

CHAPTER-7 CORRELATION

CORRELATION:

Correlation is defined as a Statistical tool used to establish the relationship between two or more variables. It is commonly classified into : Positive and Negative

Positive Correlation



The correlation is said to be Positive when the variables move together in the same direction

EXAMPLES

When income rises, consumption also rises. when income falls, consumption also falls when summer heat rises, hill stations are crowded with visitors

NEGATIVE CORRELATION

The correlation is said to be negative when the variables move in the opposite direction

EXAMPLES

When the price of apples fall demand increases

When the price of apples rise demand decreases

When you spend more time in studying, you get more a+

TECHNIQUE FOR MEASURING CORRELATION

There are three important tools to measure Correlation.

- 1.Scatter Diagram
- 2.Karl Pearson's Coefficient of Correlation
- 3.spearman's Rank Correlation

I - SCATTER DIAGRAM

A scatter diagram is an useful technique for visually examining the form of relationship, with out calculating. IN this technique the values of the two variables are plotted as points on a graph paper.

SCATTER DIAGRAM

If all the points lie on a line, the correlation is perfect and is said to be unity

If the scatter points are widely dispersed around the line, the correlation is low

The correlation is said to be linear if the scatter points lie on a line or near a line

POSITIVE CORRELATION

Scatter around an upward rising¹ line indicating the movement of the variables in the same direction. when 'x' axis rises, 'y' will also rise and vice versa.

NEGATIVE CORRELATION

The points are found to be scattered around a downward sloping line. this time the variables move in opposite direction. when 'x' rises, 'y' falls and vice versa.

NO CORRELATION

There is no upward rising or downward sloping. points are scattered

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PERFECT POSITIVE AND PERFECT NEGATIVE CORRELATION: The points are no longer scattered around an upward rising or downward falling line. The points themselves are on the lines.

MERITS OF SCATTER DIAGRAM

1. It is a simple and non mathematical method
2. It is not influenced by the size of extreme items
3. Can form relationship between variables at a glance
4. Usually² it is the first step in finding the relationship

LIMITATIONS OF SCATTER DIAGRAM

1. It does not give a numerical measurement
2. It gives only an approximate idea only



II – KARL PEARSON'S COEFFICIENT OF CORRELATION

- It is only one among the many methods of measuring Correlation
- It is also known as Pearsonian Coefficient of Correlation • It is denoted by the symbol

NOTE.

+1	Perfect Positive
Greater than 0 but less than 1	Positive
0	No Correlation
Less than 0 but greater than -1	Negative
-1	Perfect Negative

SPEARMAN'S RANK CORRELATION

IT was developed by the British Psychologist Charles Edward Spearman in 1904.

This method is used when the variables are not capable of quantitative measurement

(Eg. beauty, intelligence, honesty, colour etc.)

PROPERTIES OF CORRELATION COEFFICIENT

The Correlation Coefficient 'r' has no unit. It is a pure number

The range of simple correlation coefficient is -1 to +1

If 'r' = 0, then the variables have no correlation

If 'r' is positive, then there is positive correlation between the variables

If 'r' is negative, then there is negative correlation between the variables

If 'r' = +1, then the variables have perfect positive correlation

If 'r' = -1, then the variables have perfect negative correlation

A high positive value of 'r' indicates strong positive correlation

A negative value near to -1 indicates strong negative correlation

A value near to 0 indicates weak linear correlation

