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2C2220009

Tugas Ancova

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

Tabel Statistik

Statistik	Treatment A	Treatment B	Total
N	6	6	12
Σx	1190	1190	2330
Σx^2	238750	219900	458650
Σy	990	995	1985
Σy^2	167600	166275	333875
Σxy	199150	188900	388050
$\bar{x}$	198,3	190	388,3
$\bar{y}$	165	165,8	330,8

Langkah-langkah perhitungan

A. Sumber variasi Total (residu)

1). $JK_{yt} = \Sigma y_t^2 = \Sigma x_t^2 - \frac{(\Sigma y_t)^2}{N} = 333875 - \frac{(1985)^2}{12} = 5522,91$

2). $JK_{xt} = \Sigma x_t^2 = \Sigma x_t^2 - \frac{(\Sigma x_t)^2}{N} = 458650 - \frac{(2330)^2}{12} = 6291,66$

3). $JP_{xyt} = \Sigma xy = \Sigma xy - \frac{(\Sigma x)(\Sigma y)}{N} = 388050 - \frac{(2330)(1985)}{12} = 2629,16$

4). $Beta_t = \frac{\Sigma xy}{\Sigma x_x^2} = \frac{2629,16}{6291,66} = 0,92$

5). $JK_{regt} = B_x \Sigma xy = 0,42 \times 2629,16 = 1109,29$

6). $JK_{rest} = JK_{yt} - JK_{regt} = 5522,91 - 1109,29 = 9418,67$

B. Sumber variasi dalam (JK dalam residu)

1). $JK_{yd} = \Sigma y_t^2 = \Sigma y_t^2 - \Sigma \frac{(\Sigma y_A)}{nA} = 333875 - \left(\frac{990^2}{6} + \frac{995^2}{6}\right) = 5520,83$

2). $JK_{xd} = \Sigma x_t^2 = \Sigma x_t^2 - \Sigma \frac{(\Sigma x_A)}{nA} = 458650 - \left(\frac{1190^2}{6} + \frac{1190^2}{6}\right) = 6033,33$

3). $JP_{xyd} = \Sigma xy = \Sigma xy - \Sigma \frac{(\Sigma x_A)(\Sigma y_A)}{nA} = 388050 - \left(\frac{1190 \times 990}{6} + \frac{1190 \times 995}{6}\right) = 2650$

4). $Beta_d = \frac{\Sigma xy}{\Sigma x_t^2} = \frac{2650}{6033,33} = 0,93$

5). $JK_{regd} = B_d \times \Sigma xy = 0,93 \times 2650 = 1139,5$

6). $JK_{rest} = JK_{yd} - JK_{regd} = 5520,83 - 1139,5 = 4381,33$

C. Sumber variasi antar

$JK_A = JK_{rest} - JK_{resd} = 9418,67 - 4381,33 = 37,39$

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)

$RK_A = \frac{JK_A}{DK_A} = \frac{37,39}{1} = 37,39$

$RK_D = \frac{JK_D}{DK_D} = \frac{9381,33}{9} = 486,81$

F. Menghitung harga F

$F^* = \frac{RK_A}{RK_D} = \frac{37,39}{486,81} = 0,07$

Rangkuman Ancova : Faktor

Statistik	JK	DK	RK	F	F Tabel	
Antar	37,39	1	37,39	0,07	5,12	-
Dalam (error)	4881,33	9	486,81	-	-	-
Total (residu)	9918,67	10	-	-	-	-

Hipotesis

$H_0 : \mu_1 = \mu_2$ (tidak terdapat perbedaan nilai variabel X antara yang menggunakan metode treatment A dan B)

$H_0 : M_1 = M_2$ (terdapat perbedaan nilai variabel X antara yang menggunakan metode treatment A dan B)

Berdasarkan perhitungan F hitung = 0,07 dan F tabel $\xrightarrow{(1-0,05;1;9)}$ = 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)

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
9	2
9	1,5

Tabel Perhitungan

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	334	39

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

$$= \frac{10(89,5) - (52)(19)}{\sqrt{(10(334) - (52)^2)(10(39) - (19)^2)}}$$

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

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

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

Dari hasil tersebut didapat korelasi negatif antara test score (x) dan hours playing video games per week (y)