured. The problem should be capable of being stated in the form of workable research questions that can be answered empirically.

ii) Is the problem new?

There is no use in studying a problem which has already been adequately investigated by other researchers. To avoid such duplication, it is essential to examine very carefully the literature available in the field concerned. The problem should be selected only when you are convinced that it is really a new problem which has never before been investigated successfully. However, it must be noted that a researcher may repeat a

study when he/she wants to verify its conclusions or to extend the validity of its findings in a situation entirely different from the previous one.

iii) Is the problem significant?

The problem should be such that it is likely to fill in the gaps in the existing knowledge, to help to solve some of the inconsistencies in the previous research, or to help in the interpretation of the known facts. The results or findings of a study should either become a basis for a theory, generalisations or principles. Besides, they should lead to new problems for further research or have some useful practical applications.

iv) Is the problem feasible for the particular research?

A research problem may be researchable, new or significant and yet not feasible because of the following considerations:

a. **Research Competencies:** the problem should be in an area in which the researcher is qualified and competent. He/she must possess the necessary skills and competencies that may be needed to develop and administer the data gathering tools, and interpret the data available for analysis. The researcher should also have the necessary knowledge of research design, qualitative and quantitative techniques of data analysis etc. that may be required to carry out the research to its completion.

b. **Interest and enthusiasm:** The researcher should be genuinely interested in and enthusiastic about the problem he/she wants to undertake for research.

c. **Financial considerations and feasibility:** The problem should be financially feasible. The researcher should ascertain whether he/she has the necessary financial and temporal resources to carry on the study. Each project has a cost, particularly in the case of projects where students are dispersed. The cost is an important element in feasibility. It is important to estimate the cost of the project and assess the availability of funds. This will determine whether the project can be actually executed.

d. **Administrative considerations:** In addition to personal limitations, financial and time constraints, the researcher should also consider the administrative facilities that are needed to complete the study successfully. He/she should check whether he/she is able to get the cooperation from various administrative authorities for collecting various types of data.

e. **Times:** projects are a time bound exercise. Most of you if not all are already engaged in more than one activity in office, at home and at completing a study.

For instance, if you wish to study instructional transactions in personal contact programmes, your project must be timed so that you can actually observe a series of sessions in personal contact programmes.

ITQ 2

What are the steps involved in formulating research problem?

ITA 2

The steps are: Identify a broad field or subject area of interest to you, dissect the broad area into sub areas, Select what is of most interest to you, raise research questions, formulate objectives, and assess your objectives and double check.

3.0 Tutor Marked Assignments

As an PGDM/MBA student in the final year, you want to embark on your research journey, explain to us how you can identify a research topic and problems

4.0 Study Session Conclusion/Summary

There are practical steps through which you must pass in your research journey in order to find answers to your research questions. The path to finding answers to your research questions constitutes what we call Research Methodology. At each operational step in the research process you are required to choose from a multiplicity of methods, procedures and models of research methodology which will help you to best achieve your objectives.

The definition of a problem amounts to specifying it in detail and narrowing it down to workable size. Each question and subordinate questions to be answered are specified at this stage and the scope and limits of investigation are determined. In this session, you have learnt how to identify and formulate research problem and what you are to consider when you want to choose a research topic for your project.

5.0 Self-Assessment Questions

1. As an PGDM/MBA student in the final year, you want to embark on your research journey, explain to us how you can identify a research topic and problems.
2. Assuming that this topic is approved by your supervisor without any adjustment, define the practical and theoretical problem of the topic you have identified.

3. Discuss the steps you will follow in formulation of the research problem you have identified in question 1 above.
4. Evaluation the Problem of the topic you have identified.
5. Discuss how you can relate the dependent and independent variables of your topic to your research problems.
6. Explain how your research topic and problem has linkage to societal benefit. Who will benefit if you successfully find solution to your research problem?
7. Discuss the research design that best address your research problem.

6.0 Additional Activities (Videos, animation and outdoor activities)

a. Visit U-tube **https://goo.gl/RVknVc** . Watch the video & summarise in 1 paragraph

b. View the animation on **https://goo.gl/SP54pN** and critique it in the discussion forum

7.0 References/Further Readings

Salkind, N. J. (2017). *Exploring Research (9th Ed.)*. Boston, MA: Pearson.

Gliner, J. A., Morgan, G. A. & Leech, N. L. (2016). *Research Methods in Applied Settings: An Integrated Approach to Design and Analysis*, (3rd Ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

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STUDY SESSION 2

Literature Review and Theoretical Framework

Section and Subsection Headings

Introduction

1.0 Learning Outcomes

2.0 Main Content

1.1 - Review of Literature

2.2 - Search for existing literature

2.2.1 - Books

2.2.2 - Journals

2.3 - Review the literature selected

2.4 - Develop a theoretical framework

3.0 Tutor Marked Assignments

4.0 Study Session Conclusion/Summary

5.0 Self-Assessment Question

6.0 Additional Activities (Videos, animation and outdoor activities)

7.0 References/Further Readings

Introduction

Welcome to study session 2. As we said earlier, there are practical steps through which you must pass while undertaking your research project in order to find answers to your research questions. Extensive literature review is the second step you need to follow. Thus, this session will take you through the second step of research process. More specifically, you will learn how to review literature and develop theoretical framework for your PGDM/MBA project. Let us take a break to see the learning outcome of this study session before we continue.

1.0 Learning Outcomes

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

1. Review literature for your PGDM/MBA project
2. Critique previous study and take a position
3. Search for existing literature
4. Develop theoretical framework for your PGDM/MBA project

2.0 Main Content

2.1 Review of Literature

The next step after you have formulated your research problem is to do an extensive review of literature and this constitutes:



Figure 2.2.1: *Review of Literature*

i. Essential preliminary task in order to acquaint yourself with the available body of knowledge in your area of interest.

ii. Literature review is an integral part of the entire research process and makes valuable contribution to every operational step.

iii. Reviewing literature can be time-consuming, daunting and frustrating, but is also rewarding.

It is very important you review literature because of the role it plays in research. Its functions are:

a. Bring clarity and focus to your research problem;

b. Improve your methodology;

c. Broaden your knowledge;

d. Contextualize your findings.

Now, let us study them one after another;

a. **Bring clarity and focus to your research problem**

The process of reviewing the literature help you to understand the subject area better and thus enable you to conceptualize your research problem clearly and precisely. It also help you to understand the relationship between your research problem and the body of knowledge in the area.

b. **Improve your methodology**

A literature review tells you if others have used procedures and methods similar to the ones that you are proposing, which procedures and methods have worked well for them, and what problems they have faced with them. Thus you will be better positioned to select a methodology that is capable of providing valid answers to your research questions.

c. **Broaden your knowledge base in your research area**

It ensures that you read widely around the subject area in which you intend to conduct your research study. As you are expected to be an expert in your area of study, it helps fulfill this expectation. It also help you to understand how the findings of your study fit into the existing body of knowledge.

d. **Contextualize your findings**

How do answers to your research questions compare with what others have found? What contribution have you been able to make to the existing body of knowledge? How are your findings different from those of others? For you to be able to answer these questions, you need to go back to your literature review. It is important to place your findings in the context of what is already known in your field of enquiry.

Haven learned all we have discussed, it is important at this point you know how to review literature before you start your PGDM/MBA research project. The procedure for reviewing the literature include:

i. Search for existing literature in your area of study;

ii. Review the literature selected;

iii. Develop a theoretical framework;

iv. Develop a conceptual framework.

Let us proceed to discuss these basic procedures so as to enhance our understanding of the subject matter.

2.2 Search for existing literature

i. To effectively search for literature in your field of enquiry, it is imperative that you have in mind at least some idea of broad subject area and of the problem you wish to investigate, in order to set parameters for your search.

ii. Next compile a bibliography for this broad area. This can be sourced from books and journals.

Books

Books comprise a central part of any bibliography. Its advantage is that material published generally is of good quality and the findings are integrated with other research to form a coherent body of knowledge. On the other hand, its disadvantage is that material is not completely up to date, as it can take a few years between the completion of a work and publication in the form of a book. Search for books in your area of interest, prepare a final list, locate these books in the

libraries or borrow from other sources. Examine their content, if contents are not found to be relevant to your topic, delete it from your reading list.

Journals

Journals provide you with the most up-to-date information, even though there is a gap of two to three years between the completion of a research project and the publication in a journal. Just like books, you need to prepare a list of journals for identifying literature relevant to your study. This can be done thus:

i. Locate the hard copies of the journal that are appropriate to your study;
ii. Use the internet;
iii. Look at the index of research abstracts in the relevant field to identify and read the articles.

Whichever method you choose, first identify the journals you want to look at in detail for your review of literature. Select the latest issue; examine its content page to see if there is an article of relevance to your research topic. If you feel a particular article is of relevance to you, read it's abstract. If you think you are likely to use it, photocopy or prepare a summary and record it for reference or later use.

2.3 Review the literature selected

After identifying books and articles as useful, the next step is to start reading them critically to pull together themes and issues that are associated. If you do not have a theoretical framework of themes in mind to start with, use separate sheets of paper for each article or book. Once you develop a rough framework, slot the findings from the material so far reviewed into that framework, using a separate sheet of paper for each theme of that frame work. As you read further, go on

slotting the information where it logically belongs under the theme so far developed. You may need to add more themes as you go.



Figure 2.2.2: ***Review the literature selected***

Read critically with particular reference to the following aspects:

i. Note whether the knowledge relevant to your theoretical framework is confirmed beyond doubt.

ii. Note the theories put forward, the criticisms of these and their basis, the methodologies adopted and the criticisms of them.

iii. Examine to what extent the findings can be generalised to other situations.

iv. Ascertain the areas in which little or nothing is known. That is the gaps that exist in the body of knowledge

In-Text-Question 1

Why is it important to review literature in research?

In-Text-Answer 1

Literature review is important because it brings clarity and focus to your research problem; it improves your methodology; it broadens your knowledge; and it contextualise your findings.

2.4 Develop a Theoretical Framework

As you have limited time, it is important to set parameters by reviewing the literature in relation to some main themes pertinent to your research topic. As you start reading the literature, you will realize that it deals with a number of aspects that have a direct `and indirect bearing on your research topic. Use these aspects as a basis for developing your theoretical framework. Until you go through the

literature you cannot develop a theoretical framework and until you have developed a theoretical framework, you cannot effectively review the literature.

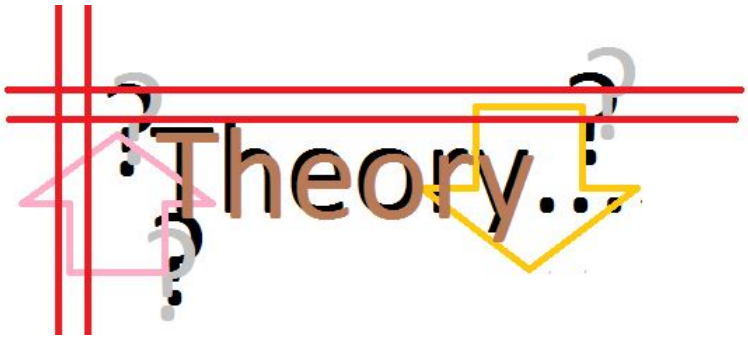


Figure 2.2.3: Develop a Theoretical Framework

Literature pertinent to your study may deal with two types of information:

i. universal;
ii. more specific(i.e. local trends or specific programme)

In writing about such information, you should start with the general and gradually narrowing down to the specific.

Writing up the literature reviewed

In order for you to comply with the first function of literature review i.e. to provide theoretical background to your study, you should:

i. List the main themes that have emerged while reading literature.
ii. Convert them into subheadings. These subheadings should be precise, descriptive of the theme in question, and follow a logical progression.
iii. Now, under each subheading, record the main findings with respect to the theme in question, highlighting the reasons for and against an argument if they exist, and identify gaps and issues.

In order to comply with the second function of literature review i.e. contextualizing the findings of your study, you are requires to systematically compare your findings with those made by others. Quote from these studies to show how your findings contradict, confirm or add to them. It places your findings in the context

of what others have found out. This function is undertaken when writing about your findings i.e. after analysis of your data.

ITQ 2

What is theoretical framework?

ITA 2

Theoretical framework has to do with the review of theories that are related to the research work.

