

LAMPIRAN 14**Regresi X1 Terhadap Y**

| No. Res | X1 | Y | X1² | Y² | X1Y |
|----------------|-----------|----------|-----------------------|----------------------|------------|
| 1 | 48 | 72 | 2328 | 5184 | 3474 |
| 2 | 49 | 70 | 2383 | 4900 | 3417 |
| 3 | 49 | 76 | 2407 | 5776 | 3729 |
| 4 | 54 | 78 | 2866 | 6084 | 4176 |
| 5 | 47 | 80 | 2241 | 6400 | 3787 |
| 6 | 59 | 77 | 3455 | 5929 | 4526 |
| 7 | 62 | 82 | 3847 | 6724 | 5086 |
| 8 | 47 | 81 | 2228 | 6561 | 3823 |
| 9 | 43 | 72 | 1835 | 5184 | 3084 |
| 10 | 51 | 70 | 2563 | 4900 | 3544 |
| 11 | 57 | 71 | 3245 | 5041 | 4045 |
| 12 | 48 | 64 | 2351 | 4096 | 3103 |
| 13 | 38 | 70 | 1446 | 4900 | 2662 |
| 14 | 51 | 72 | 2643 | 5184 | 3701 |
| 15 | 51 | 78 | 2642 | 6084 | 4009 |
| 16 | 59 | 67 | 3531 | 4489 | 3981 |
| 17 | 41 | 65 | 1656 | 4225 | 2645 |
| 18 | 39 | 66 | 1520 | 4356 | 2573 |
| 19 | 53 | 77 | 2825 | 5929 | 4092 |
| 20 | 58 | 76 | 3362 | 5776 | 4407 |
| 21 | 32 | 70 | 1040 | 4900 | 2258 |
| 22 | 53 | 84 | 2845 | 7056 | 4480 |
| 23 | 62 | 79 | 3837 | 6241 | 4894 |
| 24 | 61 | 72 | 3664 | 5184 | 4358 |
| 25 | 50 | 70 | 2473 | 4900 | 3481 |
| 26 | 54 | 68 | 2952 | 4624 | 3695 |
| 27 | 49 | 61 | 2399 | 3721 | 2988 |
| 28 | 59 | 75 | 3485 | 5625 | 4428 |
| 29 | 53 | 74 | 2786 | 5476 | 3906 |
| 30 | 50 | 70 | 2459 | 4900 | 3471 |
| 31 | 35 | 66 | 1195 | 4356 | 2282 |
| 32 | 50 | 60 | 2453 | 3600 | 2972 |
| 33 | 45 | 69 | 1998 | 4761 | 3084 |
| 34 | 42 | 70 | 1785 | 4900 | 2957 |
| 35 | 49 | 70 | 2357 | 4900 | 3398 |
| 36 | 50 | 79 | 2522 | 6241 | 3967 |

| | | | | | |
|----|----|----|------|------|------|
| 37 | 53 | 82 | 2858 | 6724 | 4384 |
| 38 | 46 | 72 | 2124 | 5184 | 3318 |
| 39 | 56 | 71 | 3097 | 5041 | 3951 |
| 40 | 50 | 70 | 2512 | 4900 | 3509 |
| 41 | 52 | 73 | 2707 | 5329 | 3798 |
| 42 | 44 | 76 | 1908 | 5776 | 3320 |
| 43 | 53 | 80 | 2795 | 6400 | 4229 |
| 44 | 57 | 65 | 3230 | 4225 | 3694 |
| 45 | 53 | 83 | 2789 | 6889 | 4383 |
| 46 | 55 | 77 | 3051 | 5929 | 4253 |
| 47 | 47 | 74 | 2203 | 5476 | 3473 |
| 48 | 51 | 70 | 2590 | 4900 | 3562 |
| 49 | 34 | 72 | 1181 | 5184 | 2475 |
| 50 | 55 | 77 | 2994 | 5929 | 4213 |
| 51 | 44 | 72 | 1914 | 5184 | 3150 |
| 52 | 47 | 64 | 2210 | 4096 | 3008 |
| 53 | 50 | 78 | 2490 | 6084 | 3893 |
| 54 | 49 | 80 | 2448 | 6400 | 3958 |
| 55 | 47 | 66 | 2254 | 4356 | 3133 |
| 56 | 52 | 76 | 2682 | 5776 | 3936 |
| 57 | 62 | 77 | 3861 | 5929 | 4785 |
| 58 | 53 | 81 | 2757 | 6561 | 4253 |
| 59 | 34 | 70 | 1141 | 4900 | 2364 |
| 60 | 38 | 70 | 1447 | 4900 | 2662 |
| 61 | 62 | 65 | 3818 | 4225 | 4016 |
| 62 | 51 | 69 | 2553 | 4761 | 3486 |
| 63 | 60 | 71 | 3651 | 5041 | 4290 |
| 64 | 41 | 64 | 1664 | 4096 | 2610 |
| 65 | 50 | 86 | 2477 | 7396 | 4280 |
| 66 | 48 | 77 | 2313 | 5929 | 3703 |
| 67 | 41 | 73 | 1649 | 5329 | 2965 |
| 68 | 53 | 79 | 2833 | 6241 | 4205 |
| 69 | 36 | 67 | 1266 | 4489 | 2384 |
| 70 | 44 | 70 | 1980 | 4900 | 3115 |
| 71 | 51 | 73 | 2565 | 5329 | 3697 |
| 72 | 36 | 60 | 1267 | 3600 | 2136 |
| 73 | 47 | 71 | 2167 | 5041 | 3305 |
| 74 | 66 | 77 | 4316 | 5929 | 5059 |
| 75 | 43 | 71 | 1868 | 5041 | 3069 |
| 76 | 57 | 67 | 3253 | 4489 | 3821 |
| 77 | 43 | 70 | 1850 | 4900 | 3010 |

