

2.4:: QUANTITATIVE METHODS FOR BUSINESS – II

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SYLLABUS:

Unit 1: INTRODUCTION TO STATISTICS 04 Hrs

Background and Basic concepts: Introduction – Definition of Statistics – Functions – Scope – Limitations, Classification and Tabulation of Data.

Unit 2: MEASURES OF CENTRAL TENDENCY 14 Hrs

Introduction – Types of averages – Arithmetic Mean (Simple and Weighted) – Median – Mode – Graphic location of Median and Mode through Ogive Curves and Histogram.

Unit 3: MEASURES OF DISPERSION AND SKEWNESS 14 Hrs

Part – 1: Measures of Dispersion : Meaning– Calculation of Absolute and Relative measures of dispersion - Range – Quartile Deviation – Mean Deviation – Standard Deviation and Coefficient of Variation

Part – 2: Measures of Skewness: Meaning of Skewness - Symmetrical & Skewed Distributions- Measures of Skewness - Absolute and Relative Measures of Skewness – Karl Pearson's Coefficient of Skewness and Bowley's Coefficient of Skewness

Unit 4: CORRELATION AND REGRESSION ANALYSIS 14Hrs

Correlation – Meaning & Definition - Uses – Types – Probable error – Karl Pearson's & Spearman's Rank Correlation (Excluding Bi-variate and Multiple correlation). Regression – Meaning and Definition, Regression Equations – Problems

Unit 5: INDEX NUMBERS 10 Hrs

Meaning & Definition – Uses – Classification – Construction of Index Numbers – Methods of constructing Index Numbers – Simple Aggregate Method – Simple Average of Price Relative Method – Weighted Index numbers – Fisher's Ideal Index (including Time and Factor Reversal tests) – Consumer Price Index – Problems

UNIT 1: INTRODUCTION TO STATISTICS

Definition of statistics: Statistics is called as science of counting. Statistics may be defined as science of collection, presentation, analysis, and interpretation of numerical data.

OBJECTIVES OF STATISTICS:

- To throw light on the complex data and sense from them
- To take action on the basis of the data processed
- To draw conclusion on the basis of analyzed data
- To prove unknown from known available data
- To examine changes in economical activities

Functions of statistics:

- It guides in collecting an appropriate quantitative data.
- It simplify the complex and presnt same in attractive form.
- It examine the past and present data, and indicate the future tendencies.
- It makes comparison between one set of data with other to know the nature of variables
- it collects numerical data systematically.

limitation of statistics:

- Statistics laws are true on averages
- Statistics deals with aggregates of facts, but not with single observation.
- Statistics deals with homogeneous facts, but not with heterogeneous facts.
- Statistical methods are applicable to quantitative data, but not qualitative data.

- Statistical methods do not provide complete solution to the problems

CLASSIFICATION AND TABULATION OF DATA

COLLECTION OF DATA: The process of Counting or enumerating and recording the same systematically is called collection of data.

Primary data: If the data are collected originally for the first time are called primary data.

The Sources of primary data are

- **Direct Personal observations:** Investigations themselves go to the field personally observe and collect the information from the informants.
- **Indirect Oral Interview:** Investigations used to appoint experienced enumerators to collect the data. The enumerators are asked to interview the respondents and record the answer given by them.
- **Local Agencies:** Investigators used to appoint local agents or correspondents in different parts of the area to collect the data.
- **Questionnaires:** A questionnaire is a list of logically arranged questions relating to the field of enquiry and providing space for the answer to be filled in by the respondents.
- **Schedules:** It is a printed list of simple questions. it is sent to the respondents through the enumerators. The enumerators discuss personally with the respondents and record their answers in the schedule.

Secondary data: if he makes use of the data which had been earlier collected by someone else, it is termed as secondary data.

The Sources of Secondary data.

1) **Published Sources:** It refers to the data sources which are available in printed format. Like journals, newspapers, books, websites etc.

2) **Unpublished Sources:** The data which are not available in printed form. There are various data available which are unwritten in any format.

Techniques of Data Collection.

- 1) Census Technique.
- 2) Sample Technique.

Census Technique: When each and every unit of population under study is considered and collected for a statistical investigation.

Sample Technique: The terminology “sampling” means the process of selecting a part of the population under study with a view to obtaining information about the whole population.

CLASIFICATION OF DATA: It is a process of arranging data into sequences and groups or classes according to their attributes or characteristics.

Objectives of Classification of data.

1. To condense the mass of data.
2. To facilitate comparison.
3. To bring homogeneity to heterogeneous features of raw data.
4. To highlight the most significant features contained in the data at a glance.

Types of classification:

- Qualitative Classification: Data are classified according to attribute or characteristics or qualities. Generally the qualitative phenomena are not measurable. However, they can be studied with reference to their presence or absence like educated or uneducated, married and unmarried, boys & girls etc.
- Quantitative Classification. Data are classified according to quantities that are measurable such as age, weight, marks, price and so on
- Class interval: size of each class or group. It begins with lower limit and ends with upper limit.
- Inclusive class interval: size of a class in which both the class limits are considered.

- Exclusive class interval:size of class in which the lower limit included and upper limit excluded.
- Cumulative frequency:it is running total of all the frequencies up to and including the respective class intervals are in ascending or descending order of values.
- Less than cumulative frequency :totals of the frequencies downwards starting from the first frequency.
- more than cumulative frequency :totals of the frequencies upwards starting from the last frequency.

TABULATION OF DATA: The process of placing classified data into tabular form is known as tabulation. A table is a symmetric arrangement of statistical data in rows and columns. Rows are horizontal arrangements whereas columns are vertical arrangements.

Contents of a Table:

1. Table number
2. Title of Table.
3. Data.
4. Row designation.
5. column Heading.
6. Body of the Table.
7. Head note.
8. source of Data.
9. Foot note.

Types of Tabulation.

1.Simple Tabulation (one-way):- When the data are tabulated to one characteristics.

Ex: - Table showing number of employees in Canara Bank according to age-group.

Age(in year)	No. of Employees
Below 30	15
30-40	18
40-50	9
50 and Above	3

2. Double Tabulation(two-way):- When data are tabulated to two characteristics at a time.

Ex: Table showing number of employees in Canara Bank according to age and sex

Age \ sex	No. of Employees		total
	Male	Female	
Below 30	9	6	15
30-40	10	8	18
40-50	2	7	9
50 and Above	-	3	3
total	21	24	45

3. Complex Tabulation(manifold): Table showing number of employees in Canara Bank according to age, sex and marital status.

EXAMPLE:

Town-A : Females were 40%, Total coffee drinkers were 45% and Males non-coffee drinkers were 20%.

Town-B : Males were 55% Males non-coffee drinkers were 30% and females coffee drinkers were 15%. Represent the above in tabular form.

Town	A		B			
Gender Habit	Male	Female	Total	Male	Female	total
Total Coffee drinker	40	5	45	25	15	40
Non coffee drinker	20	35	55	30	30	60
Total	60	40	100	55	45	100