3.0 Tutor Marked Assignments

1. Discuss the reasons why it is important for a researcher to review literature

4.0 Study Session Conclusion/Summary

To effectively search for literature in your field of enquiry, it is imperative that you have in mind at least some idea of broad subject area and of the problem you wish to investigate, in order to set parameters for your search. Next, compile a bibliography for this broad area. This can be sourced from books and journals. In this study, you have learnt how to review literature, importance of literature review and how to develop theoretical framework.

5.0 Self-Assessment Questions

1. Explain what constitutes extensive review of literature.
2. Discuss the reasons why it is important for a researcher to review literature.
3. As a researcher who is ready to review literature on an area of interest, elucidate the procedures you will follow in reviewing the literature.
4. Explain how a researcher can critique a published journal if he/she is reviewing the article.
5. Discuss the concept of theoretical framework and highlight its features.
6. Distinguish between theoretical framework and conceptual framework.

7. How does a theoretical framework differ from a research model?
8. Highlight the distinguishing features of a theory and a model.

6.0 Additional Activity (Videos, animation and outdoor activities)

a. Visit U-tube **https://goo.gl/BFgs7j**. Watch the video & summarise in 1 paragraph

b. View the animation on **https://goo.gl/2LnXdo** and critique it in the discussion forum

7.0 References/Further Readings

Salkind, N. J. (2017). *Exploring Research (9th Ed.)*. Boston, MA: Pearson.

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STUDY SESSION 3

Research objective and Variable Measurement

Section and Subsection Headings

Introduction

1.0 Learning Outcomes

2.0 Main Content

- 2.1 - Formulation of Research Objectives
- 2.2 - Characteristics of Objectives
- 2.3 - The definition of a variable
  - 2.3.1 - The difference between a concept and a variable:
  - 2.3.2 - Concepts, *indicators* and variables:
- 2.4 - Types of measurement scales:
  - *2.4.1 - The nominal or classificatory scale:*
  - *2.4.2 - The ordinal or ranking scale*
  - *2.4.3 - The interval scale*
  - *2.4.4 - The ratio scale*
  - *2.4.5 - Constructing hypotheses*
  - *2.4.6 - The functions of hypotheses*

3.0 Tutor Marked Assignments

4.0 Study Session Conclusion/Summary

5.0 Self-Assessment Question

6.0 Additional Activity (Videos, animations and outdoor activities)

7.0 References/Further Readings

Introduction

We have mentioned before that your research project required some practical steps you must follow, in order to find solution to your research problem. After you have

identified and formulated your research problem and you have reviewed literature on the subject area, the next step is for you to formulate your research objectives and know how to measure your dependent and independent variables. In this session, you will learn how to formulate research objective, characteristics of good objectives, how to operationalize both dependent and independent variables, as well as how to use different scales of measurement to measure your research variables. Let us take a break to see the learning outcome of this study session before we continue.

1.0 Learning Outcomes

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

1. Formulate your PGDM/MBA research objectives
2. Distinguish between concept and variable
3. Operationalise your PGDM/MBA research variables
4. Use the appropriate scale of measurement for your project

2.0 Main Content

2.1 Formulation of Research Objectives

Haven gone this far, you are expected to formulate your objectives. It refers to the goals you set out to attain in your study. They inform a reader what you want to attain through the study. It is extremely important to word them clearly and specifically. Your objectives should be listed under two headings:

i. Main objectives (aims);
ii. Sub-objectives.



Figure 3.3.1: ***Formulation of Research Objectives***

iii. The main objective is an overall statement of the thrust of your study. It is also a statement of the main associations and relationships that you seek to discover or establish.

iv. The sub-objectives are the specific aspects of the topic that you want to investigate within the main framework of your study.

   a. They should be numerically listed.
   b. Wording should be clear, complete and specific.
   c. Communicate to your readers your intention.
   d. Each objective should contain only one aspect of the study.
   e. Use action oriented words or verbs when writing objectives.
   f. The objectives should start with words such as ‘to determine’, ‘to find out’, ‘to ascertain’, ‘to measure’, ‘to explore’ etc.

The wording of objectives determines the type of research (descriptive, correlational and experimental) and the type of research design you need to adopt to achieve them. E.g. Descriptive studies may be:

i. To describe the types of incentives provides by Hotel XYZ to employees in Mumbai.

ii. To find out the opinion of the employees about the medical facilities provided by five star hotels in Mumbai.

Correlational studies may be:

i. To ascertain the impact of training on employee retention.

ii. To compare the effectiveness of different loyalty programmes on repeat clientele.

Hypothesis –testing studies may be:

i. To ascertain if an increase in working hours will increase the incidence of drug/alcohol abuse.
ii. To demonstrate that the provision of company accommodation to employees in
iii. Mumbai hotels will reduce staff turnover.

2.2 Characteristics of Objectives



Figure 2.3.2: ***Characteristics of Objectives***

Clear +Complete +Specific + Identify main + Identify the variables to direction of correlated relationship.

Identifying Variables:

In a research study it is important that the concepts used should be operationalized in measurable terms, so that the extent of variations in respondents' understanding is reduced if not eliminated.

Techniques about how to operationalize concepts, and knowledge about variables, play an important role in reducing this variability. Their knowledge, therefore is important in 'fine tuning' your research problem.

For example:

i. 'Jet Airways' is a perfect example of *quality* cabin service.
ii. Food in this restaurant is *excellent.*
iii. The middle class in India is getting more *prosperous.*

You see, when people express these feelings or preferences, they do so on the basis of certain criteria in their minds. Their judgment is based upon indicators that lead them to conclude and express that opinion.

These are *judgments* that require a sound basis on which to proclaim. This warrant the use of a measuring mechanism and it is in the process of measurement that knowledge about *variables* plays an important role.

In-Text-Question 1

Explain how research objective is formulated?

In-Text-Answer 1

Your objectives should have the main objective and specific objectives.

i. *The main objective is an overall statement of the thrust of your study. It is also a statement of the main associations and relationships that you seek to discover or establish.*

ii. *The sub-objectives are the specific aspects of the topic that you want to investigate within the main framework of your study.*

2.3 The Definition of a Variable

An image, perception or concept that can be measured – hence capable of taking on different values- is called a variable. To this end, it is very important for you to know the difference between a concept and a variable

The difference between a concept and a variable:

Concepts are mental images or perceptions and therefore their meaning varies markedly from individual to individual. A concept cannot be measured whereas a variable can be subjected to measurement by crude/refined or subjective/objective

units of measurement. It is therefore important for the concept to be converted into variables.

Concepts, *indicators* and variables:

If you are using a concept in your study, you need to consider its operationalization. That is, how it will be measured. For this, you need to identify indicators- a set of criteria reflective of the concept which can then be converted into variables. The choice of indicators for a concept might vary with researchers, but those selected must have a logical link with the concept.

2.4. Types of measurement scales:

Now that you have understood the difference between variable and concept, we must continue to see and know how variables are measured using scales. Measurement is central to any enquiry. The greater the refinement in the unit of measurement of a variable, the greater the confidence, all things being equal that one can place in the findings. S.S. Stevens has classified the different types of scales into four categories:

i. Nominal or classificatory scale
ii. Ordinal or ranking scale
iii. Interval scale
iv. Ratio scale

Let us study each of this scale so that you will be able to use any of them more effectively, when undertaking your research projects.

The nominal or classificatory scale:

A nominal scale enables the classification of individuals, objects or responses into subgroups based on a common/shared property or characteristic. A variable measured on a nominal scale may have one, two or more subcategories depending on the extent of variation. For example, '*water*' or '*tree*' have only one subgroup, whereas the variable "*gender*" can be classified into two sub-categories: *male and female.* '*Hotels*' can be classified in to ---- sub-categories. The sequence in which subgroups are listed makes no difference as there is no relationship among subgroups.

The ordinal or ranking scale

Do you understand the nominal scale? Now, let us see what the ordinal scale is all about. Besides categorizing individuals, objects, responses or a property into subgroups on the basis of common characteristic, it ranks the subgroups in a certain order. *They are arranged either in ascending or descending order according to the extent a subcategory reflects the magnitude of variation in the variable.* For example, 'income' can be measured either quantitatively (in rupees and paise) or qualitatively using subcategories 'above average', 'average' and 'below average'. The 'distance' between these subcategories are not equal as there is no quantitative unit of measurement. 'Socioeconomic status' and 'attitude' are other variables that can be measured on ordinal scale.

The interval scale

You have learnt the first two types of measurement scales. The next scale we will look at in this session is the interval scale. An interval scale has all the characteristics of an ordinal scale. In addition, it uses a unit of measurement with an arbitrary starting and terminating points. *For example*, Celsius scale: 0*C to

100*C, Fahrenheit scale: 32*F to 212*F, Attitudinal scales: 10-20, 21-30, 31-40 etc.

The ratio scale

The last scale you will learn in this session is the ratio scale. A ratio scale has all the properties of nominal, ordinal and interval scales plus its own property: *the zero point of a ratio scale is fixed, which means it has a fixed starting point.* Since the difference between intervals is always measured from a zero point, this scale can be used for mathematical operations. The measurement of variables like income, age, height and weight are examples of this scale. A person who is 40 years old is twice as old as one who is 20 years old. Is that statement true? Keep your answer to yourself and let us continue with our discussion of next sub-heading.

Constructing hypotheses

As a researcher you *do not know* about a phenomenon, but you *do have a hunch* to form the basis of certain *assumption or guesses.* You test these by collecting information that will enable you to conclude, if your hunch was right.

The verification process can have one of the three outcomes. Your hunch may prove to be: right; partially right; or wrong. Without this process of verification, you cannot conclude anything about the validity of your assumption.

Hence, a hypotheses is a hunch, assumption, suspicion, assertion or an idea about a phenomenon, relationship or situation, the reality or truth of which you do not know. A researcher calls these assumptions/ hunches hypotheses and they become the basis of an enquiry. In most studies the hypotheses will be based upon your own or someone else's observation. Hypotheses bring clarity, specificity and focus

to a research problem, but are not essential for a study. You can conduct a valid investigation without constructing formal hypotheses.

The functions of hypotheses

Now that you know what hypothesis is all about, it is time for us to figure out the important roles hypothesis play in scientific research study. They are highlighted as follows:

i. The formulation of hypothesis provides a study with focus. It tells you what specific aspects of a research problem to investigate.
ii. A hypothesis tells you what data to collect and what not to collect, thereby providing focus to the study.
iii. As it provides a focus, the construction of a hypothesis enhances objectivity in a study.
iv. A hypothesis may enable you to add to the formulation of a theory. It enables you to specifically conclude what is true or what is false.

ITQ 2

Enumerate the various scales of measurement in scientific study.

ITA 2

The scales used in measuring variables in research are: The ratio scale, the interval scale, the nominal scale and the ordinal scale.

3.0 Tutor Marked Assignments

1. Relate variable to concept and discuss how indicator mediate their relationship.

4.0 Study Session Conclusion/Summary

Research objectives refers to the goals you set out to attain in your study. They inform a reader what you want to attain through the study. Variable can be seen as

an image, perception or concept that can be measured. In this session, you have learnt how to formulate research objectives, characteristics of good objectives, how to operationalize both dependent and independent variables as well as how to use different scales of measurement for your research variables.

5.0 Self-Assessment Questions

1. Discuss the concept of research objective.
2. Explain the characteristics of a good research objective.
3. Relate variable to concept and discuss how indicator mediate their relationship.
4. Discuss the classification of measurement scale as suggested by S.S. Stevens.
5. What is hypothesis and how can you formulate a research hypothesis?
6. Discuss the important roles a hypothesis play in scientific research.
7. What are the distinguishes a measurement scale and Likert scale?

6.0 Additional Activities (Videos, animation and outdoor activities)

a. Visit U-tube **https://goo.gl/VdQRrM**. Watch the video & summarise in 1 paragraph

b. View the animation on **https://goo.gl/9fjBGz** and critique it in the discussion forum

7.0 References/Further Readings

Salkind, N. J. (2017). *Exploring Research (9th Ed.)*. Boston, MA: Pearson.

