

LAMPIRAN 16
Regresi X3 Terhadap Y

No. Res	X3	Y	X3 ²	Y ²	X3Y
1	57	58	3251	3349	3300
2	53	64	2765	4062	3351
3	61	66	3706	4404	4040
4	63	62	4023	3849	3935
5	68	55	4605	3005	3720
6	64	55	4038	2993	3476
7	66	55	4384	3031	3645
8	57	60	3251	3654	3447
9	53	68	2765	4604	3568
10	61	63	3706	3942	3822
11	63	66	4023	4375	4195
12	68	51	4605	2608	3466
13	57	61	3251	3765	3499
14	53	66	2765	4325	3458
15	61	62	3706	3831	3768
16	63	43	4023	1839	2720
17	68	40	4605	1585	2702
18	58	68	3408	4614	3966
19	38	68	1465	4575	2589
20	39	57	1486	3205	2182
21	62	42	3900	1737	2603
22	66	50	4403	2481	3305
23	61	53	3701	2786	3211
24	44	65	1969	4186	2871
25	41	64	1677	4147	2637
26	64	66	4038	4382	4206
27	66	45	4384	2030	2983
28	57	50	3251	2523	2864
29	53	61	2765	3692	3195
30	61	55	3706	2993	3331
31	63	55	4023	3031	3492
32	68	60	4605	3654	4102
33	58	68	3408	4604	3961
34	38	60	1465	3560	2284
35	57	41	3300	1700	2369
36	59	69	3463	4828	4089
37	54	58	2870	3377	3113
38	60	56	3631	3088	3349
39	56	43	3155	1850	2416
40	58	63	3384	3941	3652

41	63	68	3965	4680	4308
42	60	63	3631	4006	3814
43	65	55	4253	2993	3568
44	66	58	4375	3335	3820
45	45	51	2025	2603	2296
46	42	59	1790	3447	2484
47	63	67	4017	4429	4218
48	62	55	3878	3016	3420
49	63	63	3920	3986	3953
50	51	63	2620	3992	3234
51	55	53	3028	2842	2934
52	65	46	4218	2126	2994
53	56	54	3140	2965	3051
54	56	63	3155	3926	3520
55	58	66	3384	4358	3840
56	63	68	3965	4636	4287
57	64	54	4122	2904	3460
58	60	45	3631	2050	2728
59	61	58	3780	3355	3561
60	66	56	4336	3128	3683
61	51	60	2566	3546	3017
62	58	63	3376	3961	3657
63	61	68	3715	4660	4161
64	65	64	4283	4141	4211
65	63	63	3928	3990	3959
66	61	53	3711	2848	3251
67	49	46	2383	2153	2265
68	49	55	2369	3004	2667
69	58	63	3348	3944	3634
70	62	66	3869	4400	4126
71	61	68	3671	4565	4094
72	54	54	2897	2964	2931
73	50	45	2481	2026	2242
74	69	58	4729	3338	3973
75	62	56	3893	3150	3502
76	51	59	2566	3530	3010
77	58	57	3376	3241	3308
78	61	69	3715	4703	4180
79	65	62	4283	3877	4075
80	67	68	4438	4608	4523
81	56	63	3132	3909	3499
Jumlah	4734	4736	280899	281542	276340

- 1, Menghitung nilai b dengan rumus:

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

$$b = \frac{81(276340) - (4734)(4736)}{81(280899) - (4734)^2} = \frac{7676160 - 7550244}{8287500 - 8105409} = \frac{125916}{182091}$$

$$b = 0,691$$

- 2, Menghitung nilai a dengan rumus:

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

$$a = \frac{4736 - (0,691)(4734)}{81} = \frac{684,723}{81} = 11,412$$

Sehingga persamaan regresi yang terbentuk adalah:

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

- 3, Menguji Signifikansi

- a. Mencari Jumlah Kuadrat Total (JK T)

$$JK \text{ Total} = \sum Y^2 - \frac{(\sum Y)^2}{n} = 281542 - \frac{(4736)^2}{81} = 2877,6$$

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

$$JK \text{ Reg}(a) = \frac{(\sum Y)^2}{n} - \frac{(4736)^2}{81} = \frac{7033104}{81} = 117218,4$$

