Perhitungan Validitas Variabel X3 :

$$r_{xy} = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{\left(n\sum X^2 - (\sum X)^2\right)\left(n\sum Y^2 - (\sum Y)^2\right)}}$$

Item 1

$$r_{x1y} = \frac{15(3284) - (59)(820)}{\sqrt{\left(15(243) - 59^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x1y} = \frac{49260 - 48380}{\sqrt{(164)(11330)}} = \frac{880}{1363,1} = 0,646$$

Item 2

$$r_{x2y} = \frac{15(2772) - (49)(820)}{\sqrt{\left(15(187) - 49^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x2y} = \frac{41580 - 40180}{\sqrt{(404)(11330)}} = \frac{1400}{2139,5} = 0,654$$

Item 3

$$r_{x3y} = \frac{15(3110) - (56)(820)}{\sqrt{\left(15(218) - 56^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x3y} = \frac{46650 - 45920}{\sqrt{(134)(11330)}} = \frac{730}{1232,2} = 0,592$$

Item 4

$$r_{x4y} = \frac{15(3114) - (56)(820)}{\sqrt{\left(15(218) - 56^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x4y} = \frac{46710 - 45920}{\sqrt{(134)(11330)}} = \frac{790}{1232,2} = 0,641$$

Item 5

$$r_{x5y} = \frac{15(3059) - (55)(820)}{\sqrt{\left(15(215) - 55^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x5y} = \frac{45885 - 45100}{\sqrt{(200)(11330)}} = \frac{785}{1505,3} = 0,521$$

Item 6

$$r_{x6y} = \frac{15(3489) - (63)(820)}{\sqrt{\left(15(273) - 63^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x6y} = \frac{52335 - 51660}{\sqrt{(126)(11330)}} = \frac{675}{1194,8} = 0,565$$

Item 7

$$r_{x7y} = \frac{15(3338) - (60)(820)}{\sqrt{\left(15(254) - 60^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x7y} = \frac{50070 - 49200}{\sqrt{(210)(11330)}} = \frac{870}{1542,5} = 0,564$$

Item 8

$$r_{x8y} = \frac{15(3270) - (59)(820)}{\sqrt{\left(15(241) - 59^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x8y} = \frac{49050 - 48380}{\sqrt{(134)(11330)}} = \frac{670}{1232,2} = 0,544$$

Item 9

$$r_{x9y} = \frac{15(3416) - (62)(820)}{\sqrt{\left(15(266) - 62^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x9y} = \frac{51240 - 50840}{\sqrt{(146)(11330)}} = \frac{400}{1286,1} = 0,311$$

Item 10

$$r_{x10y} = \frac{15(2988) - (54)(820)}{\sqrt{\left(15(200) - 54^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x10y} = \frac{44820 - 44280}{\sqrt{(84)(11330)}} = \frac{540}{975,6} = 0,555$$

Item 11

$$r_{x11y} = \frac{15(3269) - (59)(820)}{\sqrt{\left(15(241) - 59^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x11y} = \frac{49035 - 48380}{\sqrt{(134)(11330)}} = \frac{655}{1232,2} = 0,532$$

Item 12

$$r_{x12y} = \frac{15(3095) - (55)(820)}{\sqrt{\left(15(215) - 55^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x12y} = \frac{46425 - 45100}{\sqrt{(200)(11330)}} = \frac{1325}{1505,3} = 0,880$$

Item 13

$$r_{x12y} = \frac{15(2987) - (54)(820)}{\sqrt{\left(15(208) - 54^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x12y} = \frac{44805 - 44280}{\sqrt{(204)(11330)}} = \frac{525}{1520,3} = 0,345$$

Item 14

$$r_{x14y} = \frac{15(3168) - (57)(820)}{\sqrt{\left(15(229) - 57^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x14y} = \frac{47520 - 46740}{\sqrt{(186)(11330)}} = \frac{780}{1451,7} = 0,537$$

Item 15

$$r_{x15y} = \frac{15(1223) - (22)(820)}{\sqrt{\left(15(36) - 22^2\right)\left(15(45582) - 820^2\right)}}$$

$$r_{x15y} = \frac{18345 - 18040}{\sqrt{(56)(11330)}} = \frac{305}{796,5} = 0,383$$

Perhitungan Reliabilitas

Reliabilitas angket dengan rumus Alpha Cronbach dan jumlah varians butir item dicari dengan rumus berikut:

$$\sigma_i^2 = \frac{\Sigma X^2 - \frac{(\Sigma X)^2}{n}}{n}$$

$$\sigma_1^2 = \frac{243 - \frac{(59)^2}{15}}{15} = 0,729 \qquad \sigma_3^2 = \frac{218 - \frac{(56)^2}{15}}{15} = 0,596 \qquad \sigma_5^2 = \frac{215 - \frac{(55)^2}{15}}{15} = 0,889$$

$$\sigma_2^2 = \frac{187 - \frac{(49)^2}{15}}{15} = 1,796 \qquad \sigma_4^2 = \frac{218 - \frac{(56)^2}{15}}{15} = 0,596 \qquad \sigma_6^2 = \frac{273 - \frac{(63)^2}{15}}{15} = 0,560$$

$$\sigma_7^2 = \frac{254 - \frac{(60)^2}{15}}{15} = 0{,}933 \qquad \sigma_{10}^2 = \frac{200 - \frac{(54)^2}{15}}{15} = 0{,}373 \qquad \sigma_{13}^2 = \frac{208 - \frac{(54)^2}{15}}{15} = 0{,}907$$

$$\sigma_8^2 = \frac{241 - \frac{(59)^2}{15}}{15} = 0{,}596 \qquad \sigma_{11}^2 = \frac{241 - \frac{(59)^2}{15}}{15} = 0{,}596 \qquad \sigma_{14}^2 = \frac{229 - \frac{(57)^2}{15}}{15} = 0{,}827$$

$$\sigma_9^2 = \frac{266 - \frac{(62)^2}{15}}{15} = 0{,}649 \qquad \sigma_{12}^2 = \frac{215 - \frac{(55)^2}{15}}{15} = 0{,}889 \qquad \sigma_{15}^2 = \frac{36 - \frac{(22)^2}{15}}{15} = 0{,}249$$

Jumlah varians seluruh item

$\Sigma\sigma_i^2 =$ 0,729+1,796+0,596+0,596+0,889+0,560+0,933+0,596+
0,649+0,373+0,596+0,889+0,907+0,827+0,249=11,182

Varians item total

$$\sigma_t^2 = \frac{45582 - \frac{(820)^2}{15}}{15} = 50{,}356$$

Menghitung nilai Alpha dengan rumus

$$r_{11} = \left(\frac{k}{k-1}\right)\left(1 - \frac{\Sigma\sigma_i^2}{\sigma_t^2}\right)$$

$$r_{11} = \left(\frac{15}{15-1}\right)\left(1 - \frac{11{,}182}{50{,}356}\right)$$

$$r_{11} = (1{,}071)(0{,}778)$$

$r_{11} = 0{,}834$ (reliabilitas tinggi)