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STUDY SESSION 4

The Research Design

Section and Subsection Headings

Introduction

1.0 Learning Outcomes

2.0 Main Content

2.1 - The Research Design

2.1.1 - Preparing the Research Design

2.1.2 - Objectives of the Research Study:

2.1.3 - Methods of Data Collection:

2.2 - Methods of Primary Data Collection

2.2.1 - Observation Method

2.2.2 - Survey Method

2.2.3 - Contact Methods:

2.2.4 - Experimental Method

3.0 Tutor Marked Assignments

4.0 Study Session Conclusion/Summary

5.0 Self-Assessment Questions

6.0 Additional Activities (Videos, animation and outdoor activities)

7.0 References/Further Readings

Introduction

I hope you are enjoying the interaction. Please do enjoy it because learning in this class is a pleasure and not an ordeal. We are still on the steps you need to follow while conducting your PGDM/MBA research. After you have successfully formulated your research objectives and known how to measure your dependent

and independent variables. The next step is to define your research design. In this session, you will learn how to prepare a research design, various methods of data collections, their advantages and disadvantages. However, it will be more informed if we first of all know the learning outcome of this study session before we continue.

1.0 Learning Outcomes

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

1. Structure your PGDM/MBA research design
2. Explain the observation method of data collection
3. Discuss the survey method of data collection
4. Interview your research participants during your PGDM/MBA research

2.0 Main Content

2.1 The Research Design

Plan your work and work your plan is the suggestion of Napoleon Hill. For a scientific research, one has to prepare a research design. It should indicate the various approaches to be used in solving the research problem, sources and information related to the problem and, time frame and the cost budget. Essentially, the research design creates the foundation of the entire research work.



Figure 2.4.1: *The Research Design*

The design will help perform the chosen task easily and in a systematic way. Once the research design is completed the actual work can be initiated. The first step in the actual work is to learn the facts pertaining to the problem. Particularly, theoretical methods, numerical techniques, experimental techniques and other relevant data and tools necessary for the present study have to be collected and learnt. It is not necessary that every theory, technique and information in the topic of research is useful for a particular problem. A researcher has to identify and select materials which are useful to the present work.

Further, the validity and utility of the information gathered should be tested before using them. Scientific research is based on certain mathematical, numerical and experimental methods. These sources have to be properly studied and judged before applying them to the problem of interest.

Preparing the research design

The next step we will look at is how you will develop your PGDM/MBA research design. Your research design is the conceptual structure within which you will conduct your research. The function of research design is to provide for the collection of relevant information with minimal expenditure of effort, time and money. For you to prepare a research design that will be appropriate for research problem, you must consider the following:

1. Objectives of the research study,
2. Method of data collection to be adopted,
3. Source of information—sample design,
4. Tool for data collection,
5. Data Analysis- qualitative and quantitative.

Let us study them one after the other to learn how we can better formulate our individual research design.

1. **Objectives of the research study:** The objectives you identified to answer your research questions have to be listed, making sure that they are numbered and statement begins with an action verb.

2. **Methods of data collection:** There are two types of data you can use for your research. They include:

   i. Primary Data: collected for the first time
   ii. Secondary Data: those which have already been collected and analyzed by someone else.

Now that you know primary and secondary sources of data collection, how or through what means can you gather the data you need for your study? Let us start with the primary method of data collections.

In-Text-Question 1

What is a research design?

In-Text-Answer 1

Research design is the methodology of research that show the various approaches to be used in solving the research problem, sources and information related to the problem and, time frame and the cost budget. Essentially, the research design creates the foundation of the entire research work.

2.2 Methods of Primary Data Collection



Figure 2.4.2: *Methods of Primary Data Collection*

Primary data can be gathered through observation method, survey method, contact

methods, experimental method among others. Let us learn how and where we can use them one by one.

1. Observation method

This method is commonly used in behavioral sciences. It is the gathering of primary data by investigator's own direct observation of relevant people, actions and situations without asking from the respondent. e.g.

i. A hotel chain sends observers posing as guests into its coffee shop to check on cleanliness and customer service.
ii. A food service operator sends researchers into competing restaurants to learn menu items prices, check portion sizes and consistency and observe point-of purchase merchandising.
iii. A restaurant evaluates possible new locations by checking out locations of competing restaurants, traffic patterns and neighborhood conditions.

Observation can yield information which people are normally unwilling or unable to provide. E.g. observing numerous plates containing uneaten portions - the same menu items indicates that food is not satisfactory.

Types of observation:

1. Structured – for descriptive research
2. Unstructured—for exploratory research
3. Participant Observation
4. Non- participant observation
5. Disguised observation

Mutations:

i. Feelings, beliefs and attitudes that motivate buying behavior and infrequent behaviour cannot be observed.
ii. Expensive method. This often makes researchers to supplement observation with survey research.

2. Survey method

This is an approach that is most suited for gathering descriptive information. Just like observation, survey method of data collection can be:

Structured Surveys: use formal lists of questions asked of all respondents in the someway.

Unstructured Surveys: this allows the interviewer to probe respondents and guide the interview according to their answers.

Survey research may be direct or indirect.

Direct Approach: The researcher asks direct questions about behaviors and thoughts. E.g., why don't you eat at MacDonald's?

Indirect Approach: The researcher might ask: "What kind of people eat at MacDonald's?"

From the response, the researcher may be able to discover why the consumer avoids MacDonald's. It may suggest factors of which the consumer is not consciously aware.

Advantages:

i. Survey method of data collection can be used to collect many different kinds of information.

ii. Survey method of data collection is quick and low cost as compared to observation and experimental method.

Limitations:

i. The survey approach allows respondent's reluctance to answer questions asked by unknown interviewers about things they consider private.

ii. Busy people may not want to take the time to answer the questions.

iii. The respondent may try to help by giving pleasant answers.

iv. Unable to answer because they cannot remember or never gave a thought to what they do and why.

v. The respondent may answer in order to look smart or well informed.

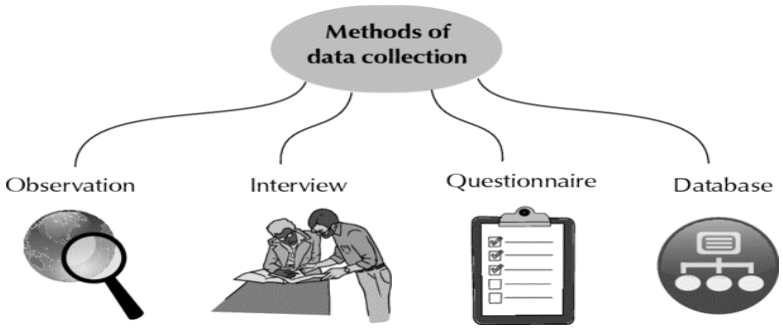


Figure 2.4.3: ***Methods of Primary Data Collection***

3. Contact Methods:

This method of data collection allows information to be collected through

Mail

Telephone

Personal interview

Mail Questionnaires:

Advantages:

i. This approach can be used to collect large amounts of information at a low cost per respondent.

ii. The respondents may give more honest answers to personal questions on a mail questionnaire.
iii. No interviewer is involved to bias the respondent's answers.
iv. This method is convenient for respondents who can answer when they have time.
v. This approach is a good way to reach people who often travel.

Limitations:

i. This approach is not flexible
ii. It take longer to complete than telephone or personal interview
iii. Response rate is often very low
iv. Researcher has no control over who answers

Telephone interviewing:

Advantages:

i. This method is quick
ii. It is more flexible as interviewer can explain questions not understood by the respondent
iii. Depending on respondent's answer, they can skip some questions and probe more on others
iv. It allows greater sample control
v. Response rate tends to be higher than mail

Drawbacks:

i. Cost per respondent is higher
ii. Some people may not want to discuss personal questions with interviewer
iii. Interviewer's manner of speaking may affect the respondent's answers
iv. Different interviewers may interpret and record response in a variety of ways

v. Under time pressure ,data may be entered without actually interviewing

Personal interviewing:

This approach is very flexible and can be used to collect large amounts of information. Trained interviewers can hold the respondent's attention and are available to clarify difficult questions. They can guide interviews, explore issues, and probe as the situation requires. Personal interview can be used in any type of questionnaire and can be conducted fairly quickly. Interviewers can also show actual products, advertisements, packages and observe and record their reactions and behavior.

Personal interviewing is further subdivided into two. They are:
Individual; otherwise called intercept interviewing and Group; which is also called focus group interviewing.
Let us study how we can utilize them in our research approach.

Intercept interviewing:

This type of interview is widely used in tourism research.

i. It allows researcher to reach known people in a short period of time.
ii. Is the only method of reaching people whose names and addresses are unknown?
iii. It involves talking to people at homes, offices, on the street, or in shopping malls.
iv. Interviewer must gain the interviewee's cooperation.
v. Time involved may range from a few minutes to several hours (for longer surveys compensation may be offered)

vi. It involves the use of *judgmental sampling* i.e. interviewer has guidelines as to whom to "intercept", such as 25% under age 20 and 75% over age 60

Drawbacks:

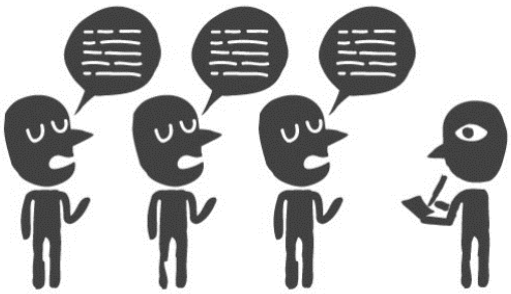


Figure 2.4.4: ***Drawbacks***

i. This method often gives room for error and bias on the part of the interviewer who may not be able to correctly judge age, race etc.

ii. Interviewer may be uncomfortable talking to certain ethnic or age groups.

Focus group interviewing:

It is rapidly becoming one of the major research tools to understand people's thoughts and feelings. It is usually conducted by inviting six to ten people to gather for a few hours with a trained moderator to talk about a product, service or organization. The meeting is held in a pleasant place, and refreshments are served to create a relaxed environment. The moderator needs objectivity, knowledge of the subject and industry, and some understanding of group and consumer behavior. The moderator starts with a broad question before moving to more specific issues, encouraging open and easy discussion to bring out true feelings and thoughts. At the same time, the interviewer focuses the discussion, hence the name focus group interviewing.

Advantage

It is often held to help determine the subject areas on which questions should be asked in a later, large-scale, structured-direct interview. Comments are recorded through note taking or videotaped and studied later to understand consumer'

buying process. This method is especially suited for managers of hotels and restaurants, who have easy access to their customers. E.g. some hotel managers often invite a group of hotel guests from a particular market segment to have a free breakfast with them. Managers get the chance to meet the guests and discuss what they like about the hotel and what the hotel could do to make their stay more enjoyable and comfortable. The guests appreciate this recognition and the manager gets valuable information. Restaurant managers use the same approach by holding discussion meetings over lunch or dinner.

Drawbacks

i. **Cost:** may cost more than telephone survey
ii. **Sampling:** group interview studies keep small sample size to keep time and cost down, therefore; it may be difficult to generalise from the results
iii. Interviewer biasness is possible

4. Experimental method

Also called *Empirical Research* or *Cause and Effect Method*, it is a data-based research, coming up with conclusions which are capable of being verified with observation or experiment. Experimental research is appropriate when proof is sought that certain variables affect other variables in some way. *e.g.*

-Tenderisers (independent variable) affect cooking time and texture of meat (dependent variable).

- The effect of substituting one ingredient in whole or in part for another such as soya flour to flour for making high protein bread

-Develop recipes to use products

Such research is characterized by the experimenter's control over the variables understudy and the deliberate manipulation of one of them to study its effects.

In such a research, it is necessary to get at facts first hand, at their source, and actively go about doing certain things to stimulate the production of desired information.

i. Researcher must provide self with a *working hypothesis* or guess as to the probable results.
ii. Then work to get enough facts (data) to prove or disprove the hypothesis.
iii. He then sets up experimental designs which he thinks will manipulate the persons or the materials concerned, so as to bring forth the desired information.

Evidence gathered through experimental or empirical studies today is considered to be the most powerful support possible for a given hypothesis.

ITQ 2

How do we collect data using primary source?

ITA 2

Method of collecting primary data include: Observation, interview, questionnaire, contact and experimental methods.

3.0 Tutor Marked Assignments

1. In your own understanding, what is research design?

4.0 Study Session Conclusion/Summary

Research design has to do with the various approaches to be used in solving the research problem, sources and information related to the problem and, time frame and the cost budget. Essentially, the research design creates the foundation of the

entire research work. The design will help perform the chosen task easily and in a systematic way. Once the research design is completed, the actual work can be initiated. In this session, you have learnt how to prepare a research design and various methods of data collections. There advantages and disadvantages are also discussed in this session.

