

Correlation by Rank Difference Method

*B.Ed. 3rd semester
Paper-IX, Unit-V
Statistics*

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Question: The marks obtained by twelve students in two subjects Economics and Maths are given as below, compute coefficient of correlation by Rank Order (Difference) Method.

STUDENTS NAME	ECONOMICS	MATHS
Anil kumar	60	75
Shyam Das	34	32
Ritu Raj	40	34
Amit Kumar	50	40
Sanjay Das	45	45
Vivek kumar	41	33
Sameer	22	12
Kishor Khan	43	30
Pratap	42	36
Suman	66	72
Anjali	64	41
Kunal	46	57

SOLUTION

STUDENTS NAME	ECONOMICS	RANK for Eco (R1)	MATHS	RANK for Math (R2)
Anil kumar	60	3	75	1
Shyam Das	34	11	32	10
Ritu Raj	40	10	34	8
Amit Kumar	50	4	40	6
Sanjay Das	45	6	45	4
Vivek kumar	41	9	33	9
Sameer	22	12	12	12
Kishor Khan	43	7	30	11
Pratap	42	8	36	7
Suman	66	1	72	2
Anjali	64	2	41	5
Kunal	46	5	57	3

STUDENTS NAME	ECONOMIC S	RANK for Eco (R1)	MATHS	RANK for Math (R2)	D = (R1-R2)
Anil kumar	60	3	75	1	2
Shyam Das	34	11	32	10	1
Ritu Raj	40	10	34	8	2
Amit Kumar	50	4	40	6	-2
Sanjay Das	45	6	45	4	2
Vivek kumar	41	9	33	9	0
Sameer	22	12	12	12	0
Kishor Khan	43	7	30	11	-4
Pratap	42	8	36	7	1
Suman	66	1	72	2	1
Anjali	64	2	41	5	3
Kunal	46	5	57	3	2

STUDENTS NAME	ECONOMICS	RANK for Eco (R1)	MATHS	RANK for Math (R2)	D = (R1-R2)	D ²
Anil kumar	60	3	75	1	2	4
Shyam Das	34	11	32	10	1	1
Ritu Raj	40	10	34	8	2	4
Amit Kumar	50	4	40	6	-2	4
Sanjay Das	45	6	45	4	2	4
Vivek kumar	41	9	33	9	0	0
Sameer	22	12	12	12	0	0
Kishor Khan	43	7	30	11	-4	16
Pratap	42	8	36	7	1	1
Suman	66	1	72	2	1	1
Anjali	64	2	41	5	3	9
Kunal	46	5	57	3	2	4
						$\Sigma D^2 = 48$

Using formula

$$r = 1 - \frac{6\sum D^2}{N(N-1)}$$

$$\therefore r = 1 - \frac{6\sum D^2}{N(N-1)}$$

$$r = 1 - \frac{6 * 48}{12(12^2 - 1)}$$

$$r = 1 - \frac{288}{12 * (144 - 1)}$$

$$r = 1 - \frac{288}{12 * 143}$$

$$r = 1 - \frac{288}{1716}$$

$$r = \frac{1716 - 288}{1716}$$

$$r = \frac{1428}{1716}$$

$$r = +0.83 \text{ Ans}$$

Where,

r- correlation coefficient

$\sum D^2$ = Sum of squared differences between ranks

of two variables.

N= Total no. of students

INTERPRETATION

The result shows that there is very high positive correlation between the marks obtained by students in Economics and mathematics.

TABLE VALUE

Value of coefficient of correlation	Interpretation
0.00 to ± 0.20	Negligible
± 0.21 to ± 0.40	Low
± 0.41 to ± 0.60	Moderate
± 0.61 to ± 0.80	High
± 0.81 to ± 0.99	Very high
± 1.00	Perfect