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

$$\begin{aligned} JK \text{ Reg}(b | a) &= b \left\{ \sum XY - \frac{(\sum X)(\sum Y)}{n} \right\} \\ &= 0,691 \left\{ 276340 - \frac{(3734)(4736)}{81} \right\} \\ &= (0,691)(2098,6) \\ &= 1450,133 \end{aligned}$$

- d. Mencari Jumlah Kuadrat Residu (JK Res)

$$JK \text{ Res} = \sum Y^2 - JK \text{ Reg}(b|a) - JK \text{ Reg}(a)$$

$$= 120096 - 1450,133 - 117218,4$$

$$= 1427,467$$

e. Mencari Rata-rata Jumlah Kuadrat Regresi (RJK Reg(a))
 $RJKReg(a) = JKReg(a) = 117218,4$

f. Mencari Rata-rata Jumlah Kuadrat Regresi (RJK Reg(b|a))
 $RJKReg(b|a) = JKReg(b|a) = 1450,133$

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

$$RJK\ Res = \frac{JKRe\ s}{n - 2} = \frac{1427,467}{79} = 24,611$$

h. Menguji Signifikansi dengan Rumus:

$$F_{hitung} = \frac{RJK\ Re\ g(b|a)}{RJK\ Re\ s} = \frac{1450,133}{24,611} = 58,922$$

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	57	58	1				
2	53	64	1				
3	61	66	2				
4	63	62		1	1886.671	48.99125	38.51037
5	68	55	1				
6	64	55	2				
7	66	55		1	2449.975	62.74047	39.04936
8	57	60	2				
9	53	68		1	2228.892	52.95928	42.0869
10	61	63	3				
11	63	66					
12	68	51		2	2413.678	61.91667	38.9827
13	57	61	1				
14	53	66	2				
15	61	62		1	2349.614	51.44076	45.67611
16	63	43	3				
17	68	40					
18	58	68		2	1757.393	50.72369	34.64639

19	38	68	2				
20	39	57		1	2733.358	52.38065	52.18259
21	62	42	2				
22	66	50		1	2264.416	60.13275	37.65695
23	61	53	4				
24	44	65					
25	41	64					
26	64	66		3	73.22112	67.74586	1.08082
27	66	45	3				
28	57	50					
29	53	61		2	2686.276	49.11544	54.69309
30	61	55	2				
31	63	55		1	2084.309	51.43233	40.52527
32	68	60	3				
33	58	68					
34	38	60		2	2555.515	59.03306	43.28956
35	57	41	3				
36	59	69					
37	54	58		2	2011.858	44.1285	45.59091
38	60	56	4				
39	56	43					
40	58	63					
41	63	68		3	2672.465	63.23334	42.26355
42	60	63	3				
43	65	55					
44	66	58		2	2449.975	53.83051	45.51276
45	45	51	3				
46	42	59					
47	63	67		2	2443.45	56.15328	43.51393
48	62	55	4				
49	63	63					
50	51	63					
51	55	53		3	2286.729	55.23826	321,00
52	65	46	3				
53	56	54					
54	56	63		2	2561.556	60.20009	42.5507
55	58	66	4				
56	63	68					
57	64	54					
58	60	45		3	2064.322	50.75669	40.67094
59	61	58	3				
60	66	56					

61	51	60		2	2470.647	56.73027	43.55078
62	58	63	5				
63	61	68					
64	65	64					
65	63	63					
66	61	53		4	2073.476	52.13107	39.77429
67	49	46	4				
68	49	55					
69	58	63					
70	62	66		3	2452.38	58.25183	42.09962
71	61	68	3				
72	54	54					
73	50	45		2	2119.183	51.28051	41.32532
74	69	58	3				
75	62	56					
76	51	59		2	2296.417	57.25343	40.10968
77	58	57	3				
78	61	69					
79	65	62		2	2318.715	53.23426	43.55682
80	67	68	2				
81	56	63		1	1899.873	49.69999	38.22682
Σ	4734	4736	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:

$$\begin{aligned} JKTC &= JKRes - JKE \\ &= 1427,467 - 513,127 \\ &= 914,34 \end{aligned}$$

- 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})

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

$$r_{x_3y} = \frac{81(276340) - (4734)(4736)}{\sqrt{(81(280899) - (4734)^2)(81(281542) - (4736)^2)}}$$

$$r_{x_3y} = \frac{7676160 - 7550244}{\sqrt{(125256)(172656)}} = \frac{125916}{78193,836} = 0,621$$

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:

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

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