5.0 Self-Assessment Questions

1. In your own understanding, what is research design?
2. Choose a research topic and discuss the research design that will be appropriate for addressing the research problem.
3. Discuss the considerations that need to be followed in preparing the research design.
4. Assuming you are undertaking research that requires you to use primary data in you analysis. Discuss the available method you can use.
5. Choose a research topic and explain why survey research design is more appropriate for the study. Explain the instrument you can use to collect the data for the chosen topic.
6. Discuss the types of survey research design and explain the difference between cross sectional and longitudinal survey.
7. *Explain the advantages and disadvantages of various methods of collecting primary data.*

6.0 Additional Activities (Videos, animation and outdoor activities)

a. Visit U-tube **https://goo.gl/FZYMyS**. Watch the video & summarise in 1 paragraph

b. View the animation on **https://goo.gl/vj74F7** and critique it in the discussion forum

7.0 References/Further Readings

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MODULE 3:

Data Presentation and Analysis

Content:

Study Session 1: Sample Design and Instrument for Data Collection

Study Session 2: Data Collection and Analysis

Study Session 3: Reporting Research Findings

Study Session 4: The Research Hypothesis

STUDY SESSION 1:

Sample Design and Instrument for Data Collection

Section and Subsection Headings

Introduction

1.0 Learning Outcomes

2.0 Main Content

2.1 - Determining Sample Design

2.2 - Types of Samples

2.2.1 - Probability Samples

2.2.2 - Non Probability Samples

2.3 - Tool for Data Collection (Research Instruments)

2.4 - The Questionnaire:

2.4.1 - Closed –ended Questionnaire:

2.4.2 - Open-ended Questionnaire:

2.4.3 -Combination of both:

2.4.4 - Piloting the Questionnaire

3.0 Tutor Marked Assignments

4.0 Study Session Conclusion/Summary

5.0 Self-Assessment Question

6.0 Additional Activities (Videos, animations and outdoor activity

7.0 References/Further Readings

Introduction

This session is a continuation of research process we started in module two. I believe we are making progress. This session will enlighten you on how you can draw your sample size from the total population of your study. You will also learn probability and non-probability sampling, guideline on how to construct a questionnaire and the various instruments of primary method of data collections such as questionnaire, interview and observation. However, we will be more informed if we first of all know the learning outcome of this study session before we continue.

1.0 Learning Outcomes

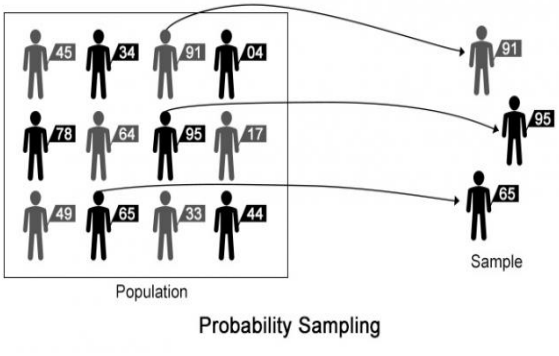
At the end of this study session, you should be able to:

1. Determine sample size for your PGDM/MBA project,
2. Discuss the probability and non-probability sample,
3. Construct questionnaire you will administer to your respondents,
4. Distinguish between open and close end questionnaire, and
5. Interview your research participants during your PGDM/MBA research.

2.0 Main Content

2.1 Determining Sample Design

Researchers usually draw conclusions about large groups by taking a sample.



A Sample is a segment of the population selected to represent the population as a whole. Ideally, the sample should be representative and allow the researcher to make accurate estimates of the thoughts and behavior of the larger population.

Figure 3.1.1: ***Determining Sample Design***

Designing the sample calls for three decisions:

i. Who will be surveyed? (The Sample): at this point, the researcher must determine what type of information is needed and who is most likely to have it.

ii. How many people will be surveyed? (Sample Size): here, you should note that large samples give more reliable results than small samples. However it is not necessary to sample the entire target population.

iii. How should the sample be chosen? (Sampling): Sample members may be chosen at random from the entire population (probability sample) or the researcher might select people who are easier to obtain information from (non-probability sample). However, what your research project need will determine which method is most effective.

2.2 Types of Samples

(i) Probability samples

i. **Simple random sample:** Every member of the population has a known and equal chance of being selected and the probability of the first and second person been selected does not affect the probability that the third person will or will not be selected.

ii. **Stratified random sample:** Under this sample, the population is divided into mutually exclusive groups such as age groups and random samples are drawn from each group.

iii. **Cluster (area) sample:** Here the population is divided into mutually exclusive groups such as blocks, and the researcher draws a sample of the group to interview.

(ii) Non probability samples

i. **Convenience sample:** This is the type of sample that allows you to select the easiest population members from which you will obtain your information.

ii. **Judgment sample:** This sample type gives you the opportunity to use your judgment to select population members who are good prospects for accurate information that you need.

iii. **Quota sample:** under this sample, you as the researcher finds and interviews a prescribed number of people in each of several categories.

In-Text-Question 1

List the probability and non-probability sampling technique you have studied.

In-Text-Answer 1

Probability Samples: Simple random sample, Stratified random sample, Cluster (area) sample.

Non Probability Samples: *Quota sample, Judgment sample, Convenience sample.*

2.3 Tool for Data Collection (Research Instruments)

So far we have learnt from our previous discussion on how to design sample and the various types of sample we can employ in our research. This session will enlighten us on the instruments we can use for data collections, while conducting our research project. The construction of a research instrument or tool for data collection is the most important aspect of a research project because anything you say by way of findings or conclusions is based upon the type of information you collect, and the data you collect is entirely dependent upon the questions that you ask of your respondents. The famous saying about computers- "garbage in garbage out"- is also applicable for data collection. The research tool provides the input into a study and therefore the quality and validity of the output (the findings), are solely dependent on it. Let us quickly go through the guidelines to construct a research tool before we study the instruments.

Guidelines to construct a research tool:

The underlying principle behind the guidelines suggested below is to ensure the validity of your instrument by making sure that your questions relate to the objectives of your study.

Step I: Clearly define and individually list all the specific objectives or research questions for your study.

Step II: For each objective or research questions, list all the associated questions that you want to answer through your study.

Step III: Take each research question listed in step II and list the information required to answer it.

Step IV: Formulate question(s) to obtain this information.

2.4 The Questionnaire:

Structured surveys/ interviews employ the use of a questionnaire. A questionnaire consists of a set of questions presented to a respondent for answers. The respondents read the questions, interpret what is expected and then write down the answers themselves. It is called an Interview Schedule when the researcher asks the questions (and if necessary, explains them) and records the respondent's reply on the interview schedule.

Since there are many ways to ask questions, the questionnaire is very flexible. Questionnaire should be developed and tested carefully before being used on a large-scale. There are three basic types of questionnaire:

i. Closed –ended
ii. Open-ended
iii. Combination of both

Let us now learn what each of these instruments constitutes.

1. **Closed –ended Questionnaire**: Closed ended questions include all possible answers/prewritten response categories, and respondents are asked to choose among them. E.g. multiple choice questions, scale questions. These type of questions are used to generate statistics in quantitative research. As these follow a set format, and most responses can be entered easily into a computer for ease of analysis, greater numbers can be distributed.



Figure 3.1.2: ***Closed –ended Questionnaire***

2. **Open-ended Questionnaire**: Open-ended questions allow respondents to answer in their own words. Questionnaire does not contain boxes to tick but instead leaves a blank section for the respondent to write in an answer. Whereas closed –ended questionnaires might be used to find out how many people use a service, open-ended questionnaires might be used to find out what people think about a service. As there are no standard answers to these questions, data analysis is more complex. As it is opinion which are sought rather than numbers, fewer questionnaires need to be distributed.

3. **Combination of both:** This way it is possible to find out how many people use a service and what they think of the service in the same form. It begins with a series of closed –ended questions, with boxes to tick or scales to rank, and then finish with a section of open-ended questions or more detailed response.

How to construct questionnaires

Now that you have studied the three types of questionnaires and how they work, how then can you construct a questionnaire? Before you construct a questionnaire, you need to:

i. Decide which questionnaire to use- closed or open ended, self or interviewer administered;

ii. Decides on the wording and structure of questions: Questions should be kept short and simple-avoid double barreled i.e. two questions in one –ask two questions rather than one. Avoid negative questions which have '*not* 'in them as it is confusing for respondent to agree or disagree. Question should not contain *Prestige Bias* – causing embarrassment or forcing the respondent to give false answer in order to look good. Questions about educational qualification or income might elicit this type of response. You should use indirect questions for sensitive issues- in indirect questions respondents can relate their answer to other people;

iii. If you use closed- ended questions- try to make sure that all possible answers are covered so that respondents are not constrained in their answer. "Don't know" category also needs to be added;

Avoid Leading Question: Don't lead the respondent to answer in a certain way. e.g. "How often do you wash your car?" assumes that respondent has a car and he washes his car. Instead, ask a filter question to find if he has a car, and then, 'If you wash your car, how many times a year?'

iv. Length and ordering of the Questions: you are to keep the questionnaire as short as possible. Ask easy questions that respondents will enjoy answering. If you employ combined questionnaire, keep open ended questions for the end. Your questions should be as interesting as possible and easy to follow by varying type and length of question. Group questions into specific topic as this makes it easier to understand and follow.

Piloting the questionnaire

Once you have constructed your questionnaire, you must pilot it. This means that you must test it out to see if it is obtaining the result you require. This is done by asking people to read it through and see if there are any ambiguities which you have not noticed. They should also be asked to comment about the length, structure and wording of the questionnaire and alter the questions accordingly.

ITQ 2

What is a questionnaire?

ITA 2

A questionnaire consists of a set of questions presented to a respondent for answers. There are three basic types of questionnaire:

• Closed –ended, Open-ended and Combination of both.

3.0 Tutor Marked Assignments

1. What is sample and how can a researcher determine an appropriate sample for a particular study?

4.0 Study Session Conclusion/Summary

A sample is a segment of the population selected to represent the population as a whole. Ideally, the sample should be representative and allow the researcher to

make accurate estimates of the thoughts and behaviour of the larger population. This session have enlightened you on how you can draw your sample size from the total population of your study. You have also learnt probability and non-probability sampling, guideline on how to construct a questionnaire and the various instruments of primary method of data collections such as questionnaire, interview and observation.

5.0 Self-Assessment Questions

1. What is sample and how can a researcher determine an appropriate sample for a particular study?
2. Discuss the probability and non-probability sample.
3. What is a questionnaire? Discuss how a researcher can construct a questionnaire.
4. Discuss the advantages and disadvantages of open-ended and close-ended questionnaire. Which one is more useful in getting relevant data for a scientific study?
5. Explain the concept of research tool. What are the guidelines for constructing a research tool?
6. Explain how a questionnaire can be piloted to verify and validate its reliability.
7. Is there a difference between research tool and research instrument? Support your argument with valid proof.

6.0 Additional Activities (Videos, animations and outdoor activities)

a. Visit U-tube **https://goo.gl/NX8orT** . Watch the video & summarise in 1 paragraph

b. View the animation on **https://goo.gl/cBrt16** and critique it in the discussion forum

7.0 References/Further Readings

Salkind, N. J. (2017). *Exploring Research (9th Ed.).* Boston, MA: Pearson.

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STUDY SESSION 2

Data Collection and Analysis

Section and Subsection Headings

Introduction

1.0 Learning Outcomes

2.0 Main Content

2.1 - Data Collection

2.2 - Ethical Issues Concerning Research Participants

i. Collecting information:

ii. Seeking consent:

iii. Providing incentives:

iv. Seeking sensitive information:

v. The possibility of causing harm to participant:

vi. Maintaining confidentiality:

2.3 - Ethical Issues Relating to the Researcher

i. Avoiding bias

ii. Provision or deprivation of a treatment:

iii. Using inappropriate research methodology:

iv. Incorrect reporting:

v. Inappropriate use of the information:

2.4 - Processing and Analyzing Data

i. Editing:

ii. Classification:

iii. Tabulation:

2.5 - Data Analysis Methods

3.0 Tutor Marked Assignments

4.0 Study Session Conclusion/Summary

5.0 Self-Assessment Question

6.0 Additional Activities (Videos, animation and outdoor activities)

7.0 References/Further Readings

Introduction

Welcome to another study session. You see, when you have successfully formulated your research problem, developed your study design, constructed your research instrument and selected your sample, you then proceed to collect the data from which you will draw inferences and conclusions for your study. In this session, you will learn how to collect data, the ethical issues that relate to both the researcher and the research participant and how the collected data is analysed to come up with a meaningful and reliable result. Depending upon your plans, you might commence interviews, mail out a questionnaire, conduct experiments and/or make observations. However, before we go into that, let's see the learning outcome of this study session before we continue.

