

LAMPIRAN 16**Regresi X3 Terhadap Y**

No. Res	X3	Y	X3 ²	Y ²	X3Y
1	60	72	3550	5184	4290
2	48	70	2303	4900	3359
3	58	76	3398	5776	4431
4	38	78	1441	6084	2961
5	47	80	2194	6400	3747
6	45	77	2039	5929	3477
7	38	82	1423	6724	3093
8	50	81	2546	6561	4087
9	32	72	1042	5184	2324
10	41	70	1718	4900	2901
11	48	71	2310	5041	3412
12	32	64	1004	4096	2028
13	44	70	1921	4900	3068
14	64	72	4047	5184	4580
15	40	78	1632	6084	3151
16	49	67	2433	4489	3305
17	44	65	1921	4225	2849
18	46	66	2136	4356	3050
19	35	77	1211	5929	2680
20	35	76	1221	5776	2656
21	52	70	2699	4900	3637
22	56	84	3101	7056	4678
23	47	79	2202	6241	3707
24	35	72	1229	5184	2524
25	48	70	2308	4900	3363
26	46	68	2133	4624	3140
27	51	61	2580	3721	3099
28	46	75	2121	5625	3454
29	46	74	2114	5476	3402
30	49	70	2397	4900	3427
31	51	66	2570	4356	3346
32	49	60	2412	3600	2946
33	47	69	2207	4761	3242
34	52	70	2709	4900	3643
35	51	70	2610	4900	3576
36	59	79	3444	6241	4636

37	56	82	3149	6724	4602
38	48	72	2293	5184	3448
39	61	71	3704	5041	4321
40	42	70	1726	4900	2908
41	47	73	2198	5329	3423
42	48	76	2336	5776	3673
43	52	80	2681	6400	4142
44	44	65	1944	4225	2866
45	41	83	1663	6889	3385
46	49	77	2437	5929	3801
47	49	74	2368	5476	3601
48	37	70	1336	4900	2558
49	49	72	2422	5184	3544
50	44	77	1921	5929	3374
51	46	72	2136	5184	3327
52	35	64	1211	4096	2227
53	60	78	3547	6084	4646
54	58	80	3381	6400	4651
55	47	66	2190	4356	3089
56	52	76	2712	5776	3958
57	46	77	2151	5929	3571
58	57	81	3238	6561	4609
59	50	70	2514	4900	3510
60	47	70	2171	4900	3262
61	31	65	978	4225	2033
62	47	69	2173	4761	3217
63	42	71	1779	5041	2995
64	60	64	3547	4096	3812
65	58	86	3381	7396	5000
66	47	77	2190	5929	3603
67	52	73	2712	5329	3802
68	46	79	2151	6241	3664
69	57	67	3238	4489	3812
70	50	70	2514	4900	3510
71	47	73	2171	5329	3402
72	31	60	978	3600	1876
73	47	71	2173	5041	3310
74	42	77	1779	5929	3248
75	57	71	3292	5041	4074
76	45	67	2042	4489	3028
77	55	70	3005	4900	3837

78	64	70	4047	4900	4453
79	50	79	2454	6241	3914
80	50	71	2514	5041	3560
81	47	65	2171	4225	3029
Jumlah	3866	5872	189045	428322	280944

1, Menghitung nilai b dengan rumus:

$$b = \frac{n \sum XY - \sum X \sum Y}{n \sum X^2 - (\sum X)^2}$$

$$b = \frac{81(280944) - (4459)(5872)}{81(250129) - (4459)^2} = \frac{7676160 - 7550244}{8287500 - 8105409} = \frac{125916}{182091}$$

$$b = 0,691$$

2, Menghitung nilai a dengan rumus:

$$a = \frac{\sum Y - b \sum X}{n}$$

$$a = \frac{5872 - (0,691)(2847)}{81} = \frac{684,723}{81} = 11,412$$

Sehingga persamaan regresi yang terbentuk adalah:

