APPENDICES

Appendix-I

Trend Analysis of Interest Coverage Ratio

Fy	Mid-value (x)	y	x^2	xy
2062/63	-2	1.67	4	-3.37
2063/64	-1	1.29	1	-1.29
2064/65	0	1.39	0	0
2065/66	1	1.30	1	1.30
2066/67	2	1.09	4	2.18
n = 5	$\sum x = 0$	$\sum y = 6.76$	$\sum x^2 = 10$	$\sum xy = -1.15$

Assuming 2064/65 is base year,

Trend line, $Y_c = a + bx$

$$a = \frac{\sum y}{n} = \frac{6.74}{5} = 1.35$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{-1.15}{10} = -0.115$$

Now, putting the value of 'a' and 'b' in trend line,

$$Y_c = a + bx$$

Trend value:

2062/63 : 1.35 – 0.115 (2062/63-2064/65)=1.58

2063/64 : 1.35 – 0.115 (2063/64-2064/65) =1.47

2064/65 : 1.35 – 0.115 (2064/65-2064/65) =1.35

2065/66 : 1.35 – 0.115 (2065/66-2064/65) =1.24

2066/67 : 1.35 – 0.115 (2066/67-2064/65) =1.12

2067/68 : 1.35 – 0.115 (2067/68-2064/65) =1.00

2068/69 : 1.35 – 0.115 (2068/69-2064/65) =0.89

2069/70 : 1.35 – 0.115 (2069/70-2064/65) =0.78

2070/71 : 1.35 – 0.115 (2070/71-2064/65) =0.66

2071/72 : 1.35 – 0.115 (2071/72-2064/65) =0.55

Appendix-II

Trend Analysis of Total Interest Expenses to Total Interest Income

Fy	Mid-value (x)	y	x^2	xy
2062/63	-2	99.95	4	-200
2063/64	-1	57.27	1	-57.27
2064/65	0	51.21	0	0
2065/66	1	55.69	1	55.69
2066/67	2	67.80	4	135.6
n = 5	$\sum x = 0$	$\sum y = 331.92$	$\sum x^2 = 10$	$\sum xy = -65.98$

Assuming 2064/65 is base year,

Trend line, $Y_c = a + bx$

$$a = \frac{\sum y}{n} = \frac{331.92}{5} = 6.38$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{-65.98}{10} = -6.598$$

Now, putting the value of 'a' and 'b' in trend line,

$Y_c = a + bx$

Trend value:

2062/63 : 66.38– 6.598 (2062/63-2064/65)= 79.58

2063/64 : 66.38– 6.598 (2063/64-2064/65) =72.98

2064/65 : 66.38– 6.598 (2064/65-2064/65) = 66.38

2065/66 : 66.38– 6.598 (2065/66-2064/65) = 59.79

2066/67 : 66.38– 6.598 (2066/67-2064/65) = 53.19

2067/68 : 66.38– 6.598 (2067/68-2064/65) = 46.59

2068/69 : 66.38– 6.598 (2068/69-2064/65) = 40.00

2069/70 : 66.38– 6.598 (2069/70-2064/65) = 33.39

2070/71 : 66.38– 6.598 (2070/71-2064/65) = 26.80

2071/72 : 66.38– 6.598 (2071/72-2064/65) = 20.20

Appendix-III

Computation of Correlation Coefficient between EBIT and Interest Charge

Rs. in '00,000'

Fy	EBIT (x)	Interest charge (y)	xy	x^2	y^2
2062/63	4809.52	2886.62	13883256.62	23131482.63	8332575.02
2063/64	5117.48	3977.22	20353343.81	26188601.55	15818278.93
2064/65	5671.41	4079.19	23134758.96	32164891.39	16639791.06
2065/66	7563.04	5800.36	43868354.69	57199574.04	33644176.13
2066/67	12486.14	11448.08	142942329.6	155903692.10	131058535.7
n = 5	$\sum x$ = 35647.59	$\sum y$ = 28191.47	$\sum xy$ = 244182043.7	$\sum x^2$ = 294588241.70	$\sum y^2$ = 205493356.80

$$r = \frac{N\sum xy - \sum x.\sum y}{\sqrt{\left[N\sum x^2 - (\sum x)^2\right]}\sqrt{\left[N\sum y^2 - (\sum y)^2\right]}}$$

