**Lampiran 7: Uji Normalitas (Chi Kuadrat)**

Uji normalitas dapat dilakukan dengan menggunakan rumus uji Chi Kuadrat (X2) sebagai berikut:

X2 = $\sum\_{}^{}\frac{\left(f\_{o}- f\_{h}\right)²}{f\_{h}}$

Keterangan :

X2  = Chi Kuadrat

fo = Frekuensi / Jumlah data hasil observasi

fh = Frekuensi / jumlah yang diharapkan

fo – fh = Selisih data fo dengan fh

Krikteria pengujiannya adalah membandingkan antara Chi kuadrat hitung (X2Hitung) dengan Chi kuadrat tabel (X2Tabel), bila harga Chi kuadrat hitung lebih kecil dari pada harga Chi kuadrat tabel, maka distribusi data dinyatakan normal, dan bila lebih besar dinyatakan tidak normal pada taraf signifikan α = 0,05 dengan derajat kebebasan (dk) = k – 1.

 Tabel Rumus Kelas Interval Chi Kuadrat

|  |  |
| --- | --- |
| No | Interval |
| 1. | (2 X SD)+ M – (3 X SD)+ M |
| 2. | (1 X SD)+ M – (2 X SD)+ M |
| 3. | M – (1 X SD)+ M |
| 4. | (-1 X SD)+ M – M |
| 5. | (-2 X SD)+ M – (-1 X SD)+ M |
| 6. | (-3 X SD)+ M – (-2 X SD)+ M |

Tabel perhitungan nilai Frekwensi Harapan dengan jumlah subjek sebannyak 30 orang sebagai berikut (Umar; 2007: 172) :

|  |  |  |
| --- | --- | --- |
| **no** | **persentase** | **Nilai (Fh)** |
| 1 | 2% x 30 | 0.6 |
| 2 | 14% x 30 | 4.2 |
| 3 | 34% x 30 | 10.2 |
| 4 | 34% x 30 | 10.2 |
| 5 | 14% x 30 | 4.2 |
| 6 | 2% x 30 | 0.6 |

1. **Perhitungan Chi kuadrat Variabel X**
2. Perhitungan Standar deviasi

 Tabel Penolong

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **no** | **X urut** | **x** | **X-x** | **(X-x)2** | **X2** |  2165 |
| 1 | 56 | 72.17 | -16.17 | 261.36 | 3136 |
| 2 | 56 | 72.17 | -16.17 | 261.36 | 3136 |
| 3 | 56 | 72.17 | -16.17 | 261.36 | 3136 |
| 4 | 56 | 72.17 | -16.17 | 261.36 | 3136 |
| 5 | 60 | 72.17 | -12.17 | 148.03 | 3600 |
| 6 | 64 | 72.17 | -8.17 | 66.69 | 4096 |
| 7 | 65 | 72.17 | -7.17 | 51.36 | 4225 |
| 8 | 65 | 72.17 | -7.17 | 51.36 | 4225 |
| 9 | 66 | 72.17 | -6.17 | 38.03 | 4356 |
| 10 | 66 | 72.17 | -6.17 | 38.03 | 4356 |
| 11 | 68 | 72.17 | -4.17 | 17.36 | 4624 |
| 12 | 69 | 72.17 | -3.17 | 10.03 | 4761 |
| 13 | 70 | 72.17 | -2.17 | 4.69 | 4900 |
| 14 | 70 | 72.17 | -2.17 | 4.69 | 4900 |
| 15 | 76 | 72.17 | 3.83 | 14.69 | 5776 |
| 16 | 76 | 72.17 | 3.83 | 14.69 | 5776 |
| 17 | 77 | 72.17 | 4.83 | 23.36 | 5929 |
| 18 | 77 | 72.17 | 4.83 | 23.36 | 5929 |
| 19 | 77 | 72.17 | 4.83 | 23.36 | 5929 |
| 20 | 78 | 72.17 | 5.83 | 34.03 | 6084 |
| 21 | 79 | 72.17 | 6.83 | 46.69 | 6241 |
| 22 | 79 | 72.17 | 6.83 | 46.69 | 6241 |
| 23 | 80 | 72.17 | 7.83 | 61.36 | 6400 |
| 24 | 82 | 72.17 | 9.83 | 96.69 | 6724 |
| 25 | 82 | 72.17 | 9.83 | 96.69 | 6724 |
| 26 | 82 | 72.17 | 9.83 | 96.69 | 6724 |
| 27 | 82 | 72.17 | 9.83 | 96.69 | 6724 |
| 28 | 83 | 72.17 | 10.83 | 117.36 | 6889 |
| 29 | 84 | 72.17 | 11.83 | 140.03 | 7056 |
| 30 | 84 | 72.17 | 11.83 | 140.03 | 7056 |
|  | **2165** |  |  | **2548.17** | **158789** |

1. Perhitungan Nilai Chi Kuadrat

Tabel perhitungan nilai chi kuadrat variable X

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No** | **Interval** | **Fo** | **Fh** | **Fo-Fh** | **(Fo-Fh)2** | **(Fo-Fh)2/Fh** |
| 1 | 94.07 – 103.78 | 0 | 0.6 | -0.6 | 0.360 | 0.600 |
| 2 | 84.36 – 94.07 | 0 | 4.2 | -4.2 | 17.640 | 4.200 |
| 3 | 74.66 – 84.36 | 16 | 10.2 | 5.8 | 33.640 | 3.298 |
| 4 | 64.95 – 74.66 | 8 | 10.2 | -2.2 | 4.840 | 0.475 |
| 5 | 55.24 – 64.95 | 6 | 4.2 | 1.8 | 3.240 | 0.771 |
| 6 | 45.53 – 55.24 | 0 | 0.6 | -0.6 | 0.360 | 0.600 |
|  | **Jumlah** | 30 | 30 |   |   | **9.944** |

 $X^{2}= \sum\_{}^{}\frac{\left(f\_{o}- f\_{h}\right)²}{f\_{h}}$

$$X^{2}=9,944$$

Xtabel dengan dk = k-1 = 30-1 = 29 pada taraf signifikan 0,05 sebesar 42.557.