1.0 Learning Outcomes

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

1. Collect relevant data for your PGDM/MBA research project
2. Point out the ethical issues in research
3. Process and analyze the data you will gather for your project
4. Explain the quantitative method of data analysis
5. Discuss the quantitative method of data analysis

2.0 Main Content

2.1 Data Collection

Having formulated the research problem, develop a study design, constructed are search instrument and selected a sample, you then collect the data from which you will draw inferences and conclusions for your study. Depending upon your plans, you might commence interviews, mail out a questionnaire, conduct experiments and/or make observations. Collecting data through any of the methods may involve some ethical issues in relation to the participants and the researcher:

i. Those from whom information is collected or those who are studied by a researcher become *participants* of the study.
ii. Anyone who collects information for a specific purpose, adhering to the accepted code of conduct, is a *researcher*.

2.2 Ethical Issues Concerning Research Participants

There are many ethical issues in relation to participants of a research activity.

i. **Collecting information:** Your request for information may put pressure or create anxiety on a respondent. Is it ethical? Research is required to improve conditions. Provided any piece of research is likely to help society directly or indirectly, it is acceptable to ask questions, if you first obtain the respondents' informed consent. If you cannot justify the relevance of the research you are conducting, you are wasting your respondents' time, which is unethical.

ii. **Seeking consent:** In every discipline it is considered unethical to collect information without the knowledge of the participant, and their expressed willingness and informed consent. Informed consent implies that subjects are made adequately aware of the type of information you want from them, why the information is being sought, what it is purposed to be put to, how they are expected to participate in the study, and how it will directly or indirectly affect them. It is important that the consent should be voluntary and without pressure of any kind.

iii. **Providing incentives:** Most people do not participate in a study because of incentives, but because they realise the importance of the study. It is ethical to provide incentives to respondents to share information with you because they are giving their time. However, you should know that giving a present before data collection is unethical.

iv. **Seeking sensitive information:** Certain types of information can be regarded as sensitive or confidential by some people and thus an invasion to their privacy, asking for such information may upset or embarrass a respondent. For most people, questions on drug use, pilferage, income, age, marital status etc., are intrusive. In collecting data you need to be careful about the sensitivities of your respondents. It is not unethical to ask such questions provided that you tell



Figure 3.2.1: ***Seeking sensitive information***

your respondents the type of information you are going to ask clearly and frankly, and give them sufficient time to decide if they want to participate, without any major inducement.

v. **The possibility of causing harm to participant:** When you collect data from respondents or involve subjects in an experiment, you need to examine carefully whether their involvement is likely to harm them in anyway. Harm includes a research that might include hazardous experiments, discomfort, anxiety, harassment, invasion of privacy, or demeaning or dehumanising procedures. If it is likely to, you must make sure that the risk is minimal i.e. the extent of harm or discomfort is not greater that ordinarily encountered in daily life. If the way information is sought creates anxiety or harassment, you need to take steps to prevent this.

vi. **Maintaining confidentiality:** Sharing information about a respondent with others for purposes other than research is unethical. Sometimes you need to identify your study population to put your findings into context. In such a situation you need to make sure that at least the information provided by respondents is kept anonymous. It is unethical to identify an individual's responses. Therefore you need to ensure that after the information has been collected, the source cannot be known.

2.3 Ethical Issues Relating to the Researcher

You have just learnt some ethical issues regarding a respondent to research questions. Now, we are going to study some ethical issues relating to you as a researcher. They are spelt out below for easy understanding.

i. **Avoiding bias:** Bias on your part as a researcher is unethical. Bias is a deliberate attempt to either hide what you have found in your study, or highlight something disproportionately to its true existence.

ii. **Provision or deprivation of a treatment:** Both the provision and deprivation of a treatment/ intervention may pose an ethical dilemma for you as a researcher. Is it ethical to provide a study population with an intervention/ treatment that has not yet been conclusively proven effective or beneficial? But if you do not test, how can you prove or disprove its effectiveness or benefits? There are no simple answers to these dilemmas. Ensuring informed consent, 'minimum risk' and frank discussion as to the implications of participation in the study will help to resolve ethical issues.

iii. **Using inappropriate research methodology:** It is unethical to use a method or procedure you know to be inappropriate e.g. selecting a highly biased sample, using an invalid instrument or drawing wrong conclusions.

iv. **Incorrect reporting:** To report the findings in a way that changes or slants them to serve your own or someone else's interest, is unethical.

v. **Inappropriate use of the information:** The use of information in a way that directly or indirectly adversely affects the respondents is unethical. If so, the study population needs to be protected. Sometimes it is possible to harm individuals in the process of achieving benefits for the organizations. An example would be a study to examine the feasibility of restructuring an organization.

Restructuring may be beneficial to the organization as a whole but may be harmful to some individuals. Should you ask respondents for information that is likely to be used against them? It is ethical to ask questions provided you tell respondents of the potential use of the information, including the possibility of it being used against some of them, and you let them decide if they want to participate.

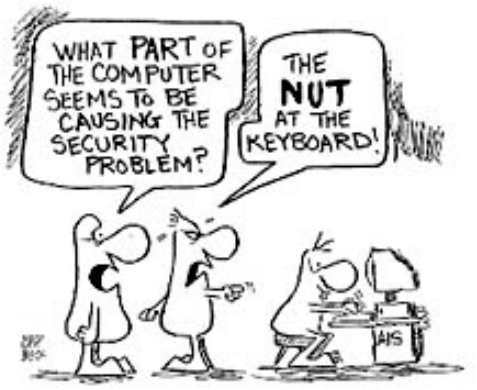


Figure 3.2.2: ***Inappropriate use of the information***

2.4 Processing and Analyzing Data

After you have successfully gathered the data you need for your research, the next step is to process and analyze the data before you can get the result of your study. Processing and analyzing data involves a number of closely related operations, which are performed with the purpose of summarizing the collected data and organizing these in a manner that they answer the research questions (objectives).

The Data Processing operations are:

1. **Editing:** A process of examining the collected raw data to detect errors and omissions and to correct these when possible.

2. **Classification**: This is a process of arranging data in groups or classes on the basis of common characteristics. Depending on the nature of phenomenon involved. The classification can be in any of the following forms;

a. Classification according to attributes: here data is analyzed on the basis of common characteristics which can either be descriptive such as literacy, sex, religion etc. or numerical such as weight, height, income etc. Such classification can be either; simple classification: where we consider only one attribute, and

divide the universe into two classes—one class consisting of items possessing the given attribute and the other class consisting of items which do not possess the given attribute or manifold classification: here, we consider two or more attributes simultaneously, and divide the data into a number of classes.

b. classification according to class –intervals: is done with data relating to income, age, weight, tariff, production, occupancy etc. Such quantitative data are known as the statistics of variables and are classified on the basis of class –intervals.

3. Tabulation: Tabulation is the process of summarizing raw data and displaying the same in compact form for further analysis. It is an orderly arrangement of data in columns and rows. Tabulation is essential because:

a. it conserves space and reduces explanatory and descriptive statement to a minimum.

b. it facilitates the process of comparison.

c. it facilitates the summation of items and the detection of errors and omissions.

d. it provides the basis for various statistical computations.

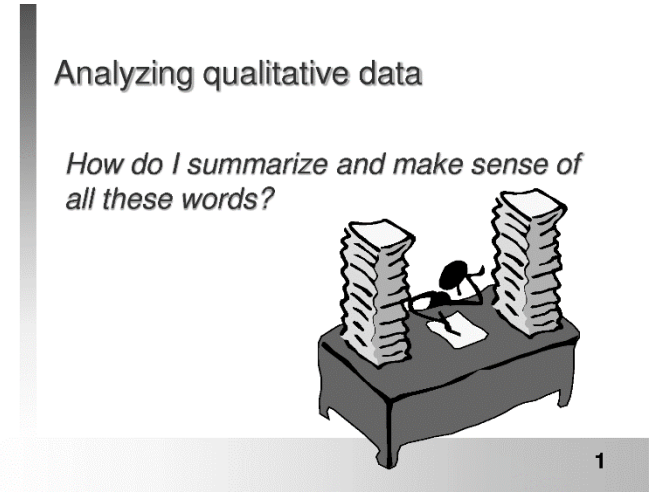


Figure 3.2.3: *Tabulation*

Tabulation may also be classified as simple and complex tabulation. Simple tabulation generally results in one-way tables which supply answers to questions about one characteristic of data only. Complex tabulation usually results on two-way tables (which give information about two

inter-related characteristics of data), three –way tables or still higher order tables, also known as manifold tables.

In-Text-Question 1

What are the processes involved in analyzing data?

In-Text-Answer 1

The processes involved in analyzing data are editing, classification and tabulation.

2.5 Data Analysis Methods

Qualitative data analysis: Qualitative data analysis is a very personal process with few rigid rules and procedures. For this purpose, you as the researcher needs to go through a process called content analysis. Content Analysis means analysis of the contents of an interview in order to identify the main themes that emerge from the responses given by the respondents. This process involves a number of steps:

Step 1. Identify the main themes: You as the researcher need to carefully go through the descriptive responses given by respondents to each question. From these responses you develop broad themes that reflect these meanings. People use different words and language to express themselves. It is important that you select wording of the theme in a way that accurately represents the meaning of the responses categorized under a theme. These themes become the basis for analyzing the text of unstructured interviews.

Step 2. Assign codes to the main themes: If you, the researcher wants to count the number of times a theme has occurred in an interview, you need to select a few responses to an open- ended question and identify the main themes. You continue to identify these themes from the same question till a saturation point is reached. Write these themes and assign a code to each of them, using numbers or keywords.

Step 3. Classify responses under the main themes: Having identified the themes, the next step is to go through the transcripts of all the interviews and classify the responses under the different themes.

Step 4. Integrate themes and responses into the text of your report: Having identified responses that fall within different themes, the next step is to integrate into the text of your report. While discussing the main themes that emerged from their study, sometimes you can use verbatim responses to keep the feel of the response. However, some researchers count how frequently a theme has occurred, and then provide a sample of the responses. It entirely depends upon the way the researcher wants to communicate the findings to the readers.

Quantitative data analysis: This method is most suitable for large well designed and well administered surveys using properly constructed and worded questionnaire. Data can be analyzed either manually or with the help of a computer.

Manual data analysis: This can be done if the number of respondents is reasonably small, and there are not many variables to analyze. However, this is useful only for calculating frequencies and for simple cross tabulations. Manual data analysis is extremely time consuming. The easiest way to do this is to code it directly onto large graph paper in columns. Detailed headings can be used or question numbers can be written on each column to code information about the question. To manually analyze data (frequency distribution), count various codes in a column and then decode them. In addition, if you want to carry out statistical tests, they have to be calculated manually. However, the use of statistics depends

on your expertise and the desire/need to communicate the findings in a certain way.

Data analysis using a computer: If you want to analyze data using computer, you should be familiar with the appropriate programme. In this area, knowledge of computer and statistics plays an important role. The most common software is SPSS for windows. However, data input can be long and laborious process, and if data is entered incorrectly, it will influence the final results.

ITQ 2

What statistical software can we use to analyze data using computer?

ITA 2

The statistical software we can use to analyze data using computer include: Statistical package for social sciences (SPSS), Smart partial lead square (Smart PLS), E View among others.

3.0 Tutor Marked Assignments

1. Elucidate the guiding ethical principles underpinning research

4.0 Study Session Conclusion/Summary

Collection of data requires some ethical issues that relate to both the researcher and the research participants. A qualitative analysis involved content analysis which means, analysis of the contents of an interview in order to identify the main themes that emerge from the responses given by the respondents. However, a quantitative analysis is most suitable for large well designed and well administered surveys using properly constructed and worded questionnaire. In this session you have learnt some ethical issues that must be followed in data collection. You have also studied the process of data collection. We further discussed qualitative and quantitative method of data analysis.