| | | | | | |
|---------------|-------------|-------------|---------------|---------------|---------------|
| 78 | 48 | 70 | 2334 | 4900 | 3382 |
| 79 | 62 | 79 | 3880 | 6241 | 4921 |
| 80 | 61 | 71 | 3714 | 5041 | 4327 |
| 81 | 53 | 65 | 2839 | 4225 | 3463 |
| Jumlah | 4031 | 5872 | 205119 | 428322 | 293431 |

1, Menghitung nilai b dengan rumus:

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

$$b = \frac{81(293431) - (4734)(5872)}{81(280899) - (4734)^2} = \frac{22100121 - 22021104}{22752819 - 22410756} = \frac{79017}{342063}$$

$$b = 0,231$$

2, Menghitung nilai a dengan rumus:

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

$$a = \frac{5872 - (0,231)(4734)}{81} = \frac{3578,446}{81} = 44,178$$

Sehingga persamaan regresi yang terbentuk adalah:

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

3, Menguji Signifikansi

a. Mencari Jumlah Kuadrat Total (JK T)

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

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

$$JK \text{ Reg (a)} = \frac{(\sum Y)^2}{n} = \frac{(5872)^2}{81} = \frac{21827584}{81} = 269476,346$$

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

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

$$\begin{aligned}
 &= 0,231 \left\{ 293431 - \frac{(4734)(572)}{81} \right\} \\
 &= (0,231)(1436,4) \\
 &= 981,875
 \end{aligned}$$

- d. Mencari Jumlah Kuadrat Residu (JK Res)

$$\begin{aligned}
 JK_{Res} &= \Sigma Y^2 - JK_{Reg(b|a)} - JK_{Reg(a)} \\
 &= 428322 - 981,875 - 269476,346 \\
 &= 2795,725
 \end{aligned}$$

- 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 | 48 | 72 | 1 | | | | |
| 2 | 49 | 70 | 1 | | | | |
| 3 | 49 | 76 | 2 | | | | |
| 4 | 54 | 78 | | 1 | 2632.985 | 62.15404 | 42.36226 |
| 5 | 47 | 80 | 1 | | | | |
| 6 | 59 | 77 | 2 | | | | |
| 7 | 62 | 82 | | 1 | 2746.559 | 64.8784 | 42.33395 |
| 8 | 47 | 81 | 2 | | | | |
| 9 | 43 | 72 | | 1 | 2190.686 | 54.80228 | 39.97436 |