$$= \frac{5\times 244182043.70 - 35647.59\times 28191.47}{\sqrt{5\times 294588241.70 - (35647.59)^2}\sqrt{5\times 205493356.8 - (28191.47)^2}}$$

$$= \frac{1220910219 - 1004957964}{\sqrt{202190535.7\times 232707803.2}}$$

$$= \frac{215570132}{216913151.6}$$

r = 0.9956

Since r = 0.9956

$r^2 = (0.9956)^2$

or, $r^2 = 0.9912$

$$t = \frac{r}{\sqrt{1-r^2}}\sqrt{n-2}$$

$$= \frac{0.9956}{\sqrt{1-0.9912}}\sqrt{5-2}$$

$$t = \frac{0.9956}{0.0938}\sqrt{3}$$

or, t = 18.38

Degree of freedom (d.f.) = 5 – 2

= 5-2

= 3

α = 5% = 0.05

Critical value: Tabulated value of t for 3 d.f. and α = 5% level of significance for two tailed test is 3.182.

Decision: Since tabulated value i.e. 3.182 is less than calculated value i.e. 18.38, null hypothesis is rejected and alternative hypothesis is accepted. Therefore we can conclude that EBIT and interest charge are significantly correlated.

Appendix-IV

Computation of Correlation Coefficient between Total Interest Expenses to Total Interest Income

Rs. in '00,000'

Fy	Interest expenses (x)	Interest income (y)	xy	x^2	y^2
2062/63	5633.62	5636.62	31754575.16	31737674.3	31771485.02
2063/64	3977.22	6944.82	27621077	15818278.93	48230524.83
2064/65	4079.19	7965.97	32494705.16	16639791.06	63456678.04
2065/66	5800.36	10414.73	60409183.3	33644176.13	108466601
2066/67	11448.08	16886.18	193314339.5	131058535.7	285143075
n = 5	$\sum x$ = 30938.47	$\sum y$ = 47848.32	$\sum xy$ = 345593880	$\sum x^2$ = 228898456.1	$\sum y^2$ = 537068364.9

$$r = \frac{N\sum xy - \sum x.\sum y}{\sqrt{\left[N\sum x^2 - (\sum x)^2\right]}\sqrt{\left[N\sum y^2 - (\sum y)^2\right]}}$$

$$= \frac{5 \times 345593880 - 30938.47 \times 47848.32}{\sqrt{5 \times 228898456.1 - (30938.47)^2}\sqrt{5 \times 537068364.9 - (47848.32)^2}}$$

$$= \frac{1727969400 - 1480353813}{\sqrt{187303354.6 \times 395880093.2}}$$

$$= \frac{247615587}{272304369.2}$$

r = 0.91

Since r = 0.91

$r^2 = (0.91)^2$

or, $r^2 = 0.8281$

$$t = \frac{r}{\sqrt{1-r^2}}\sqrt{n-2}$$

$$= \frac{0.91}{\sqrt{1-0.8281}}\sqrt{5-2}$$

$$t = \frac{0.9956}{\sqrt{0.1719}}\sqrt{3}$$

$= \frac{0.91}{0.4146}\sqrt{3}$

or, t = 3.80

Degree of freedom (d.f.) = n – 2

= 5-2

= 3

α = 5% = 0.05

Critical value: Tabulated value of t for 3 d.f. and α = 5% level of significance for two tailed test is 3.182.

Decision: Since calculated value of t i.e.3.80 is greater than tabulated value of t i.e. 3.182, null hypothesis is rejected and alternative hypothesis is accepted. Therefore we can conclude that there is significant relationship between total interest expenses and total interest income.

Appendix-V

Regression Analysis between EBIT and Interest Charge

Rs. in '00000'

Fy	EBIT (y)	Interest charge (x)	xy	x^2	y^2
2062/63	4809.52	2886.62	13883256.62	23131482.63	8332575.02
2063/64	5117.48	3977.22	20353343.81	26188601.55	15818278.93
2064/65	5671.41	4079.19	23134758.96	32164891.39	16639791.06
2065/66	7563.04	5800.36	43868354.69	57199574.04	33644176.13
2066/67	12486.14	11448.08	142942329.6	155903692.1	131058535.7
n = 5	Σy = 35647.59	Σx = 28191.47	Σxy = 244182043.7	Σx^2 = 294588241.70	Σy^2 = 205493356.8

