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Tugas Ancova

NO	Treatment A		Treatment B	
	X	Y	X	Y
1	175	135	205	165
2	175	145	175	195
3	235	205	230	160
4	215	175	190	155
5	195	140	155	150
6	195	190	185	170

Tabel statistik

Statistik	Treatment A	Treatment B	Total
N	6	6	12
ΣX	1.190	1.140	2.330
ΣX^2	238.750	219.900	458.650
ΣY	990	995	1.985
ΣY^2	167.600	166.275	333.875
ΣXY	199.150	188.900	388.050
$\bar{X}$	198,3	190	388,3
$\bar{Y}$	165	165,8	330,8

Langkah-langkah perhitungan

A. Sumber Variasi Total (residu)

1) $JK_{Y_t} = \Sigma y_t^2 = \Sigma Y_t^2 - \frac{(\Sigma Y_t)^2}{N}$

$= 333.875 - \frac{(1.985)^2}{12}$

$= 5522,91$

2) $JK_{X_t} = \Sigma x_t^2 = \Sigma x_t^2 - \frac{(\Sigma X_t)^2}{N}$

$= 458.650 - \frac{(2.330)^2}{12}$

$= 6241,66$

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3) $JP_{XY_t} = \Sigma xy = \Sigma XY - \frac{(\Sigma X)(\Sigma Y)}{N}$

$= 388.050 - \frac{(2.330)(1.985)}{12}$

$= 2629,16$

4) $Beta_t = \frac{\Sigma xy}{\Sigma x_t^2}$

$= \frac{2629,16}{6241,66}$

$= 0,42$

5) $JK_{reg\,t} = \beta \times \Sigma xy$

$= 0,42 \times 2629,16$

$= 1104,24$

6) $JK_{res\,t} = JK_{Y_t} - JK_{reg\,t}$

$= 5522,91 - 1104,24$

$= 4418,67$

B. Sumber Variasi Dalam (JK dalam residu)

1) $JK_{Yd} = \Sigma y_t^2 = \Sigma Y_t^2 - \frac{\Sigma (\Sigma Y_A)^2}{nA}$

$= 333.875 - \left(\frac{990^2}{6} + \frac{995^2}{6}\right)$

$= 5520,83$

2) $JK_{Xd} = \Sigma x_t^2 = \Sigma X_t^2 - \frac{\Sigma (\Sigma X_A)^2}{nA}$

$= 458.650 - \left(\frac{1190^2}{6} + \frac{1140^2}{6}\right)$

$= 6033,33$

3) $JP_{XYd} = \Sigma xy = \Sigma XY - \frac{\Sigma (\Sigma X_A)(\Sigma Y_A)}{nA}$

$= 388.050 - \left(\frac{1190 \times 990}{6} + \frac{1140 \times 995}{6}\right)$

$= 2650$

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4) $Beta\,d = \frac{\Sigma xy}{\Sigma x_t^2}$

$= \frac{2650}{6033.33}$

$= 0.43$

5) $JK_{reg\,d} = \beta_d \times \Sigma xy$

$= 0,43 \times 2650$

$= 1139,5$

6) $JK_{res\,t} = JK_{Yd} - JK_{reg\,d}$

$= 5520,83 - 1139,5$

$= 4381,33$

C. Sumber Variasi Antar

$JK_A = JK_{res\,t} - JK_{res\,d}$

$= 4418,67 - 4381,33$

$= 37,34$

D. Menghitung Derajat kebebasan

$DK_A = a - 1$

$= 2 - 1 = 1$

$DK_D = N - a - M$

$= 12 - 2 - 1 = 9$

$DK_T = N - 1$

$= 12 - 1 - 1 = 10$

E. Menghitung Rata-rata kuadrat (RK)

$RK_A = \frac{JK_A}{DK_A}$

$= \frac{37,34}{1} = 37,34$

$RK_D = \frac{JK_D}{DK_D}$

$= \frac{4381,33}{9} = 486,81$

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F. menghitung harga F

$$F^* = \frac{RK_A}{RK_D}$$

$$= \frac{37,34}{486,81} = 0,07$$

Rangkuman ancova 1 faktor

Statistik	JK	DK	RK	F	F Tabel	
Antar	37.34	1	37.34	0,07	5,12	-
Dalam (error)	4381,33	9	486,81	-	-	-
Total (residu)	4418.67	10	-	-	-	-

Hipotesis

Ho ; $M_1 = M_2$ (tidak terdpt perbedaan nilai variabel y antara yg menggunakan Metode treatment A dan B)

Ho ; $M_1 = M_2$ (terdapat perbedaan nilai variabel y antara yg menggunakan metode treatment A dan B)

→ (1 - 0.05 ; 1 ; 9)

Berdasarkan perhitungan F hitung = 0.07 dan F tabel = 5,12

Maka F hitung < F tabel, maka Ho diterima

Kriteria pengujian :

Tolak Ho jika F hitung > F (α ; DK_A ; DK_B)

Tolak Ho jika F hitung < F (α ; DK_A ; DK_B)

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Tugas Analisis korelasi

(X)	(Y)
Test score (out of 10)	Hours Playing vidio games per week
8	2
3	2
5	1,5
7	1
1	2,5
2	3
6	1,5
7	2
4	2
9	1,5

Tabel Perhitungan

NO	Xi	Yi	XiYi	Xi^2	Yi^2
1	8	2	16	64	4
2	3	2	6	9	4
3	5	1,5	7,5	25	2,25
4	7	1	7	49	1
5	1	2,5	2,5	1	6,25
6	2	3	6	4	9
7	6	1,5	9	36	2,25
8	7	2	14	49	4
9	4	2	8	16	4
10	9	15	13,5	81	2,25
sum	52	19	89,5	334	39

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$$r_{XY} = \frac{n\Sigma x_i y_i - \Sigma x_i \Sigma y_i}{\sqrt{(n\Sigma x_i^2 - (\Sigma x_i)^2)(n\Sigma y_i^2 - (\Sigma y_i)^2}}$$

$$= \frac{10(89.5) - (52)(19)}{\sqrt{(10(334) - (52)^2)(10(39) - (19)^2)}}$$

$$= \frac{(895) - (988)}{\sqrt{(636)(29)}}$$

$$= \frac{-93}{\sqrt{18444}}$$

$$= \frac{-93}{135,80}$$

$$= -0,68$$

Dari hasil ini didapat korelasi negatif antara test score (x) dan hours playing vidio games per week (Y)