5.0 Self-Assessment Questions

1. Discuss the ethical issues in research that relates to the researcher.
2. Why does research with human participants require ethical approval?
3. Elucidate the guiding ethical principles underpinning research.
4. Discuss the ethical issues in research that relates to research participants.
5. How can a researcher adhere to ethics of the following term while conducting a research: research design, sample, data collection, unforeseen needs?
6. What is data processing? Discuss the operations involved in data processing.
7. Discuss the steps involved in analyzing data.
8. What do you understand by quantitative data analysis? How is it different from qualitative data analysis?

6.0 Additional Activities (Videos, animation and outdoor activities)

a. Visit U-tube **https://goo.gl/FxJL54**. Watch the video & summarise in 1 paragraph

b. View the animation on **https://goo.gl/diq3Jh** and critique it in the discussion forum

7.0 References/Further Readings

Salkind, N. J. (2017). *Exploring Research (9th Ed.)*. Boston, MA: Pearson.

Gliner, J. A., Morgan, G. A. & Leech, N. L. (2016). *Research Methods in Applied Settings: An Integrated Approach to Design and Analysis*, (3rd Ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

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Dillman, D. A. (2014). *Mail to Internet Surveys: The Tailored Design Method* (4th Ed.). New York: Wiley.

Krueger, R. A. & Casey, M. A. (2014). *Focus Groups: A Practical Guide for Applied Research* (5th Ed.). Thousand Oaks, CA: Sage Publications.

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STUDY SESSION 3

Reporting Research Findings

Section and Subsection Headings

Introduction

1.0 Learning Outcomes

2.0 Main Content

2.1 -Written Research Project Report Format

1 Title Page:

2 Table of Contents

3 Theoretical Framework and Review of Literature

4 Research design:

5 Data Analysis and Interpretation:

6 Summary and Conclusion:

7 Recommendations

8 Suggestion for Further Research

9 List of References /Bibliography

10 For Books

11 For Journal Article:

12 Appendices:

2.3 - Research Methods and Research Methodology

2.3 - Importance of Research Methodology in Research Study

3.0 Tutor Marked Assignments

4.0 Study Session Conclusion/Summary

5.0 Self-Assessment Question

6.0 Additional Activities (Videos, animation and outdoor activities)

7.0 References/Further Readings

Introduction

When you have successfully formulated your research problem, developed your study design, constructed your research instrument, selected your sample, collect your data and analyzed it, you then draw inferences and conclusions for your study. After that, you now write your report. Writing the report is the last, and for many, the most difficult step of the research process.

The report informs the world what you have done, what you have discovered and what conclusions you have drawn from your findings. The report should be written in an academic style. Language should be formal and not journalistic.

In this session, you will learn how to write a research report. However, before we go into that, let's see the learning outcome of this study session before we continue.

1.0 Learning Outcomes

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

1. Write a report of your PGDM/MBA research
2. Offer useful recommendations from your findings
3. Write APA style of referencing

2.0 Main Content

2.1 Written Research Project Report Format

Traditional written reports tend to be produced in the following format.

Title Page:

i. title of the Research Project,
ii. name of the researcher,
iii. purpose of the research project, e.g. “A research project submitted in partial fulfillment of the requirements for the award of master in Business Administration, Ahmadu Bello University, Zaria”,
iv. Date of publication.

Table of Contents

In this section you list the contents of the report, either in chapters or in subheadings

e.g.

Contents Page No

Introduction ……..1
Chapter I Theoretical Framework and Review of Related Literature ……3
Chapter II Research Design…….…….. 30
Chapter III Data Analysis and Interpretation ……..…..35
Chapter IV Summary and Conclusion …….…….70
Suggestions for Further Research ……..75
References/ Bibliography
Appendices
Appendix I Questionnaire for Employees
Appendix II Questionnaire for Managers

List of Tables

This section include title and page number of all tables e.g.

Table No. Title Page No

1 Income levels of Respondents 31
2 Age distribution of Respondents 35

List of Figures

This section contains title and page number of all graphs, pie charts etc. e.g. Figure no. Title Page No

1. Pie Chart showing age distribution of respondents 33
2. Bar Graph showing popularity of menu items 37

Acknowledgements

Here the researcher may acknowledge Institute Principal, Faculty Guide-research guide and technical guide, research participants, friends etc.

Introduction

This section introduces the research, setting out aims and objectives.
It includes a rationale for the research.

Theoretical Framework and Review of Literature

In this section, you include all your background research which may be obtained from the literature review. You must indicate from where all the information has come, so remember to keep a complete record of everything you read. If you do not do this, you could be accused of plagiarism which is a form of intellectual theft. When you are referring to a particular book or journal article, use the Harvard system.

Research Design:

This section include all practical details followed for research. After reading this, any interested party should be able to replicate the research study. The methods used for data collection, how many people took part, how they were chosen, what tool was used for data collection, how the data was analyzed etc.



Fig 3.3.1: Research Design

Data Analysis and Interpretation:

If you have conducted a large quantitative survey, this section may contain tables, graphs, pie charts and associated statistics. If you have conducted a qualitative piece of research this section may be descriptive prose.

Summary and Conclusion:

In this section you sum up your findings and draw conclusions from them, perhaps in relation to other research or literature.

Recommendations

If you have conducted a piece of research for a hotel or any other client organization, this section could be the most important part of the report. A list of clear recommendations which you have developed from your research is included.

Suggestion for Further Research

It is useful in both academic reports and work-related reports to include a section which shows how the research can be continued. Perhaps some results are

inconclusive, or perhaps the research has thrown up many more research questions which need to be addressed. It is useful to include this section because it shows that you are aware of the wider picture and that you are not trying to cover up something which you feel may be lacking in your own work.

List of References /Bibliography

i. List of references contain details only of those works cited in the text.

ii. A bibliography includes sources not cited in the text but which are relevant to the subject. (Larger dissertations or thesis)

iii. Small research projects will need only a reference section. This includes all the literatures to which you have referred in your report. The popular referencing system *Harvard System* lists books and periodicals in the following manner:

For Books

1. Authors surname (alphabetically), followed by their initials,

2. Date of publication

3. Title of book in italics

4. Place of publication, Publisher. E.g. Philip, T.E. (1986*) Modern Cookery for Teaching and Trade.* Mumbai: Orient Longman.

For Journal Article:

The title of the article appears in inverted commas and name of the journal comes in italics, followed by volume number and pages of the article. e.g., Philip, T.E. "Influence of British Raj on Indian Cuisine"; *Journal of Hospitality Education*; 5:5-11

Appendices:

If you have constructed a questionnaire or interview schedule for your research, it may be useful to include them in your report as an appendix. Appendices do not count towards your total number of pages/words. It is a useful way of including relevant material so that the examiner can gain a deeper understanding of your work by reading it.

In-Text-Question 1

List the headings in writing a research report.

In-Text-Answer 1

The sub- headings in writing a research report are: Title page, table of contents, list of tables, acknowledgements, introduction, theoretical framework and review of literature, research design, data analysis and interpretation, summary and conclusion, recommendations, suggestion for further research, list of references /bibliography and appendices.

2.3 Research Methods and Research Methodology

You may wonder if there is any difference between research methods and research methodology. This session will clarify your doubt as you will fully understand the fundamentals of the two concepts in research. Research methods are the various procedures, schemes and algorithms used in research. All the methods used by a researcher during a research study are termed as research methods. They are essentially planned, scientific and value-neutral.

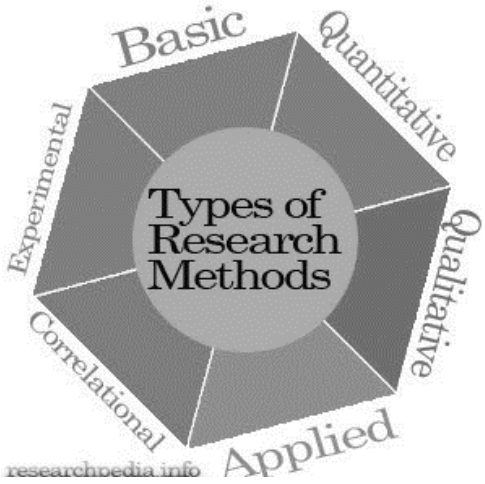


Figure 3.3.2: ***Research Methods and Research Methodology***

They include theoretical Procedures, experimental studies, numerical schemes, statistical approaches, etc.

Research methods help us collect samples, data and find a solution to a problem. Particularly, scientific research methods call for explanations based on collected facts, measurements and observations and not on reasoning alone. They accept only those explanations which can be verified by experiments.

Research methodology is a systematic way to solve 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. We cannot just stop here because knowing the importance of research methodology in scientific research is imperative.

2.3 Importance of Research Methodology in Research Study

It is necessary for you as a researcher to design a methodology for the problem chosen. You should note that even if the methods considered in two problems are same the methodology may be different. It is also important for you as the researcher to know not only the research methods necessary for the research under taken but also the methodology.

For example, you do not only need to know how to calculate mean, variance and distribution function for a set of data, how to find a solution of a physical system described by mathematical model, how to determine the roots of algebraic equations and how to apply a particular method but you also need to know which is

a suitable method for the chosen problem, what is the order of accuracy of the result of a method?, what the efficiency of the method is, and so on. Considerations of these aspects constitute a research methodology.

More precisely, research methods help us get a solution to a problem. On the other hand, research methodology is concerned with the explanation of the following:

(1) Why is a particular research study undertaken?

(2) How did one formulate a research problem?

(3) What type of data were collected?

(4) What particular method has been used?

(5) Why was a particular technique of analysis of data used?

The study of research methods gives training to apply them to a problem. The study of research methodology provides us the necessary training in choosing methods, materials, scientific tools and training in techniques relevant for the problem chosen.

ITQ 2

What is the difference between research method and research methodology?

ITA 2

Research methods are the various procedures, schemes and algorithms used in research. Research methodology on the other hand is a systematic way to solve a problem. It is a science of studying how research is to be carried out.

3.0 Tutor Marked Assignments

1. Explain how a written research project report format should look like.

4.0 Study Session Conclusion/Summary

Research report is the last and the most difficult step of the research process. The report informs the world what you have done, what you have discovered and what conclusions you have drawn from your findings. In this session, we have discussed how to write a research report. The sub- headings in writing a research report are: Title page, table of contents, list of tables, acknowledgements, introduction, theoretical framework and review of literature, research design, data analysis and interpretation, summary and conclusion, recommendations, suggestion for further research, list of references /bibliography and appendices.

5.0 Self-Assessment Questions

1. Explain how a written research project report format should look like.
2. Write ten references /Bibliography each for book and journal paper using APA style of referencing, 6th Edition.
3. List out at least 10 methods which you have learnt in your UG and PG courses and write their purpose or application.
4. Distinguish between research methods and research techniques.
5. Distinguish between research methods and research methodology, with an example of your own choice.
6. Discuss the relationship between research findings, conclusion and recommendation.
7. Explain how summary id different from conclusion. Highlight their identical features.

6.0 Additional Activities (Video, animation and outdoor activities

a. Visit U-tube **https://goo.gl/aV4awT** . Watch the video & summarise in 1 paragraph

b. View the animation on **https://goo.gl/BJm97p** and critique it in the discussion forum

7.0 References/Further Readings

Salkind, N. J. (2017). *Exploring Research (9th Ed.)*. Boston, MA: Pearson.

Gliner, J. A., Morgan, G. A. & Leech, N. L. (2016). *Research Methods in Applied Settings: An Integrated Approach to Design and Analysis*, (3rd Ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Berg, B. L. (2016). *Qualitative Research Methods for the Social Sciences* (9th Ed.). Boston, MA: Pearson.

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Silverman, D. (Ed.). (2016). *Qualitative Research: Theory, Method and Practice* (4th Ed.). Thousand Oaks, CA: Sage Publications.

Dillman, D. A. (2014). *Mail to Internet Surveys: The Tailored Design Method* (4th Ed.). New York: Wiley.

Krueger, R. A. & Casey, M. A. (2014). *Focus Groups: A Practical Guide for Applied Research* (5th Ed.). Thousand Oaks, CA: Sage Publications.

