

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	185
5	195	140	155	150
6	195	190	185	170

LP

TABEL STATISTIK

Statistik	treatment A	treatment B	Total
N	6	6	12
$\sum X$	1.190	1140	2330
$\sum X^2$	238.750	219.900	458.650
$\sum Y$	990	995	1985
$\sum Y^2$	167.600	166.275	333.875
$\sum XY$	199.150	188.900	388.050
\bar{x}	198,3	190	388,3
\bar{y}	165	165,8	330,8

laangkah perhitungan

A. Sumber Variasi Total (Residu)

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

$$= 333.875 - \frac{(1985)^2}{12}$$

$$= 5522,91$$

$$2. JK_{Xt} = \sum x_t^2 = \sum X_t^2 - \frac{(\sum X_t)^2}{N}$$

$$= 458.650 - \frac{(2330)^2}{12}$$

$$= 6241,66$$

$$3. JP_{XYt} = \sum xy = \sum XY - \frac{(\sum X)(\sum Y)}{N}$$

$$= 388.050 - \frac{(2330)(1985)}{12}$$

$$= 2629,16$$

$$4. Beta_t = \frac{\sum XY}{\sum X_t^2}$$

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

$$= 0,42$$

$$\begin{aligned} 5. JK_{reg t} &= \beta \times \sum xy \\ &= 0,42 \times 2629,16 \\ &= 1104,24 \end{aligned}$$

$$\begin{aligned} 6. JK_{res t} &= JK_{Yt} - JK_{reg t} \\ &= 5522,91 - 1104,24 \\ &= 4418,67 \end{aligned}$$

B. Sumber Variasi Dalam (JK dalam residu)

$$\begin{aligned} 1. JK_{Yd} &= \sum y^2_t = \sum y^2_t - \frac{(\sum Y_A)^2}{n_A} \\ &= 333.875 - \left(\frac{(990)^2}{6} + \frac{(995)^2}{6} \right) \\ &= 5520,83 \end{aligned}$$

$$\begin{aligned} 2. JK_{Xd} &= \sum x^2_t = \sum x^2_t - \frac{(\sum X_A)^2}{n_A} \\ &= 458.600 - \left(\frac{(1190)^2}{6} + \frac{(1140)^2}{6} \right) \\ &= 6033,33 \end{aligned}$$

$$\begin{aligned} 3. JP_{XYd} &= \sum xy = \sum XY - \frac{(\sum X_A)(\sum Y_A)}{n_A} \\ &= 388.050 - \left(\frac{1190 \times 990}{6} + \frac{1140 \times 995}{6} \right) \\ &= 2650 \end{aligned}$$

$$\begin{aligned} 4. \text{Beta } d &= \frac{\sum XY}{\sum X_t^2} \\ &= \frac{2650}{6033,33} \\ &= 0,43 \end{aligned}$$

$$\begin{aligned} 5. JK_{reg d} &= \beta_d \times \sum xy \\ &= 0,43 \times 2650 \\ &= 1139,5 \end{aligned}$$

$$\begin{aligned} 6. JK_{res d} &= JK_{Yd} - JK_{reg d} \\ &= 5520,83 - 1139,5 \\ &= 4381,33 \end{aligned}$$

D. Sumber Variasi Antar

$$\begin{aligned} JKA &= JK_{res t} - JK_{res d} \\ &= 4418,67 - 4381,33 \\ &= 37,34 \end{aligned}$$

D. Menghitung Derajat Kebebasan

$$\begin{aligned} DK_A &= a - 1 \\ &= 2 - 1 = 1 \end{aligned}$$

$$\begin{aligned} DK_D &= N - a - M \\ &= 12 - 2 - 1 = 9 \end{aligned}$$

$$\begin{aligned} DK_T &= N - 1 - M \\ &= 12 - 1 - 1 = 10 \end{aligned}$$

E. Menghitung rata-rata kuadrat (RK)

$$RKA = \frac{JKA}{DK_A} = \frac{37,34}{1} = 37,34$$

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

F. Menghitung harga F

$$F^* = \frac{RKA}{RK_D} = \frac{37,34}{486,81} = 0,07$$

Rangkuman ANCOVA 1 Factor

Statistik	JK	DK	PK	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 statistik

$H_0 : \mu_1 = \mu_2$: Tidak terdapat perbedaan hasil variabel dependen dan variabel independent antara yang menggunakan treatment A dan yang menggunakan treatment B.

$H_0 : \mu_1 \neq \mu_2$ = Terdapat perbedaan hasil variabel dependen dan variabel independent antara yang menggunakan treatment A dan yang menggunakan treatment B.

Dari perhitungan diperoleh $F_{hitung} = 0,07$ dan $F_{tabel} (1-0,05; 1; 9) = 5,12$ maka $F_{hitung} < F_{tabel}$, maka H_0 diterima.

TUGAS ANALISIS KORELASI

X Test score (out of 10)	Y Hours Playing Video 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

NO	x_i	y_i	$x_i y_i$	x_i^2	y_i^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	1,5	13,5	81	2,25
Sum	52	19	89,5	339	39

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

$$r_{xy} = \frac{10(89,5) - (52)(19)}{\sqrt{(10(339) - (52)^2)(10(39) - (19)^2)}}$$

$$= \frac{895 - 988}{\sqrt{(636)(29)}} = \frac{-93}{\sqrt{18444}}$$

$$= \frac{-93}{135,80} = -0,68$$

Dari hasil ini didapat korelasi negatif antara test score (x) dan hours playing video game (y)