

LAMPIRAN 14

Regresi X1 Terhadap Y

No. Res	X1	Y	X1 ²	Y ²	X1Y
1	54	58	2888	3349	3110
2	50	64	2474	4062	3170
3	60	66	3649	4404	4009
4	65	62	4214	3849	4027
5	62	55	3876	3005	3412
6	41	55	1643	2993	2218
7	48	55	2282	3031	2630
8	67	60	4543	3654	4075
9	62	68	3854	4604	4212
10	63	63	4027	3942	3984
11	44	66	1961	4375	2929
12	64	51	4115	2608	3276
13	67	61	4556	3765	4142
14	60	66	3612	4325	3953
15	53	62	2787	3831	3267
16	63	43	3956	1839	2697
17	65	40	4237	1585	2592
18	68	68	4688	4614	4651
19	61	68	3685	4575	4106
20	41	57	1687	3205	2325
21	42	42	1793	1737	1765
22	64	50	4044	2481	3167
23	67	53	4466	2786	3528
24	62	65	3796	4186	3986
25	47	64	2244	4147	3051
26	44	66	1961	4382	2931
27	64	45	4115	2030	2890
28	42	50	1791	2523	2126
29	67	61	4538	3692	4093
30	66	55	4405	2993	3631
31	62	55	3849	3031	3415
32	47	60	2244	3654	2864
33	45	68	2015	4604	3046
34	68	60	4596	3560	4045
35	67	41	4448	1700	2750
36	56	69	3142	4828	3895
37	57	58	3227	3377	3301
38	63	56	3925	3088	3481

39	67	43	4524	1850	2893
40	67	63	4462	3941	4193
41	65	68	4225	4680	4447
42	39	63	1484	4006	2438
43	64	55	4044	2993	3479
44	61	58	3705	3335	3515
45	54	51	2929	2603	2761
46	48	59	2261	3447	2792
47	57	67	3227	4429	3781
48	63	55	3925	3016	3441
49	67	63	4524	3986	4247
50	42	63	1728	3992	2627
51	50	53	2539	2842	2686
52	53	46	2849	2126	2461
53	64	54	4073	2965	3476
54	65	63	4248	3926	4084
55	63	66	4003	4358	4177
56	50	68	2460	4636	3377
57	46	54	2120	2904	2481
58	64	45	4140	2050	2913
59	59	58	3485	3355	3419
60	39	56	1513	3128	2176
61	45	60	2032	3546	2685
62	67	63	4433	3961	4190
63	68	68	4564	4660	4612
64	63	64	4005	4141	4072
65	46	63	2075	3990	2878
66	69	53	4701	2848	3659
67	71	46	5067	2153	3303
68	53	55	2815	3004	2908
69	56	63	3161	3944	3531
70	56	66	3112	4400	3701
71	63	68	3988	4565	4267
72	65	54	4177	2964	3519
73	62	45	3819	2026	2782
74	44	58	1895	3338	2515
75	46	56	2122	3150	2585
76	67	59	4553	3530	4009
77	69	57	4825	3241	3955
78	65	69	4194	4703	4441
79	47	62	2241	3877	2948
80	48	68	2272	4608	3235

81	67	63	4533	3909	4209
Jumlah	4672	4736	276383	281542	272615

1, Menghitung nilai b dengan rumus:

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

$$b = \frac{81(272615) - (4672)(4736)}{81(276383) - (4672)^2} = \frac{22100121 - 22021104}{22752819 - 22410756} = \frac{79017}{342063}$$

$$b = 0,231$$

2, Menghitung nilai a dengan rumus:

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

$$a = \frac{4736 - (0,231)(4672)}{81} = \frac{3578,446}{81} = 44,178$$

Sehingga persamaan regresi yang terbentuk adalah:

$$\hat{Y} = 44,178 + 0,231X$$

3, Menguji Signifikansi

a. Mencari Jumlah Kuadrat Total (JK T)

$$JK \text{ Total} = \sum Y^2 - \frac{(\sum Y)^2}{n} = 281542 - \frac{(4736)^2}{81} = 6906,654$$

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

$$JK \text{ Reg}(a) = \frac{(\sum Y)^2}{n} - \frac{(4736)^2}{81} = \frac{21827584}{81} = 269476,346$$

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

$$\begin{aligned} JK \text{ Reg}(b | a) &= b \left\{ \sum XY - \frac{(\sum X)(\sum Y)}{n} \right\} \\ &= 0,231 \left\{ 272615 - \frac{(4672)(4736)}{81} \right\} \\ &= (0,231)(1436,4) \\ &= 981,875 \end{aligned}$$

- d. Mencari Jumlah Kuadrat Residu (JK Res)

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

$$= 281542 - 981,875 - 269476,346$$

$$= 2795,725$$
- e. Mencari Rata-rata Jumlah Kuadrat Regresi (RJK Reg(a))

$$RJK_{Reg(a)} = JK_{Reg(a)} = 269476,346$$
- f. Mencari Rata-rata Jumlah Kuadrat Regresi (RJK Reg(b|a))

$$RJK_{Reg(b|a)} = JK_{Reg(b|a)} = 981,875$$
- g. Mencari Rata-rata Jumlah Kuadrat Residu (RJK Res)

$$RJK_{Res} = \frac{JK_{Res}}{n-2} = \frac{2795,725}{79} = 35,389$$
- h. Menguji Signifikansi dengan Rumus:

$$F_{hitung} = \frac{RJK_{Reg(b|a)}}{RJK_{Res}} = \frac{981,875}{35,389} = 27,745$$

