



Ref. No.:

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B.Com. I
CORE CONCEPT OF
BUSINESS MATHEMATICS & STATISTICS

When some values or ranks are equal –

Example- 24: Calculate rank correlation coefficient for following data:

x	49	69	39	49	29
y	59	59	59	49	39

Solution-24:

x	R _x	y	R _y	D(R _x -R _y)	D ²
49	3.5	59	4	-0.5	0.25
69	5	59	4	1	1
39	2	59	4	-2	4
49	3.5	49	2	1.5	2.25
29	1	39	1	0	0
					7.5

$$r_r = 1 - \frac{6[\sum D + 1/12(m_3 - m) + 1/12(m_3 - m)]}{N(N^2 - 1)}$$

Since item 49 is repeated 2 times in series x, m=2

Since item 59 is repeated 3 times in series y, m=3

$$r_r = 1 - \frac{6[7.5 + 1/12(2)3 - 2 + 1/12(3)3 - 3]}{5(5^2 - 1)}$$

$$r_r = 1 - \frac{6[7.5 + 1/12(8 - 2) + 1/12(27 - 3)]}{5(25 - 1)}$$

$$r_r = 1 - \frac{6[7.5 + 6/12 + 24/12]}{5(25 - 1)}$$

$$r_r = 1 - \frac{6[7.5 + 0.5 + 2]}{5 \times 24}$$

$$r_r = 1 - \frac{6 \times 10}{120}$$

$$r_r = 1 - \frac{60}{120}$$

$$r_r = 1 - 0.5$$

$$r_r = 0.5$$



Regression Analysis

Regression Analysis is the measure of average relationship between two or more variables in terms of the original units of the data. The technique of correlation is used to measure statistical relationship which provides information regarding the degree and direction of relationship between two related series. But, if the two value of one series (variable) is given and the value of the other series is to be predicted, the technique of regression analysis is required for this purpose. The credit of using regression technique in statistics for the first time goes to British Biometrician **Sir Francis Galton** who used this term in 1877 while studying the relationship between the height of fathers and sons.

Definition:-

“Regression analysis is a mathematical measure of the average relationship between two or more variables in terms of the original unit of data.” – **According to M.M. Blair**

Types of Regression

- 1) **Simple Regression-** This distinction is based on the number of variables studied. If regression analysis is based only two variables is known as simple regression.
- 2) **Multiple and Partial Regression:** When more than two variables are studied, it is a problem of either multiple or partial regression.
- 3) **Linear Regression:** If the regression line is in the form of a straight line, it indicates linear regression.
- 4) **Curvi-linear Regression:** If the regression line is not a straight line but a smoothed curve, regression is termed as curvi-linear or non-linear.

The linear function is useful because it is mathematically simple and it can be shown to be reasonably close to the approximation of many situations.