Apabila X2 dibandingkan dengan X2tabel, diketahui bahwa X2hit < X2tabel hal ini berarti bahwa data Variabel X terdistribusi Normal.

1. **Perhitungan Chi Kuadrat Variabel Y**
2. Perhitungan Standar deviasi

 Tabel Penolong

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **no** | **Y urut** | **y** | **Y-y** | **(Y-y)2** | **Y2** |  249,73 |
| 1 | 7.27 | 8.32 | -1.06 | 1.12 | 52.80444 |
| 2 | 7.50 | 8.32 | -0.82 | 0.68 | 56.25 |
| 3 | 7.53 | 8.32 | -0.79 | 0.63 | 56.75111 |
| 4 | 7.57 | 8.32 | -0.76 | 0.57 | 57.25444 |
| 5 | 7.73 | 8.32 | -0.59 | 0.35 | 59.80444 |
| 6 | 7.73 | 8.32 | -0.59 | 0.35 | 59.80444 |
| 7 | 7.83 | 8.32 | -0.49 | 0.24 | 61.36111 |
| 8 | 7.97 | 8.32 | -0.36 | 0.13 | 63.46778 |
| 9 | 8.00 | 8.32 | -0.32 | 0.11 | 64 |
| 10 | 8.10 | 8.32 | -0.22 | 0.05 | 65.61 |
| 11 | 8.17 | 8.32 | -0.16 | 0.02 | 66.69444 |
| 12 | 8.20 | 8.32 | -0.12 | 0.02 | 67.24 |
| 13 | 8.27 | 8.32 | -0.06 | 0.00 | 68.33778 |
| 14 | 8.27 | 8.32 | -0.06 | 0.00 | 68.33778 |
| 15 | 8.33 | 8.32 | 0.01 | 0.00 | 69.44444 |
| 16 | 8.33 | 8.32 | 0.01 | 0.00 | 69.44444 |
| 17 | 8.50 | 8.32 | 0.18 | 0.03 | 72.25 |
| 18 | 8.53 | 8.32 | 0.21 | 0.04 | 72.81778 |
| 19 | 8.57 | 8.32 | 0.24 | 0.06 | 73.38778 |
| 20 | 8.60 | 8.32 | 0.28 | 0.08 | 73.96 |
| 21 | 8.60 | 8.32 | 0.28 | 0.08 | 73.96 |
| 22 | 8.63 | 8.32 | 0.31 | 0.10 | 74.53444 |
| 23 | 8.67 | 8.32 | 0.34 | 0.12 | 75.11111 |
| 24 | 8.83 | 8.32 | 0.51 | 0.26 | 78.02778 |
| 25 | 8.83 | 8.32 | 0.51 | 0.26 | 78.02778 |
| 26 | 8.83 | 8.32 | 0.51 | 0.26 | 78.02778 |
| 27 | 8.87 | 8.32 | 0.54 | 0.29 | 78.61778 |
| 28 | 8.93 | 8.32 | 0.61 | 0.37 | 79.80444 |
| 29 | 9.20 | 8.32 | 0.88 | 0.77 | 84.64 |
| 30 | 9.33 | 8.32 | 1.01 | 1.02 | 87.11111 |
|  | **249.733333** |  |  | **7.99** | **2086.884** |

1. Perhitungan Nilai Chi Kuadrat

Tabel perhitungan nilai chi kuadrat variabel Y

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No** | **Interval** | **Fo** | **Fh** | **Fo-Fh** | **(Fo-Fh)2** | **(Fo-Fh)2/Fh** |
| 1 | 9.81 - 10.41 | 0 | 0.6 | -0.6 | 0.360 | 0.600 |
| 2 | 9.21 - 9.81 | 1 | 4.2 | -3.2 | 10.240 | 2.438 |
| 3 | 8.61 - 9.21 | 8 | 10.2 | -2.2 | 4.840 | 0.475 |
| 4 | 8.01 - 8.61 | 12 | 10.2 | 1.8 | 3.240 | 0.318 |
| 5 | 7.41 - 8.01 | 8 | 4.2 | 3.8 | 14.440 | 3.438 |
| 6 | 6.81 - 7.41 | 1 | 0.6 | 0.4 | 0.160 | 0.267 |
|   |  Jumlah | 30 | 30 |   |   | **7.535** |

 $X^{2}= \sum\_{}^{}\frac{\left(f\_{o}- f\_{h}\right)²}{f\_{h}}$

$$Y^{2}=7.535$$

Ytabel dengan dk = k-1 = 30-1 = 29 pada taraf signifikan 0,05 sebesar 42,557.

Apabila Y2 dibandingkan dengan X2tabel, diketahui bahwa Y2hit < X2tabel hal ini berarti bahwa data Variabel Y terdistribusi Normal.