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STUDY SESSION 4

The Research Hypothesis

Section and Subsection Headings

Introduction

1.0 Learning Outcomes

2.0 Main Content

2.1 - Hypothesis and its Importance

2.2 - Characteristics of a Good Hypothesis

1 Three forms of Hypothesis

2 Declarative hypothesis

3 Null hypothesis

4 Hypothesis in question form

2.4 - Formulation of Hypothesis

3.0 Tutor Marked Assignments

4.0 Study Session Conclusion/Summary

5.0 Self-Assessment question

6.0 Additional Activities (Videos, animation and outdoor activities)

7.0 References/Further Readings

Introduction

This session will be the last session we will discuss. It guides the direction of your research study. After you have identified a problem, you may formulate certain answers in the form of hypotheses. These guesses are based on the past experiences or informal observation or information gained from others. In this session, you will learn the basic characteristics of hypothesis, importance of hypothesis, the types of hypothesis and how to formulate a good hypothesis to

guide the thought of your MBA research project. However, do stay tune while we look at the main content of this study session.

1.0 Learning Outcomes

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

A. Discuss the importance of hypothesis
B. Identify the characteristics of a good hypothesis
C. Explain the types of hypotheses
D. Formulate a research hypothesis

2.0 Main Content

2.1 Hypothesis and its Importance

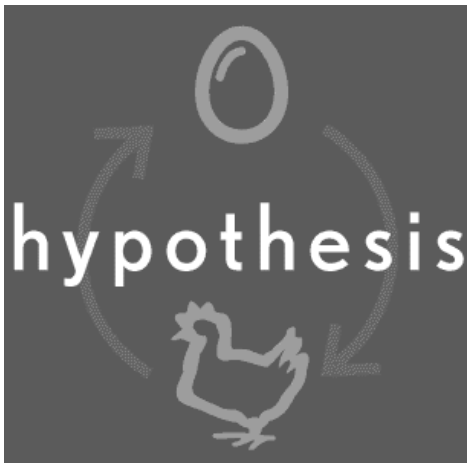


Figure 3.4.1: ***Hypothesis and its Importance***

A hypothesis is defined as "A tentative proposition suggested as a solution to a problem or as an explanation of some phenomenon (Ary et, al. 1985).It is an agreed fact that, whenever possible, research should proceed from a hypothesis. Hypotheses are particularly necessary in studies where the cause and effect relationships are to be discovered. These, however, may not be so important in research studies in which the issue is of determining the status of a given historical, social or educational phenomenon.

It may be mentioned here that hypotheses are not essential to all researches, particularly, in the early stages of exploration of a problem. And it should not be assumed that failure to develop a hypothesis is necessarily a sign of lack of

scientific orientation. However, a hypothesis may be conceived as an assumption which merits consideration and needs to be tested against the available empirical evidence. That is why it is suggested that a hypothesis is to be used as a pivot around which the investigation resolves, limiting thereby the field of investigation to a definite target and also determining the observations to be made and the ones to ignore.

A good hypothesis has several basic characteristics. Let us discuss some of them as follows:

i) Providing direction: Hypotheses provide direction to research and prevent review of irrelevant literature and collection of useless or excessive data. They enable you to classify the information from the stand point of both ‘relevance’ and ‘organisation’. This is necessary because, a given fact may be relevant with respect to one hypothesis and irrelevant with respect to another, or it may belong to one classification with regard to first hypothesis or to an entirely different classification with regard to the second.

   Thus, hypotheses ensure the collection of relevant data necessary, to answer questions arising from the statement of the problem. For example, in a research problem, ‘Study habits and achievement of Distance Education Learners’, the researcher may frame the hypothesis- learners putting in more study hours achieve more in the examination. The researcher will collect data about the number of hours being put in by learners for study and their achievement in the examination.

ii) Hypothesis should be testable: Hypotheses should be stated in such a way as to indicate an expected difference or an expected relationship between the measures used in the research. The researcher should not state any hypothesis that she/he does not have reason to believe that it can be tested or evaluated by some objective means. Hypotheses are the propositions about the relationship between variables. These can be tested empirically. There is no relationship between attendance to personal contact programmes in a distance education course and achievement in examination. Such propositions can be tested by means of empirical data.

iii) Hypothesis should be brief and clear: Hypothesis should be stated clearly and briefly. It makes problems easier for the reader to understand and also for the researcher to test. The statement should be a concise statement of the relationship expected.

2.2 Characteristics of a Good Hypothesis

There are some important aspects to be looked into to judge the worth of a hypothesis in research. A good hypothesis must be:

i) Consistent with known facts and theories, and might even been expected to predict or anticipate previously unknown data,

ii) Able to explain the data in simpler terms,

iii) Stated in the simplest possible terms, depending upon the complexity of the concepts involved in the research problem, and

iv) Stated in a way that it can be tested for its being probably true or probably false, in order to arrive at conclusions in the form of empirical or operational statements.

In-Text-Question 1

What is hypothesis?

In-Text-Answer 1

A hypothesis is defined as "A tentative proposition suggested as a solution to a problem or as an explanation of some phenomenon (Ary et, al. 1985).It is an agreed fact that, whenever possible, research should proceed from a hypothesis. Hypotheses are particularly necessary in studies where the cause and effect relationships are to be discovered.

Three forms of hypothesis

To arrive at some conclusions pertaining to a particular research problem, a hypothesis is generally stated in testable form for its proper testing. It may be stated either in **declarative** form, the **null** form or the **question** form. What do these three forms mean?

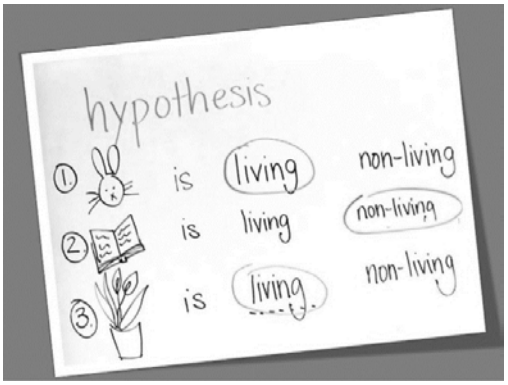


Figure 3.4.2: Three forms of hypothesis

Declarative hypothesis

When a researcher makes a positive statement about the outcome of the study, we get a declarative hypothesis. For example, the hypothesis **'The performance of the creative on problem solving tasks is significantly higher than the non- creative"** is stated in the declarative form. Here, the researcher makes an attempt to predict the future outcome. This prediction is based on the theoretical formulation of what should happen in a particular situation, if the explanations of the behaviour (performance on problem solving tasks) which the researcher has given in his/her theory are correct.

Null hypothesis

A null hypothesis is a non- directional hypothesis that proposes no difference or no relationship. The usual form of such hypothesis is: “There is no significant difference between the performance of two groups of students, one following the conventional system of education and the second following distance- mode of education. Since a null hypothesis can be statistically tested, it is also known as “statistical hypothesis” or “testing hypothesis”.

The proponents of null hypothesis emphasise that the researcher must remain unbiased throughout his/her research efforts. This view is defended on the basis of the fact that in this case the researcher neither predicts a result nor indicates a preconceived attitude that may influence his/her behaviour during the conduct of the study. On the other hand, those who criticise the use of null hypothesis argue that the researcher should indicate the direction of the outcome of the study, wherever possible. It is further argued that predicting the results of a study is less awkward in phrasing a relationship, than in using the ‘no difference’ phrase that is usual in the null form.

A null hypothesis challenges the assertion of a declarative hypothesis and also denies it altogether. It says even where it seems to hold well, it is so due to mere coincidence. It is for the researcher to reject the null hypothesis by showing that the outcome mentioned in the declarative hypothesis does occur and the quantum thereof is so significant that it cannot easily be said to have occurred by chance. The reason for rejecting the null hypothesis may differ.

Sometimes the null hypothesis is rejected only when the probability of it having occurred by a mere chance is 1 out of 100 or .01 out of 1. In such instances, we consider the probability of its having occurred by change to be too little to be

considered and we reject the chance component of the null hypothesis and take the occurrence to be due to a genuine tendency.

Hypothesis in question form

In the question form- hypothesis, instead of stating what outcome is expected, a question is asked as to what the outcome will be e.g., if you are interested to find out whether instructions through video programmes have any positive effect on the learning of the students of Post Graduate Diploma in Distance Education. The declarative form of the hypothesis will be: 'Will instruction through video conferencing affect the learning of students of Distance Education?' This statement shows that instructions through video programmes are not related to learning.

It is easier to state a hypothesis in question form because it appears to be quite useful to write down all the questions that one wants to answer in a particular research study. On the other hand, a researcher faces difficulties in predicting the outcome of the study and stating the hypothesis in declarative form. But it is worth noting that the question form is less powerful than the declarative or null form as a tool for obtaining valid information, and it is generally advisable to state a hypothesis in directional form?

2.3 Formulation of Hypothesis

Hypotheses are formulated to explain observed facts, conditions or behaviour and to serve as a guide in the research process. The statements or tentative generalisations which constitute hypotheses are partly based on facts and explanations, and partly conceptual. Hence, there are certain necessary conditions that are conducive to the formulation of hypothesis. There are:

i) Deducing a hypothesis inductively: You may deduce a hypothesis inductively after making observations of behaviour, noticing trends or probably relationships. For example, as a teacher you observe your learners behaviour in the classroom. On the basis of your experience in the educational institution, you may attempt to relate your behaviour with that of the learners, to various teaching- learning methods as well as to the change in the institution itself and so on. On the basis of these observations, you may be able to formulate a hypothesis that attempts to explain these behavioural relationships in an educational setting.

ii) Limiting the problem: Here we need to state that the basic understanding of the literature pertaining to the problem under investigation also becomes essential, in view of the fact that the already existing corpus of knowledge on the particular problem is too detailed to be incorporated in the process of hypothesis formulation. Hence, the researcher must have the ability to comprehend the available evidence in support or against the expected relationships, so as to remain within the limits of the problem while formulating the hypothesis.

iii) Deriving a hypothesis deductively: Hypotheses are also derived deductively from the theory. Such types of hypothesis, called “deductive hypothesis” are formulated by studying a particular theory in the area of one’s interest and deducing a hypothesis from this theory through logic. This is possible when a researcher has a versatile intellect and can make use of it for restructuring his/her experiences in research. Creative approach to problem solving so badly needed by a researcher, is the product of intellectual adventure, sound attitude and agile intellect. This

view is more relevant to descriptive and historical research in which the abundance of literature with a number of contradictory/supplementary theories may divert the researcher from the right path.

Therefore, you have to exercise great restraint and display considerable patience to keep yourself on the right path. You have to develop certain habits and attitudes, besides saturating yourself with all the possible information about the problem and also think open- minded about it before proceeding further in the conduct of the study.

iv) Hypothesis from analogies, conversations, etc.: Analogies also lead a researcher to clues that may prove to be useful in the formulation of hypotheses and for finding solutions to problems. For example, a new social situation resembles an old one with respect to a particular set of factors. If the researcher knows that the factors correlate in a particular fashion in the old situation, he/she may hypothesise in terms of trends in the relationship to be expected in the new social situation. However, it is to be mentioned here that use of analogies must be made cautiously as they are not fool- proof tools for finding solutions to problems.

Sometimes, especially the inter-disciplinary research conversations and consolations with experts, are also found to be useful in the formulation of hypotheses. To study the relationship of increasing literacy rate in the rural population with the changing pattern of agricultural development requires consultation with experts in agriculture, education, planning etc. while formulating hypotheses. However, formulating hypothesis on the basis of

analogies, anecdotes and conversations should be done rarely, only as exceptions.

ITQ 2

What are the three forms of hypothesis?

ITA 2

To arrive at some conclusions pertaining to a particular research problem, a hypothesis is generally stated in testable form for its proper testing. It may be stated either in ***declarative*** *form, the* ***null*** *form or the* ***question*** *form.*

3.0 Tutor Marked Assignments

1. Define hypothesis and explain its importance in scientific research study.

4.0 Study Session Conclusion/Summary

Hypotheses are particularly necessary in studies where the cause and effect relationships are to be discovered. It is seen as a tentative proposition that suggest a solution to a problem or as an explanation of some phenomenon. It is an agreed fact that, whenever possible, research should proceed from a hypothesis. In this session, you have learnt the basic characteristics of hypothesis, importance of hypothesis, the types of hypothesis and how to formulate a good hypothesis to guide the direction of a research.

5.0 Self-Assessment Questions

1. Define hypothesis and explain its importance in scientific research study.
2. Discuss the characteristics of a good hypothesis.
3. Explain the three ways in which a researcher can formulate a research hypothesis.