…

Fy	$y - \bar{y}$	$(y - \bar{y})^2$
2062/63	-2320.48	5384627.43
2063/64	-2012.52	4050236.75
2064/65	-1458.59	2127484.78
2065/66	433.04	187523.65
2066/67	5356.14	28688235.7
n = 5		$\Sigma (y - \bar{y})^2$ = 40438108.31

Simple regression equation:

$Y = a + bx$

$\Sigma y = na + b\Sigma x$ ………. (i)

$\Sigma xy = a\Sigma x + b\Sigma x^2$…… (ii)

Substituting the value of above calculation in equation (i) and (ii), we get:

35647.59 = 5a + 28191.47b ………………………….. (iii)

244182043.70 = 28191.47a + 294588241.70b b……….(iv)

Multiplying equation (iii) by 28191.47 and eq. (iv) by 5, we get,

1004957964 = 140957.35a + 794758980.8b

_ 1220910219 = _ 140957.35a ± 1472941209b

-215952255 = - 678182227.7b

$$b = \frac{215952255}{67818227.7}$$

= 0.3184

Putting the value of b in eq. (iii), we get

35647.59 = 5a + 28191.47 x 0.3184

or, 35647.59 – 8976.164 = 5a

or, 26671.43 = 5a

or, a = 5334.28

Putting the value of ‘a’ and b’ on Y = a + bx

y = 5334.28 + 0.3184x

H_0: b1 = 0,

H_1: b1 ≠ 0,

Testing t-statistic,

$$t = \frac{b1}{Sb1}$$

Where,

$$SB1 = \frac{s}{\sqrt{\sum(x-\bar{x})^2}}$$

$$s = \sqrt{\frac{SST}{n-2}}$$

$SSE = \Sigma(y - \bar{y})^2$

$$S = \sqrt{\frac{\sum(y-\bar{y})^2}{n-2}}$$

$$= \sqrt{\frac{40438108.31}{5-2}}$$

$$= \sqrt{\frac{40438108.31}{3}}$$

= 3671.43

Now, Sb1 =

Sb1 = $\sqrt{\sum(x-\bar{x})^2}$

$= \frac{3671.43}{\sqrt{46541534.19}}$

= 0.5381

t = $\frac{b1}{Sb1}$

$= \frac{0.3181}{0.5381}$

= 0.5918

Degree of freedom (d.f.) = n – 2

= 5 – 2

= 3

Critical value: Tabulated value of t for 3 d.f. at α = 5% level of significance for two-tailed test is 3.182.

Decision: Since t-calculated value is less than t-tabulated value i.e. 0.5381 < 3.182, null hypothesis is accepted. Therefore we can conclude that the regression model of y on x is not significant

Appendix-VI

Regression Analysis between NPAT and Return to Total Assets

Rs. in '0000000'

Fy	NPAT (y)	Total assets (x)	xy	x^2	y^2
2062/63	13.40	906.98	12153.53	822612.72	179.56
2063/64	7.41	1080.76	8008.43	1168042.17	54.90
2064/65	8.50	1249.86	10623.81	1562150.02	72.25
2065/66	12.32	1449.07	17855.54	2099803.86	151.78
2066/67	7.33	2067.87	15157.48	4276086.33	53.72
n = 5	Σy = 48.96	Σx = 6754.54	Σxy = 63795.80	Σx^2 = 9928695.11	Σy^2 =512.22

…

Fy	$y - \bar{y}$	$(y - \bar{y})^2$
2062/63	3.61	13.03
2063/64	-2.38	5.67
2064/65	1.29	1.66
2065/66	2.53	6.40
2066/67	-2.46	6.05
n = 5		$\Sigma (y - \bar{y})^2 = 32.81$

Simple regression equation of MBL:

Y = a + bx

Σy = na + bΣx ………. (i)

$\Sigma xy = a\Sigma x + b\Sigma x^2$…… (ii)

Substituting the value of above calculation in equation (i) and (ii), we get:

48.96 = 5a + 6754.54b ………………………….. (iii)

63795.80 = 6754.54a + 9928695.11 b……….(iv)

