



# Elements Of Statistics

## Class-BCA III Semester



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**OUTLINE:-**

**UNIT-I**

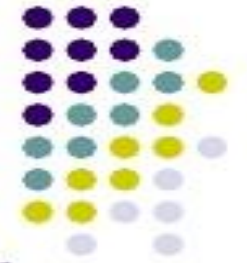
**STATISTICS-**

**DEFINITION OF STATISTICS**

**SCOPE OF STATISTICS**

**LIMITATIONS OF STATISTICS**

**ROLE OF STATISTICS**



# Definitions

- “Statistics is a numerical statement of facts in any department of enquiry placed in relation to each other’. **-Bowley**
- “Statistics are the classified facts representing the conditions of the people in a State specially those facts which can be stated in numbers or any tabular or classified arrangement”. **-Webster**
- “Statistics can be defined as the aggregate of facts affected to a marked extent by multiplicity of causes, numerically expressed, enumerated or estimated according to a reasonable standard of accuracy, collected in in a systematic manner, for a pre-determined purpose and placed in relation to each other”. **-Secrist**
- Statistics is the science of collecting, organizing , analyzing, interpreting and presenting data.

# SCOPE OF STATISTICS

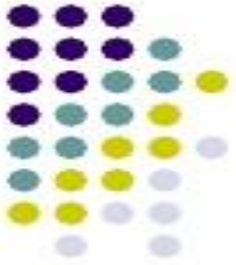
## 1. Social Sciences

- Man Power Planning
- Crime Rates
- Income & Wealth Analysis of Society
- In studying Pricing, Production, Consumption, Investments & Profits etc.

## 2. Planning

- Agriculture
- Industry
- Textiles
- Education etc.

For ex. Five Year Plans in India.





# SCOPE OF STATISTICS

## contd...



### 3. Mathematics

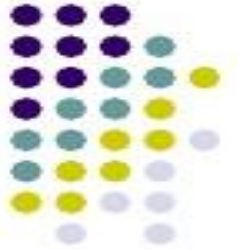
- Extensive use of Differentiation, Algebra, Trigonometry, Matrices etc in modern business analysis.
- Statistics now treated as Applied Mathematics.

### 4. Economics

- Family Budgeting
- Applied in solving economic problems related to production, consumption, distribution of products as per income & wealth related patterns, wages, prices, profits & individual savings, investments, unemployment & poverty etc.

# SCOPE OF STATISTICS

## contd...



## 5. Business Management

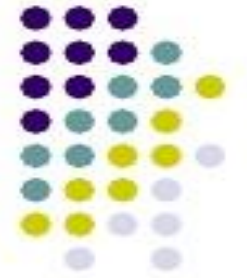
- Trend Analysis
- Market Research & Analysis
- Product Life Cycle

### i) **Marketing**

Marketing Policy Decisions depend on forecasting, demand analysis, time & motion studies, inventory control, investments & analysis of consumer data for production & sales.

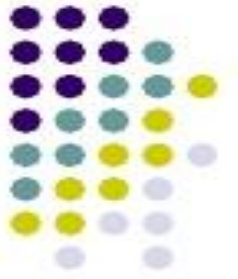
# SCOPE OF STATISTICS

## contd...



### ii) Production

- Designs
- Methods of Production
- Technology Selection
- Quality Control Mechanisms
- Product Mix
- Quantities
- Time Schedules for Manufacturing & Distribution



# SCOPE OF STATISTICS

## contd...

### iii) Finance

- Correlation Analysis of profits & dividends, assets & liabilities
- Analysis of income & expenditure
- Financial forecasts, break-even analysis, investment & risk analysis

### iv) Sales

- Demand Analysis
- Sales Forecasts

### v) Personnel

- Wage plans, Incentive plans, Cost of living, Labor turnover ratio, Employment trends, Accidental Rates, Performance Appraisals etc.



# SCOPE OF STATISTICS

## contd...



### **vi) Accounting & Auditing**

- Analysis of Income, Expenditure, Investment, Profits and Optimization of Production etc
- Forecasting costs of production & price

### **vii) Other Areas**

- Insurance, Astronomy, Social Sciences, Medical Sciences, Psychology, Education etc.

# LIMITATIONS OF STATISTICS



- Does not study individual items, deals with aggregates.
- Statistical laws are not exact.
- Not suitable for the study of qualitative phenomenon.
- Statistical methods are only means and not end for solving problems.

# ROLE OF STATISTICS IN MANAGEMENT DECISIONS



## A. Marketing & Sales

- Product selection & competence strategies
- Utilization of resources including territory control
- Advertising decisions for cost & time effectiveness
- Forecasting & trend analysis
- Pricing & market research

# ROLE OF STATISTICS IN MANAGEMENT DECISIONS contd...



## **B. Production Management**

- Product mix & product positioning
- Facility & production planning
- Distribution management
- Material handling & facility planning
- Maintenance policies
- Activity planning & resources allocation
- Quality control decisions



# ROLE OF STATISTICS IN MANAGEMENT DECISIONS contd...



## **C. Materials Management**

- Buying policy- Sourcing & Procurement
- Material Planning & Lead Times

## **D. Finance, Investments & Budgeting**

- Profit planning
- Cash Flow Analysis
- Investment decisions
- Dividend policy decisions
- Risk Analysis
- Portfolio Analysis

# ROLE OF STATISTICS IN MANAGEMENT DECISIONS contd...



## **E. Personnel Management**

- Optimum organization level
- Job evaluation & assignment analysis
- Social / habit analysis
- Salary / wage policies
- Recruitment & Training

# ROLE OF STATISTICS IN MANAGEMENT DECISIONS contd...



## **F. Research & Development**

- Area of thrust – Analysis & Planning
- Project Selection Criteria\
- Alternatives analysis
- Trade – off analysis - cost & revenue

# ROLE OF STATISTICS IN MANAGEMENT DECISIONS contd...



## **G. Defense**

- Optimization of weapon system
- Force deployment
- Transportation Cost Analysis
- Assignment Suitabilities



## QUESTIONS:-

- What is statistics Define it properly?
- What is the role of statistics in our industries?
- What is the limitations of statistics?

## Reference Books:

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6. Gupta S.P. – Statistical Methods, Sultan Chand and Sons New Delhi

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Thanks