4. Identify and explain the necessary conditions that are conducive to the formulation of hypothesis.
5. Explain the difference between confidence interval and level of significance.
6. State the levels of significance that are appropriate and acceptable in scientific research study and relate how each affect the level of confidence interval.
7. Relate hypothesis to research problem, research question and research objective.

6.0 Additional Activity (Video, animation and outdoor activities)

a. Visit U-tube **https://goo.gl/diAWzq** . Watch the video & summarise in 1 paragraph

b. View the animation on **https://goo.gl/1azFzc** and critique it in the discussion forum

7.0 References/Further Readings

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XIII. Glossary

1. **Alternative hypothesis** is the hypothesis that the researcher expects to support.
2. **Analysis of variance** is a statistical test of the difference of means for two or more groups.
3. **ANOVA** is an acronym for **an**alysis **o**f **va**riance. It is a statistical test of the difference of means for two or more groups.
4. **Central tendency** is a typical or representative value for a dataset which is reported as the mean, the median, or the mode**,** depending on the data and/or one's purposes.
5. **Chi Square** is a statistical procedure that examines the relationship between two categorical variables. The test is based on the discrepancy between the observed number of observations in each category and the expected number of observations in each category.
6. **Coefficient of determination** is a statistic used in linear regression that indicates the amount of variation in the dependent variable which is explained or accounted for by the independent variable(s).
7. **Confidence interval** is the generic label used to describe the decision points where the researcher favours the alternative hypothesis over the null hypothesis. Stated differently, it is the range of mean values within which the true population mean is likely to fall.
8. **Continuous variable** is a variable which can assume an infinite number of values. C**onvenience sample** is the kind of sampling used when the researcher decides to select the units of study on the basis of their being readily available.
9. **Correlation** is a standardised index of the strength and direction of the relationship between two variables. The range for the possible correlation between any two variables is from -1.00 (a perfect inverse relationship) to +1.00 (a perfect positive relationship).
10. **Covariance** is a measure of association between a pair of variables. It is similar to a correlation, but a correlation is expressed in a standardised metric, whereas covariance is expressed in the units of the original variables.
11. **Critical value** is a value that establishes the boundaries of the confidence interval.
12. **Decile** is a subset of adjacent scores in a distribution representing 10% of a sample or a population. A "decile score" is a raw score corresponding to the 10th, 20th, or 30th etc. percentage score.
13. **Degrees of freedom** is the number of components in the calculation of a statistic that are free to vary.
14. **Dichotomous variable** is a discrete measure with two categories that may or may not be ordered. It is a variable which has only two categories.

15. **Discrete variable** is a variable which is limited to a finite number of values. A discrete variable usually describes something which occurs only in whole units. The number of males in an English class is an example of a discrete variable.

16. **Dispersion** is the "spread" of a data set, the departure from central tendency.

17. **Distribution** is where the horizontal axis (x-axis) represents the variable being described. The density of the smooth curve over the x-axis represents the probability of occurrence for each of the values on the x-axis.

18. **Explained variance** is the variance in Y about Y' where Y' is the value of Y on the regression line predicted by the regression equation. If the regression line does not help in predicting Y, then it will pass through Y-bar, in which case, B_{yx}= 0. In absolute value terms, the highest possible score for B_{yx}= +/- 1.00.

19. **Heteroscedasticity** is a condition in which the variances of two or more population distributions are not equal.

20. **Histogram** is a bar graph used to represent the frequency of each value occurring in a distribution of scores.

21. **Homoscedasticity** is a condition in which the variances of two or more population distributions are equal.

22. **Hypotheses** is a set of two or more mutually exclusive and often exhaustive statements. The goal of hypothesis testing is to determine which is true.

23. **Independent samples t-test** is the procedure used in hypothesis testing to compare the means of two different samples. As is true for all t-tests, the standard error is not known and is estimated from sample data.

24. **Interval data** is data that possess magnitude (one value can be judged greater than, less than, or equal to another) and a constant distance between intervals (units of measurement are the same on the scale regardless of where the unit falls).

25. **Interval variable** is a variable whose attributes are rank ordered and have equal distances between adjacent attributes.

26. **Kurtosis** is the degree of flatness or peakedness of a graph of a frequency distribution. The relatively flat distributions are described as platykurtic. Distributions with medium curvature are mesokurtic (note: a normal distribution is mesokurtic). The most peaked distributions are leptokurtic.

27. **Leptokurtic** is a distribution that is more peaked than a normal distribution. This is to say that there are more cases concentrated close to the mean than in a normal distribution.

28. **Line of best fit (least squares fit)** is the least squares fit procedure that allows us to reduce the scatterplot to a single straight line described by a linear equation. It minimises the square of the vertical distance between each point and the regression line.

29. **Marginal** is the frequency distribution of each of two cross tabulated variables. There are row marginal and column marginal.

30. **Mean** is a measure of central tendency calculated by dividing the sum of the scores in a distribution by the number of scores in the distribution. This value best reflects the typical score of a data set when there are few outliers and/or the dataset is generally symmetrical.

31. **Median** is the value in a data set which divides the scores into two equal halves (i.e., an equal number of scores lie above and below it). As a measure of central tendency, it is largely unaffected by extreme values.

32. **Mode** is the score that occurs most frequently in a data set. This measure of central tendency is the only one appropriate for nominal data.

33. **Negative skew** is an asymmetry in a distribution in which the scores are bunched to the right side of the centre. With a negatively skewed distribution, the mean generally falls to the left of the median and the median usually lies to the left of the mode. Study Hint: the tail of a negatively skewed distribution points to the negative side of the number line.

34. **Non-probability sample** is a type of sampling that involves the researcher's judgment to determine the elements to be selected for the sample.

35. **Nominal data** are data that are classified into mutually exclusive ("named") groups that lack intrinsic order.

36. **Normal distribution** is a theoretical distribution which is typically bell-shaped when graphed. The distribution is theoretical because the height of the curve is defined by a mathematical formula (and the exact values necessary to create the curve would never occur).

37. **Null hypothesis** is the prediction that the researcher believes will be "nullified." That is, the researcher believes this prediction is not true.

38. **Observation** is the empirical data that is used to support or refute a hypothesis.

39. **Ordinal data** are data whose values are ordered so that inferences can be made regarding magnitude, but which have no fixed interval between values. An example of ordinal data is a letter grade on a test.

40. **Ordinal variable** is a variable whose values are ordered so that inferences regarding magnitude can be made, but which have no fixed interval between values. Letter grade on a test would be an ordinal variable: while an 'A' is greater than a 'B' which is greater than a 'C', we cannot conclude that the distance between an 'A' and a 'B' is the same as the distance between a 'B' and a 'C'.

41. **Outlier** is a value in a data set that is very different from most other values in the set.

42. **Paired t-test**is the procedure used when the independent variable is within subjects in nature in hypothesis testing. The goal is to compare two levels of the independent

variable assigned to the same group of subjects at different points in time. As it is true for all t-tests, the standard error is not known and is estimated from sample data.

43. **Parameter** is a characteristic of a population, e.g. mean (μ), pronounced "mu", and standard deviation (σ), or "sigma".

44. **Pearson's correlation coefficient** is a measure of association between two continuous variables which estimates both the direction and strength of a linear relationship.

45. **Percentile** is a value that exceeds a specific percentage of the distribution. Thus, if the 63rd percentile score for a set of you on the SAT verbal exam is 560, then 63% of scores are at or below 560.

46. **Platykurtic** is a distribution that is flatter than a normal distribution. This is to say that there are more cases in the tails of the distribution than in a normal distribution.

47. **Population** is the set of all possible data values that *could* be observed.

48. **Positive skew** is an asymmetry in a distribution in which the scores are bunched to the left side of the centre. With a positively-skewed distribution, the mean generally falls to the right of the median and the median usually lies to the right of the mode. Study Hint: the tail of a positively skewed distribution points to the positive side of a number line.

49. **Probability sample** is sampling in which each element within a study population has a known, nonzero chance of being selected into the sample.

50. **Protocol** is a specified methodology for performing a task.

51. **Quartile** is a subset of adjacent scores in a distribution representing 25% of a sample or a population. A "quartile score" is a raw score corresponding to the 25th, 50th, or 75th percentile score.

52. **Quintile** is subset of adjacent scores in a distribution representing 20% of a sample or a population. A "quintile score" is a raw score corresponding to the 20th, 40th, 60th, or 80th percentile score.

53. **Random sample** is a sample that contains observations which are selected form a population so that every member of the population has a known chance of selection for a sample.

54. **Random variable** is the measurements of a random variable, vary in a seemingly random and unpredictable manner. A random variable assumes a unique numerical value for each of the outcomes in the sample space of the probability experiment.

55. **Range** is a simple measure of dispersion, indicating the difference between the lowest and highest values observed.

56. **Ranked categories** are categories within a variable that are logically ranked. The different attributes of each category represent relatively more or less of the variable.

57. **Ratio data** are data that are ordered (so that we can make inferences regarding magnitude), have equal intervals between values, and contain an absolute zero point. Height is an example of ratio data: 60 inches is taller than 55 inches, the distance between 60 and 55 inches is the same as the distance between 30 and 25 inches, and a height of 0 inches implies no height at all.

58. **Ratio variable** are the variables that are based on a true zero point. An example of a ratio variable would be age.

59. **Regression** is a statistical procedure that allows us to determine the extent to which we can predict a given observation's score on a dependent variable, given observation's score on one or more independent variables.

60. **Regression coefficient** is the slope of the regression line. It represents the change in y for every one unit change in x.

61. **Regression line** is a model that simplifies the relationship between two variables. By approximating a line through the centre of a scatterplot that represents the data, we create a two dimensional centre for the data. The line summarises the data points in the same way that measures of central tendency do.

62. **Sample** is a collection of observations selected form a larger population.

63. **Sampling distribution** are all the possible non-overlapping samples that can be drawn, given a constant sample size.

64. **Sampling distribution of means** is a frequency distribution of a large number of random sample means that have been drawn from the same population.

65. **Sampling distribution of the difference between means** is a sampling distribution that consists of the differences in means between groups.

66. **Sampling distribution of means** is a frequency distribution of a large number of random sample means that have been drawn from the same population.

67. **Sampling distribution of the mean of difference scores** is a sampling distribution that consists of the differences in means within subjects across treatments.

68. **Sampling error** is the extent to which a sample distribution is different from the population distribution of which the sample is drawn.

69. **Scatterplot** is a group of data points that are plotted along x-axis and y-axis coordinates. Every individual is represented as a data point, whereby a perpendicular line from the individual's "X" value intersects a perpendicular line from the individual's "Y" value.

70. **Single sample t-test** is the procedure used to compare the mean of one sample to a known population meaning hypothesis testing. As is true for all t-tests, the standard error is not known and is estimated from sample data.

71. **Skewness** is asymmetry in a distribution in which scores are bunched on one side of the distribution.

72. **Standard deviation** is a measure of dispersion describing the spread of scores around the mean. It is the square root of the variance.

73. **Standard error** is the standard deviation of a sampling distribution.

74. **Standard error of the mean** is the standard deviation of a sampling distribution of means.

75. **Standard error of the mean of difference scores** is the standard deviation of a sampling distribution of the mean of difference scores.

76. **Standard score** is a raw score that has been converted from one scale into another with an arbitrarily set mean and standard deviation. Standard scores are more easily interpreted than raw scores, because they take into account the mean and standard deviation of the distribution of values.

77. **Statistic** is a characteristic of a sample, e.g. mean ($\bar{X}$) and standard deviation(s).

78. **Strata** is a subdivision of a population.

79. **Stratification** is allocating samples among subcategories, within a population. Stratification is sometimes necessary to improve the effectiveness of a sampling effort or to increase understanding of population characteristics. For example, stratifying an election survey by sex allows analysts to better understand voter behaviour by revealing differences in the way that males and females vote.

80. **Type I error** is erroneously rejecting the null hypothesis: concluding that a sample came from a different population when it in fact, is from the same population.

81. **Type II error** is erroneously failing to reject the null hypothesis: concluding that a sample came from the given population when it in fact is from a different population.

82. **Variance** is a measure of dispersion, indicating the mean of the squared deviations of a set of scores from the mean of the scores.

83. **Y-intercept** is the point through which the line intersects the Y-axis. It is the value of y when x equals zero.

84. **Z-score** is a standardised score which indicates how many standard deviations a value lies above or below the mean.