$$\hat{Y} = 11,412 + 0,691X$$

3, Menguji Signifikansi

a. Mencari Jumlah Kuadrat Total (JK T)

$$JK \text{ Total} = \sum Y^2 - \frac{(\sum Y)^2}{n} = 428322 - \frac{(5872)^2}{81} = 2877,6$$

b. Mencari Jumlah Kuadrat Regresi (JK Reg (a))

$$JK \text{ Reg}(a) = \frac{(\sum Y)^2}{n} - \frac{(5872)^2}{81} = \frac{7033104}{81} = 117218,4$$

c. Mencari Jumlah Kuadrat Regresi (JK Reg (b|a))

$$JK \text{ Reg}(b | a) = b \left\{ \sum XY - \frac{(\sum X)(\sum Y)}{n} \right\}$$

$$\begin{aligned}
&= 0,691 \left\{ 280944 - \frac{(2847)(5872)}{81} \right\} \\
&= (0,691)(2098,6) \\
&= 1450,133
\end{aligned}$$

- d. Mencari Jumlah Kuadrat Residu (JK Res)

$$\begin{aligned}
JK_{Res} &= \Sigma Y^2 - JK_{Reg(b|a)} - JK_{Reg(a)} \\
&= 428322 - 1450,133 - 117218,4 \\
&= 1427,467
\end{aligned}$$

- e. Mencari Rata-rata Jumlah Kuadrat Regresi (RJK Reg(a))

$$RJK_{Reg(a)} = JK_{Reg(a)} = 117218,4$$

- f. Mencari Rata-rata Jumlah Kuadrat Regresi (RJK Reg(b|a))

$$RJK_{Reg(b|a)} = JK_{Reg(b|a)} = 1450,133$$

- g. Mencari Rata-rata Jumlah Kuadrat Residu (RJK Res)

$$RJK_{Res} = \frac{JK_{Res}}{n-2} = \frac{1427,467}{79} = 24,611$$

- h. Menguji Signifikansi dengan Rumus:

$$F_{hitung} = \frac{RJK_{Reg(b|a)}}{RJK_{Res}} = \frac{1450,133}{24,611} = 58,922$$

F_{tabel} pada dk (1;80) pada $\alpha=0,05$ adalah 3,960

4. Menguji Linearitas

- a. Mencari Jumlah Kuadrat Error (JKE) dengan rumus:

$$JKE = \sum_k \left\{ \sum Y^2 - \frac{(\sum Y)^2}{n} \right\}$$

Mencari JKE dengan tabel penolong berikut:

Res	X1	Y	N	db	JK	Rata-rata	Jumlah
1	60	72	1				
2	48	70	1				
3	58	76	2				
4	38	78		1	1886.671	48.99125	38.51037
5	47	80	1				
6	45	77	2				
7	38	82		1	2449.975	62.74047	39.04936
8	50	81	2				
9	32	72		1	2228.892	52.95928	42.0869

10	41	70	3				
11	48	71					
12	32	64		2	2413.678	61.91667	38.9827
13	44	70	1				
14	64	72	2				
15	40	78		1	2349.614	51.44076	45.67611
16	49	67	3				
17	44	65					
18	46	66		2	1757.393	50.72369	34.64639
19	35	77	2				
20	35	76		1	2733.358	52.38065	52.18259
21	52	70	2				
22	56	84		1	2264.416	60.13275	37.65695
23	47	79	4				
24	35	72					
25	48	70					
26	46	68		3	73.22112	67.74586	1.08082
27	51	61	3				
28	46	75					
29	46	74		2	2686.276	49.11544	54.69309
30	49	70	2				
31	51	66		1	2084.309	51.43233	40.52527
32	49	60	3				
33	47	69					
34	52	70		2	2555.515	59.03306	43.28956
35	51	70	3				
36	59	79					
37	56	82		2	2011.858	44.1285	45.59091
38	48	72	4				
39	61	71					
40	42	70					
41	47	73		3	2672.465	63.23334	42.26355
42	48	76	3				
43	52	80					
44	44	65		2	2449.975	53.83051	45.51276
45	41	83	3				
46	49	77					
47	49	74		2	2443.45	56.15328	43.51393
48	37	70	4				
49	49	72					
50	44	77					

