Ajala Emmanuel Eniola
16/ENG05/006
ENG 382

Kitaa dhe Assignment 6.

$y = mx + c$

$\log d = \log a + \log \beta$

Where $a_0 = \log \alpha$

$a_1 - \log \beta$

$y = \log d$	$t = x$	d(m)	xy	x^2	y^2
0.301029996	0	0	0	0	0.09061905
0.09897004	1	1	0.69897004	1	0.48855907
1.278753601	2	2	2.557507262	4	1.63321077
1.69897004	3	3	5.096910013	9	2.886479096
2.178976947	4	4	8.715907789	16	4.747940537
2.672097858	5	5	13.36048929	25	7.14010692
3.1568519091	6	6	16.9411141	36	9.965713925
3.654389021	7	7	28.58058364	49	13.3541343
4.11180001	8	8	32.8440006	64	16.9068974
4.61416591	9	9	41.5267532	81	12.28997336
5.04505135	10	10	50.45403155	100	25.45611297

$\Sigma x = 29.4113304\,6$

$\Sigma x = 55$

$\Sigma xy = 199.8268839$

$\Sigma x^2 = 385$

$\Sigma y^2 = 105.9620488$

$\Sigma y = a_0 N + a_1 \Sigma x$

$= 29.4113046 = a_0 (11) + a_1 (55)$ —— (1)

$\Sigma xy = a_0 \Sigma x + a_1 \Sigma x^2$

$199.8268839 = a_0 (55) + a_1 (385)$ —— (2)

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Solving equations (1) and (2)

$29.4113046 = 11a_0 + 55a_1$

$119.8268835 = 55a_0 + 385a_1$

$$a_0 = \frac{\begin{vmatrix} 29.4113046 & 55 \\ 199.8368837 & 385 \end{vmatrix}}{\begin{vmatrix} 11 & 55 \\ 55 & 385 \end{vmatrix}}$$

$$\frac{29.9113376 (385) - (155)(199.8868835)}{(11 \times 385) - (55 \times 55)}$$

$a_0 = 0.2754$

$$a_1 = \frac{\begin{vmatrix} 11 & 29.9113046 \\ 55 & 199.8268835 \end{vmatrix}}{\begin{vmatrix} 11 & 55 \\ 55 & 385 \end{vmatrix}}$$

$$\frac{11 \times 199.8268835 - (29.9113086 \times 55)}{(11 \times 385) - (55 \times 55)}$$

$a_1 = 0.47573$

$a_0 = \log a$

$0.27511 = \log$

$a = 1.8891$

$a_1 = \log \beta$

$0.47573 = \log \beta$

$\beta = 3.0181$

Q.

Correlation Coefficient.

$$R = \frac{N\Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{(N\Sigma x^2 - (\Sigma x^2))(N\Sigma y^2 - (\Sigma y^2))}}$$

$$R = \frac{(11 \times 197.8268835) - (55)(29.41133046)}{\sqrt{(11 \times 385 - 55^2) \times ((11 \times 103.7620483) - (29.4113308)^2)}}$$

$R = 0.998448312$

$R \text{ square} = (0.998448312)^2$

$= 0.996896846$

From observation for all the methods used to solve the collection coefficient and it's square; It can be seen that $R^2 < R$ (i.e the value of the square of the correlation coefficient is less than the actual value of the correlation coefficient.

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