



# MCA

## Introduction to Research

### Definition, Scope, Objectives, and Types

**Name** : Divesh Jadhvani  
**Institution** : Pimpri Chinchwad University  
**LECTURE 1**



# Agenda

- 1. Definition and Scope of Research**
- 2. Objectives(Goal) and Significance(Importance) of Research**
- 3. Types of Research**
- 4. Real-life Examples and Case Studies**
- 5. Quiz**

## Definition of Research

**Definition:** Systematic investigation to establish facts, principles, or generalizable knowledge.

**Quote:** "Research is creating new knowledge."  
– Neil Armstrong

## Scope of Research

- Exploration of unknown areas.
- Validation of existing knowledge.
- Practical application of theories.
- **Example:** Discovering new treatments in medicine.

# Objectives of Research

- To gain new insights
- To solve specific problems
- To establish generalizable facts
- **Example:** Reducing carbon emissions through innovative technologies.

# Significance of Research

1. Advancement of knowledge
2. Informing policy and decision-making
3. Driving innovation and economic growth

**Case Study:** The Human Genome Project and its impact on medicine.

- The Human Genome Project (HGP) was a huge scientific project that started in 1990 and finished in 2003. Its main goal was to read and map all the genes in human DNA.
- **Better understanding of diseases , Personalized medicine , New treatments , Preventive care(Beforehand)**

# Types of Research

- **Basic Research:** Aimed at expanding knowledge (e.g., understanding genetic codes(the instructions contained in a gene that tell a cell how to make a specific protein)).
- **Applied Research:** Solving practical problems (e.g., developing new drugs).
- **Exploratory Research:** Investigating new areas (e.g., studying effects of a new teaching method).Can i do it like this?
- **Descriptive Research:** Describing characteristics (e.g., census data analysis).What is happening
- **Analytical Research:** Understanding relationships (e.g., impact of lifestyle on health).Why and how it is happening

# Real-life Examples

- **Basic Research:** A study looking at how alcohol consumption impacts the brain.
- **Applied Research:** Developing vaccines for COVID-19.
- **Exploratory Research:** Investigating the impact of social media on mental health.
- **Descriptive Research:** Analyzing population demographics in urban areas.
- **Analytical Research:** Assessing the relationship between diet and diabetes.



# Case Study

- **Title:** Development of the Internet
- **Description:** From ARPANET (Advanced Research Projects Agency Network) to the modern internet, research led to the creation of the global communication network.
- **Impact:** Revolutionized communication, commerce, and information sharing.

# QUIZ

**Question 1:** What is the primary objective of basic research?

- a) Solve specific practical problems
- b) Explore new areas
- c) Expand existing knowledge
- d) Describe characteristics

# QUIZ

**Question 2:** Which type of research aims to describe characteristics of a population?

- a) Analytical Research
- b) Descriptive Research
- c) Exploratory Research
- d) Applied Research

# QUIZ

**Question 3:** Give an example of applied research.

- a) Studying the Big Bang theory
- b) Developing new educational methods
- c) Analyzing census data
- d) Investigating genetic codes

# QUIZ

**Question 3:** Give an example of applied research.

- a) Studying the Big Bang theory (basic research)
- b) Developing new educational methods (applied research)
- c) Analyzing census data (applied research + descriptive)
- d) Investigating genetic codes (both basic and applied research)

# Summary

**Recap of key points: Definition, scope, objectives, significance, and types of research.**

**Importance of understanding different research types and their applications.**

