

LAMPIRAN 15**Regresi X2 Terhadap Y**

No. Res	X2	Y	X2 ²	Y ²	X2Y
1	47	72	2220	5184	3393
2	57	70	3287	4900	4013
3	54	76	2873	5776	4074
4	53	78	2839	6084	4156
5	51	80	2576	6400	4060
6	44	77	1943	5929	3394
7	52	82	2734	6724	4287
8	62	81	3900	6561	5058
9	51	72	2573	5184	3652
10	46	70	2141	4900	3239
11	48	71	2344	5041	3437
12	50	64	2464	4096	3177
13	43	70	1867	4900	3025
14	46	72	2146	5184	3335
15	47	78	2175	6084	3638
16	49	67	2419	4489	3295
17	51	65	2580	4225	3301
18	49	66	2409	4356	3239
19	47	77	2206	5929	3617
20	52	76	2720	5776	3963
21	51	70	2597	4900	3567
22	59	84	3445	7056	4930
23	56	79	3143	6241	4429
24	57	72	3275	5184	4120
25	46	70	2096	4900	3205
26	48	68	2316	4624	3272
27	44	61	1965	3721	2704
28	56	75	3147	5625	4207
29	53	74	2837	5476	3942
30	52	70	2678	4900	3622
31	51	66	2586	4356	3356
32	29	60	815	3600	1713
33	33	69	1119	4761	2309
34	44	70	1895	4900	3047
35	35	70	1243	4900	2468
36	45	79	2061	6241	3586

37	47	82	2220	6724	3864
38	48	72	2303	5184	3455
39	40	71	1582	5041	2824
40	47	70	2234	4900	3308
41	43	73	1848	5329	3138
42	47	76	2218	5776	3580
43	52	80	2705	6400	4161
44	28	65	767	4225	1800
45	63	83	3910	6889	5190
46	54	77	2863	5929	4120
47	53	74	2839	5476	3943
48	51	70	2619	4900	3582
49	53	72	2854	5184	3847
50	48	77	2290	5929	3684
51	51	72	2613	5184	3681
52	50	64	2484	4096	3190
53	41	78	1667	6084	3185
54	56	80	3166	6400	4501
55	41	66	1669	4356	2697
56	35	76	1211	5776	2644
57	45	77	2011	5929	3453
58	48	81	2324	6561	3905
59	45	70	2016	4900	3143
60	50	70	2474	4900	3482
61	44	65	1943	4225	2865
62	46	69	2116	4761	3174
63	35	71	1220	5041	2480
64	35	64	1227	4096	2242
65	52	86	2710	7396	4477
66	56	77	3109	5929	4293
67	60	73	3570	5329	4361
68	51	79	2553	6241	3991
69	40	67	1569	4489	2654
70	56	70	3130	4900	3916
71	53	73	2853	5329	3899
72	47	60	2200	3600	2814
73	50	71	2459	5041	3521
74	52	77	2709	5929	4007
75	43	71	1816	5041	3025
76	41	67	1646	4489	2718
77	49	70	2441	4900	3459

78	42	70	1783	4900	2956
79	56	79	3154	6241	4436
80	53	71	2831	5041	3778
81	41	65	1655	4225	2644
Jumlah	3895	5872	191212	428322	283921

1, Menghitung nilai b dengan rumus:

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

$$b = \frac{81(283921) - (4736)(5872)}{81(281542) - (4736)^2} = \frac{7880520 - 7780968}{8745780 - 8608356} = \frac{99552}{137424}$$

$$b = 0,724$$

2, Menghitung nilai a dengan rumus:

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

$$a = \frac{5872 - (0,724)(5872)}{81} = \frac{527,784}{81} = 22,796$$

Sehingga persamaan regresi yang terbentuk adalah:

$$\hat{Y} = 22,796 + 0,724X$$

3, Menguji Signifikansi

a. Mencari Jumlah Kuadrat Total (JK T)

$$JK \text{ Total} = \sum Y^2 - \frac{(\sum Y)^2}{n} = 428322 - \frac{(5872)^2}{81} = 6906,654$$

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

$$JK \text{ Reg (a)} = \frac{(\sum Y)^2}{n} - \frac{(\sum Y)^2}{n} = \frac{(5872)^2}{81} - \frac{(5872)^2}{81} = 269476,346$$

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

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

$$\begin{aligned}
&= 0,724 \left\{ 283921 - \frac{(4736)(5872)}{81} \right\} \\
&= (0,724)(1259,2) \\
&= 911,661
\end{aligned}$$

- d. Mencari Jumlah Kuadrat Residu (JK Res)

$$\begin{aligned}
JK_{Res} &= \Sigma Y^2 - JK_{Reg(b|a)} - JK_{Reg(a)} \\
&= 276383 - 991,661 - 269476,346 \\
&= 1885,939
\end{aligned}$$

