

Tugas Pekan 2

Harga panen Bawang merah dan harga rata-rata
 tiap Per kg.

tahun	x_i	y_i	tahun	x_i	y_i
1929	3,2	1,5	1935	3,9	0,9
1930	3,4	1,3	1936	3,3	1,4
1931	3,8	0,9	1937	4,0	0,7
1932	3,7	0,8	1938	3,8	0,9
1933	4,1	0,7	1940	15	1,2

Tentukan persamaan regresinya utk memperkirakan harga bawang!

Penyelesaian

$$\hat{y} = a + b x$$

$$n = 10$$

$$\sum x_i y_i = 50,82$$

$$\sum x_i = 48,2 \quad \bar{x} = 4,82$$

$$\sum y_i = 10,3 \quad \bar{y} = 1,03 \quad \sum y_i^2 = 11,39$$

$$b = \frac{n \sum y_i x_i - \sum y_i \sum x_i}{n \sum x_i^2 - (\sum x_i)^2}$$

$$= \frac{10(50,82) - (10,3)(48,2)}{10(348,28) - (48,2)^2}$$

$$= 0,01012$$

$$a = \bar{y} - b \bar{x}$$

$$= 1,03 - (0,01012 \times 4,82)$$

$$= 0,981$$

$$\hat{y} = a + b x$$

$$= 0,981 + 0,01012 x$$

uji koefisien regresi dan uji leartar

$$\text{Regresi } a = \frac{(\sum Y_i)^2}{n} = \frac{(10,3)^2}{10} = 10,609,11$$

$$\begin{aligned} \text{Regresi } b/a &= b \left[\sum x_i y_i - \frac{\sum x_i \sum y_i}{n} \right] \\ &= 0,01012 \left[50,82 - \frac{(48,2)(10,3)}{10} \right] \\ &= 0,01012 \left[50,82 - \frac{496,46}{10} \right] \\ &= 0,01012 [50,82 - 49,646] \\ &= 0,01012 [1,174] \\ &= 0,01188088 \end{aligned}$$

x_i	y	$\sum \sum (y_i - \bar{y})^2$
3,2	1,5	0
3,4	1,3	0
3,8	0,9; 0,9	0
3,7	0,8	0
4,1	0,7	0
3,9	0,9	0
3,3	1,4	0
4,0	0,7	0
15	1,2	0
total		0

$$K = 9$$

Schingga			
Sumber	DK	JK	RJK
Regresi a	1	10.609	
Regresi b/a	1	0,01188088	0,01188088
Residu	$n-2$ = 8	$\sum y_i^2 - \frac{(\sum y_i)^2}{n} - b \sum x_i y_i - \frac{(\sum x_i y_i)^2}{n}$ = 11,39 - $\frac{(10,3)^2}{10}$ - 0,01012 (50,82) $\frac{50,82}{10}$ = -4,8152984 = 11,39 - 10,609 - 0,5142984 - 5,082 = -4,8152984	JK Residu $n-2$ 8
Tunacacak	$k-2$ = 7	JK Residu - JK Galat - 4,8152984 - 0 - 4,8152984	JK Residu $k-2$ 7 = 0,687899771
Galat	$n-k$ = 1	$\sum \epsilon (y_{ju} - \hat{y})^2$ = 0	
total	$n-1$ = 9	$\sum y_i^2$ = 11,39	

Koefisien Regresi

$$F \text{ Perhitungan} = \frac{(\text{JK Regresi b/a})}{(\text{JK Residu} / (n-2))} = \frac{0,01188088}{-4,8152984 / 8} = \frac{0,01188088}{-0,6019123}$$

$$F_{\alpha} ; n-2 = 8 \quad = -0,019738556$$

$$F_{\alpha} = 1; 8, F \text{ tabel} = 5,32$$

• Wi linearitas

$$F \text{ Perhitungan} = \frac{(\text{JK Tunacacak}) / (k-2)}{(\text{JK Galat}) / (n-2)} = \frac{-4,8152984 / 7}{0,8} = \frac{-0,687899771}{0}$$

$$F_{\alpha} ; 8; 8, F \text{ tabel} = 3,44$$

Kesimpulan

- ① untuk menguji koefisien regresi ternyata H_0 diterima, berarti koefisien regresi tidak ada artinya
- ②. Untuk menguji linearitas dalam kasus ini menjadi tidak relevan karena JK Galat bernilai 0