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	54	58	1				
2	50	64	1				
3	60	66	2				
4	65	62		1	2632.985	62.15404	42.36226
5	62	55	1				
6	41	55	2				
7	48	55		1	2746.559	64.8784	42.33395
8	67	60	2				
9	62	68		1	2190.686	54.80228	39.97436
10	63	63	3				
11	44	66					
12	64	51		2	2813.953	65.64589	42.86564
13	67	61	1				
14	60	66	2				
15	53	62		1	2529.018	56.73371	44.57699
16	63	43	3				
17	65	40					

18	68	68		2	2427.024	63.12185	38.44982
19	61	68	2				
20	41	57		1	1617.957	38.41361	42.11936
21	42	42	2				
22	64	50		1	2752.399	64.40245	42.73749
23	67	53	4				
24	62	65					
25	47	64					
26	44	66		3	71.04335	52.24927	1.3597
27	64	45	3				
28	42	50					
29	67	61		2	2190.686	54.80228	39.97436
30	66	55	2				
31	62	55		1	2632.985	62.15404	42.36226
32	47	60	3				
33	45	68					
34	68	60		2	1606.828	48.32865	33.24794
35	67	41	3				
36	56	69					
37	57	58		2	2231.02	56.20992	39.69085
38	63	56	4				
39	67	43					
40	67	63					
41	65	68		3	2614.111	60.56975	43.15869
42	39	63	3				
43	64	55					
44	61	58		2	2743.741	65.68047	41.77408
45	54	51	3				
46	48	59					
47	57	67		2	2630.972	52.84322	49.78825
48	63	55	4				
49	67	63					
50	42	63					
51	50	53		3	2290.388	53.10618	321,00
52	53	46	3				
53	64	54					
54	65	63		2	2336.983	56.10353	41.65483
55	63	66	4				
56	50	68					
57	46	54					
58	64	45		3	2503.796	62.23179	40.23339
59	59	58	3				

60	39	56					
61	45	60		2	2111.919	58.25256	36.25453
62	67	63	5				
63	68	68					
64	63	64					
65	46	63					
66	69	53		4	2530.705	61.79913	40.9505
67	71	46	4				
68	53	55					
69	56	63					
70	56	66		3	2582.878	60.03128	43.02555
71	63	68	3				
72	65	54					
73	62	45		2	2077.352	51.81816	40.08925
74	44	58	3				
75	46	56					
76	67	59		2	2111.919	56.52548	37.36225
77	69	57	3				
78	65	69					
79	47	62		2	2715.214	63.19684	42.9644
80	48	68	2				
81	67	63		1	2328.482	61.29337	37.98913
Σ	4672	4736	79	51			987.2998

$$JKE = \left(41^2 - \frac{41^2}{1}\right) + \left(39^2 - \frac{39^2}{1}\right) + \dots + \left(42^2 - \frac{42^2}{1}\right).$$

$$JKE = (0 + 0 + 98 + \dots + 0)$$

$$JKE = 1323,48$$

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

$$\begin{aligned} JKTC &= JKRes - JKE \\ &= 2795,725 - 1323,48 \\ &= 1472,245 \end{aligned}$$

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

$$RJKTC = \frac{JKTC}{k-2} = \frac{1472,245}{27-2} = 38,889$$

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

$$RJKE = \frac{JKE}{n-k} = \frac{1323,48}{81-27} = \frac{1323,48}{54} = 24,509$$

- e. Mencari F hitung dengan rumus:

$$F_{hitung} = \frac{RJKTC}{RJKE} = \frac{38,889}{24,509} = 1,586$$

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

Menghitung nilai korelasi X_1 dan Y (r_{x_1y})

$$r_{x_1y} = \frac{n \sum X_1 Y - (\sum X_1)(\sum Y)}{\sqrt{(n \sum X_1^2 - (\sum X_1)^2)(n \sum Y^2 - (\sum Y)^2)}}$$

$$r_{x_1y} = \frac{81(272615) - (4672)(4736)}{\sqrt{(81(276383) - (4672)^2)(81(281542) - (4736)^2)}}$$

$$r_{x_1y} = \frac{22100121 - 22071035}{\sqrt{(342063)(559439)}} = \frac{29086}{46022,256} = 0,632$$

Besarnya nilai koefisien determinasi (r^2) adalah:

$$r^2 = (r_{x_1y})^2 = (0,632)^2 = 0,399 = 39,9\%$$

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

$$\begin{aligned} t \text{ hitung} &= \frac{r\sqrt{n-2}}{\sqrt{1-r^2}} \\ &= \frac{0,632\sqrt{79}}{\sqrt{1-(0,632)^2}} \\ &= \frac{5,617}{0,601} = 9,346 \end{aligned}$$

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