51	46	72		3	2286.729	55.23826	321,00
52	35	64	3				
53	60	78					
54	58	80		2	2561.556	60.20009	42.5507
55	47	66	4				
56	52	76					
57	46	77					
58	57	81		3	2064.322	50.75669	40.67094
59	50	70	3				
60	47	70					
61	31	65		2	2470.647	56.73027	43.55078
62	47	69	5				
63	42	71					
64	60	64					
65	58	86					
66	47	77		4	2073.476	52.13107	39.77429
67	52	73	4				
68	46	79					
69	57	67					
70	50	70		3	2452.38	58.25183	42.09962
71	47	73	3				
72	31	60					
73	47	71		2	2119.183	51.28051	41.32532
74	42	77	3				
75	57	71					
76	45	67		2	2296.417	57.25343	40.10968
77	55	70	3				
78	64	70					
79	50	79		2	2318.715	53.23426	43.55682
80	50	71	2				
81	47	65		1	1899.873	49.69999	38.22682
Σ	3866	5872	79	51			1017.126

$$JKE = \left(35^2 - \frac{35^2}{1}\right) + \left(56^2 - \frac{56^2}{1}\right) + \dots + \left(47^2 - \frac{47^2}{1}\right).$$

$$JKE = (0 + 0 + 87 + \dots + 0)$$

$$JKE = 513,127$$

b. Mencari Jumlah Kuadrat Tuna Cocok (JKTC) dengan rumus:

$$JKTC = JKRes - JKE$$

$$= 1427,467 - 513,127$$

$$= 914,34$$

- c. Mencari Rata-rata Jumlah Kuadrat Tuna Cocok (JKTC) dengan rumus:

$$RJKTC = \frac{JKTC}{k-2} = \frac{914,34}{27-2} = 36,574$$

- d. Mencari Rata-rata Jumlah Kuadrat Error (JKE) dengan rumus:

$$RJKE = \frac{JKE}{n-k} = \frac{513,127}{81-27} = \frac{513,127}{54} = 25,549$$

- e. Mencari F hitung dengan rumus:

$$F_{hitung} = \frac{RJKTC}{RJKE} = \frac{36,574}{25,549} = 1,431$$

Ftabel pada dk (27,81) pada $\alpha=0,05$ adalah 1,763

Menghitung nilai korelasi X_3 dan Y (r_{x_3y})

$$r_{x_3y} = \frac{n \sum X_3 Y - (\sum X_3)(\sum Y)}{\sqrt{(\sum X_3^2 - (\sum X_3)^2)(\sum Y^2 - (\sum Y)^2)}}$$

$$r_{x_3y} = \frac{81(280944) - (4459)(5872)}{\sqrt{(1(250129) - (4459)^2)(1(428322) - (5872)^2)}}$$

$$r_{x_3y} = \frac{7676160 - 7550244}{\sqrt{(25256)(72656)}} = \frac{125916}{78193,836} = 0,621$$

Besarnya nilai koefisien determinasi (r^2) adalah:

$$r^2 = (r_{x_3y})^2 = (0,621)^2 = 0,386 = 38,6\%$$

Untuk menguji signifikansi r dilakukan dengan mencari nilai t hitung dengan rumus:

$$\begin{aligned} t_{hitung} &= \frac{r\sqrt{n-2}}{\sqrt{1-r^2}} \\ &= \frac{0,386\sqrt{79}}{\sqrt{1-(0,386)^2}} \\ &= \frac{2,939}{0,614} = 4,787 \end{aligned}$$

t tabel pada dk (81-2=79) pada $\alpha=0,05$ adalah 1,990