- 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))

$$RJK_{Reg(b|a)} = JK_{Reg(b|a)} = 911,661$$

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

$$RJK_{Res} = \frac{JK_{Res}}{n-2} = \frac{1885,939}{79} = 23,873$$

- h. Menguji Signifikansi dengan Rumus:

$$F_{hitung} = \frac{RJK_{Reg(b|a)}}{RJK_{Res}} = \frac{911,661}{23,873} = 38,188$$

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	47	72	1				
2	57	70	1				
3	54	76	2				
4	53	78		1	2576.381	64.19991	40.1306
5	51	80	1				
6	44	77	2				
7	52	82		1	2291.196	54.87901	41.74995
8	62	81	2				

9	51	72		1	2813.584	64.15257	43.8577
10	46	70	3				
11	48	71					
12	50	64		2	2128.896	58.60773	36.3245
13	43	70	1				
14	46	72	2				
15	47	78		1	2570.578	63.83066	40.27185
16	49	67	3				
17	51	65					
18	49	66		2	2816.615	53.8709	52.28453
19	47	77	2				
20	52	76		1	2354.766	62.12211	37.90545
21	51	70	2				
22	59	84		1	2077.295	45.74376	45.41155
23	56	79	4				
24	57	72					
25	46	70					
26	48	68		3	72.12372	65.29441	1.104593
27	44	61	3				
28	56	75					
29	53	74		2	2524.14	55.49703	45.48244
30	52	70	2				
31	51	66		1	2291.196	54.87901	41.74995
32	29	60	3				
33	33	69					
34	44	70		2	2479.552	63.76105	38.88819
35	35	70	3				
36	45	79					
37	47	82		2	2415.916	63.79528	37.86983
38	48	72	4				
39	40	71					
40	47	70					
41	43	73		3	2836.339	65.59369	43.24103
42	47	76	3				
43	52	80					
44	28	65		2	2401.191	56.22698	42.70531
45	63	83	3				
46	54	77					
47	53	74		2	2760.519	62.63352	44.07414
48	51	70	4				
49	53	72					

50	48	77					
51	51	72		3	2220.193	58.24776	321,00
52	50	64					
53	41	78	3				
54	56	80		2	2601.716	58.55898	44.42898
55	41	66					
56	35	76	4				
57	45	77					
58	48	81		3	1892.295	49.58014	38.16639
59	45	70	3				
60	50	70					
61	44	65		2	2474.714	57.74051	42.85924
62	46	69	5				
63	35	71					
64	35	64					
65	52	86	4				
66	56	77		4	2222.475	58.26836	38.14205
67	60	73					
68	51	79	4				
69	40	67					
70	56	70		3	2751.417	64.56642	42.61374
71	53	73	3				
72	47	60					
73	50	71		2	1881.747	49.73039	37.83897
74	52	77	3				
75	43	71					
76	41	67		2	2469.185	57.77049	42.74129
77	49	70	3				
78	42	70					
79	56	79		2	2585.559	65.42123	39.52171
80	53	71	2				
81	41	65		1	2596.044	65.20308	39.81474
Σ	3895	5872	81	51			999.1787

$$JKE = \left(39^2 - \frac{39^2}{1} \right) + \left(45^2 - \frac{45^2}{1} \right) + \dots + \left(36^2 - \frac{36^2}{1} \right).$$

$$JKE = (0 + 0 + 86 + \dots + 0)$$

$$JKE = 823,65$$

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

$$JKTC = JKRes - JKE$$

$$= 1885,939 - 823,65$$

$$= 1062,289$$

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

$$RJKTC = \frac{JKTC}{k-2} = \frac{1062,289}{27-2} = 42,491$$

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

$$RJKE = \frac{JKE}{n-k} = \frac{823,65}{81-27} = \frac{823,65}{54} = 29,959$$

- e. Mencari F hitung dengan rumus:

$$F_{hitung} = \frac{RJKTC}{RJKE} = \frac{42,491}{29,959} = 1,418$$

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

Menghitung nilai korelasi X_2 dan Y (r_{x_2y})

$$r_{x_2y} = \frac{n \sum X_2 Y - (\sum X_2)(\sum Y)}{\sqrt{(\sum X_2^2 - (\sum X_2)^2)(\sum Y^2 - (\sum Y)^2)}}$$

$$r_{x_2y} = \frac{81(283921) - (4736)(5872)}{\sqrt{(1(281542) - (4736)^2)(1(4283921) - (5872)^2)}}$$

$$r_{x_2y} = \frac{22081815 - 22050263}{\sqrt{(75206)(59439)}} = \frac{31552}{49576,896} = 0,636$$

Besarnya nilai koefisien determinasi (r^2) adalah:

$$r^2 = (r_{x_1y})^2 = (0,636)^2 = 0,404 = 40,4\%$$

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

$$t_{hitung} = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

$$= \frac{0,636\sqrt{79}}{\sqrt{1-(0,636)^2}}$$

$$= \frac{5,653}{0,596} = 9,485$$

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