| | | | | | | | |
|----|----|----|---|---|----------|----------|----------|
| 10 | 51 | 70 | 3 | | | | |
| 11 | 57 | 71 | | | | | |
| 12 | 48 | 64 | | 2 | 2813.953 | 65.64589 | 42.86564 |
| 13 | 38 | 70 | 1 | | | | |
| 14 | 51 | 72 | 2 | | | | |
| 15 | 51 | 78 | | 1 | 2529.018 | 56.73371 | 44.57699 |
| 16 | 59 | 67 | 3 | | | | |
| 17 | 41 | 65 | | | | | |
| 18 | 39 | 66 | | 2 | 2427.024 | 63.12185 | 38.44982 |
| 19 | 53 | 77 | 2 | | | | |
| 20 | 58 | 76 | | 1 | 1617.957 | 38.41361 | 42.11936 |
| 21 | 32 | 70 | 2 | | | | |
| 22 | 53 | 84 | | 1 | 2752.399 | 64.40245 | 42.73749 |
| 23 | 62 | 79 | 4 | | | | |
| 24 | 61 | 72 | | | | | |
| 25 | 50 | 70 | | | | | |
| 26 | 54 | 68 | | 3 | 71.04335 | 52.24927 | 1.3597 |
| 27 | 49 | 61 | 3 | | | | |
| 28 | 59 | 75 | | | | | |
| 29 | 53 | 74 | | 2 | 2190.686 | 54.80228 | 39.97436 |
| 30 | 50 | 70 | 2 | | | | |
| 31 | 35 | 66 | | 1 | 2632.985 | 62.15404 | 42.36226 |
| 32 | 50 | 60 | 3 | | | | |
| 33 | 45 | 69 | | | | | |
| 34 | 42 | 70 | | 2 | 1606.828 | 48.32865 | 33.24794 |
| 35 | 49 | 70 | 3 | | | | |
| 36 | 50 | 79 | | | | | |
| 37 | 53 | 82 | | 2 | 2231.02 | 56.20992 | 39.69085 |
| 38 | 46 | 72 | 4 | | | | |
| 39 | 56 | 71 | | | | | |
| 40 | 50 | 70 | | | | | |
| 41 | 52 | 73 | | 3 | 2614.111 | 60.56975 | 43.15869 |
| 42 | 44 | 76 | 3 | | | | |
| 43 | 53 | 80 | | | | | |
| 44 | 57 | 65 | | 2 | 2743.741 | 65.68047 | 41.77408 |
| 45 | 53 | 83 | 3 | | | | |
| 46 | 55 | 77 | | | | | |
| 47 | 47 | 74 | | 2 | 2630.972 | 52.84322 | 49.78825 |
| 48 | 51 | 70 | 4 | | | | |
| 49 | 34 | 72 | | | | | |
| 50 | 55 | 77 | | | | | |

| | | | | | | | |
|----|------|------|----|----|----------|----------|----------|
| 51 | 44 | 72 | | 3 | 2290.388 | 53.10618 | 321,00 |
| 52 | 47 | 64 | 3 | | | | |
| 53 | 50 | 78 | | | | | |
| 54 | 49 | 80 | | 2 | 2336.983 | 56.10353 | 41.65483 |
| 55 | 47 | 66 | 4 | | | | |
| 56 | 52 | 76 | | | | | |
| 57 | 62 | 77 | | | | | |
| 58 | 53 | 81 | | 3 | 2503.796 | 62.23179 | 40.23339 |
| 59 | 34 | 70 | 3 | | | | |
| 60 | 38 | 70 | | | | | |
| 61 | 62 | 65 | | 2 | 2111.919 | 58.25256 | 36.25453 |
| 62 | 51 | 69 | 5 | | | | |
| 63 | 60 | 71 | | | | | |
| 64 | 41 | 64 | | | | | |
| 65 | 50 | 86 | | | | | |
| 66 | 48 | 77 | | 4 | 2530.705 | 61.79913 | 40.9505 |
| 67 | 41 | 73 | 4 | | | | |
| 68 | 53 | 79 | | | | | |
| 69 | 36 | 67 | | | | | |
| 70 | 44 | 70 | | 3 | 2582.878 | 60.03128 | 43.02555 |
| 71 | 51 | 73 | 3 | | | | |
| 72 | 36 | 60 | | | | | |
| 73 | 47 | 71 | | 2 | 2077.352 | 51.81816 | 40.08925 |
| 74 | 66 | 77 | 3 | | | | |
| 75 | 43 | 71 | | | | | |
| 76 | 57 | 67 | | 2 | 2111.919 | 56.52548 | 37.36225 |
| 77 | 43 | 70 | 3 | | | | |
| 78 | 48 | 70 | | | | | |
| 79 | 62 | 79 | | 2 | 2715.214 | 63.19684 | 42.9644 |
| 80 | 61 | 71 | 2 | | | | |
| 81 | 53 | 65 | | 1 | 2328.482 | 61.29337 | 37.98913 |
| Σ | 4031 | 5872 | 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:

$$JKTC = JKRes - JKE$$

$$= 2795,725 - 1323,48$$

$$= 1472,245$$

- 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_{x1y})

$$r_{x1y} = \frac{n \sum X_1 Y - (\sum X_1)(\sum Y)}{\sqrt{(\sum X_1^2 - (\sum X_1)^2)(\sum Y^2 - (\sum Y)^2)}}$$

$$r_{x1y} = \frac{81(293431) - (4734)(5872)}{\sqrt{(1(280899) - (4734)^2)(1(428322) - (5872)^2)}}$$

$$r_{x1y} = \frac{22100121 - 22071035}{\sqrt{(42063)(59439)}} = \frac{29086}{46022,256} = 0,632$$

Besarnya nilai koefisien determinasi (r^2) adalah:

$$r^2 = (r_{x1y})^2 = (0,632)^2 = 0,399 = 39,9\%$$

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

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

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