Multiplying equation (iii) by 28191.47 and eq. (iv) by 5, we get,

$$\begin{aligned} 330702.28 &= 33772.70a + 45623810.61b \\ \_\ 318979 &= \_\ 33772.70a \pm 49643475.55b \end{aligned}$$

$$-11723.28 = -4019664.94b$$

$$b = \frac{11723.28}{4019664.94}$$

$= -0.00292$

Putting the value of b in eq. (iii), we get

48.96 = 5a + 6754.54 x -0.00292

or, 48.96 + 19.72 = 5a

or, 68.68 = 5a

or, a = 13.74

Putting the value of ‘a’ and b’ on Y = a + bx

y = 13.74 + (-0.00292)x

H_0: b1 = 0,

H_1: b1 ≠ 0,

Testing t-statistic,

$$t = \frac{b1}{Sb1}$$

Where,

$$SB1 = \frac{s}{\sqrt{\sum(x-\bar{x})^2}}$$

$$s = \sqrt{\frac{SST}{n-2}}$$

$$SSE = \Sigma(y - \bar{y})^2$$

$$S = \sqrt{\frac{\sum(y-\bar{y})^2}{n-2}}$$

$$= \sqrt{\frac{32.81}{5-2}}$$

= 3.31

Now, Sb1 =

$$Sb1 = \sqrt{\sum(x-\bar{x})^2}$$

$$= \frac{3.31}{\sqrt{803933}}$$

= 0.00369

$$t = \frac{b1}{Sb1}$$

$$= \frac{-0.00292}{0.00369}$$

= - 0.7913

|t| = 0.7913

Degree of freedom (d.f.) = n – 2

= 5 – 2

= 3

Critical value: Tabulated value of t for 3 d.f. at α = 5% level of significance for two-tailed test is 3.182.

Decision: Since t-calculated value is less than t-tabulated value i.e. 0.7913 < 3.182, null hypothesis is accepted. Therefore we can conclude that the regression model of y on x is not significant.

Appendix-VII

Budgeted and Actual Investment

Calculation Table **Rs. in '00,000'**

Fy	Budgeted investment (X)	x = (X- $\overline{X}$)/1000	(X- $\overline{X}$)^2
2062/63	562334.60	-764.29	584139.20
2063/64	1428995.78	102.37	10479.62
2064/65	1414162.27	87.53	7661.50
2065/66	1732260.67	405.63	164535.70
2066/67	1495390.38	168.76	28479.94
n = 5	Σx = 6633143.7		Σ(X- $\overline{X}$)^2 = 795295.96

Budgeted mean ($\overline{X}$) = $\frac{6633143.7}{5}$ = 1326628.74 or 1326.63

Budgeted S.D. (σ_x) = $\sqrt{\frac{1}{n}\Sigma(x-\overline{x})^2} = \sqrt{\frac{1}{5}\times 795295.96}$ = 398.82

Budgeted C.V.$_x$ = $\frac{\pm}{\overline{x}}\times 100\%$ = $\frac{398.82}{1326.63}\times 100\%$ = 30.06%

Fy	Actual investment (Y)	y = (Y- $\overline{Y}$)/1000	(Y- $\overline{Y}$)^2
2062/63	1190892.82	-260.28	198929.40
2063/64	1278468.56	-172.70	-17679.30
2064/65	1443550.56	-7.62	-666.98
2065/66	1246158.65	-205.01	-83158.21
2066/67	2096792.29	645.62	108954.83
n = 5	Σx = 7255862.88		Σ(Y- $\overline{Y}$)^2= 206379.74

Actual mean ($\overline{Y}$) = $\frac{7255862\ \ .88}{5}$ = 1451172.58 or 1451.17 (taking 000 common)

Budgeted S.D. (σ_y) = $\sqrt{\frac{1}{n}\Sigma(y-\overline{y})^2} = \sqrt{\frac{1}{5}\times 556483.31}$ = 333.61

Budgeted C.V.$_x$ = $\frac{\pm}{\overline{y}}\times 100\%$ = $\frac{333.61}{1451.17}\times 100\%$ = 22.99%

Fy	Budgeted (x)	Actual (y)	xy	y^2	x^2
2062/63	562.33	1190.89	669673.17	36438.99	316215.03
2063/64	1429.0	1278.47	1826933.63	1634485.54	2042041
2064/65	1414.16	1443.55	2041269.25	2083836.60	1999848.51
2065/66	1732.26	1246.16	2158673.12	1552914.75	3000724.71
2066/67	1495.39	2096.79	3135518.80	4396528.30	2236191.25
n = 5	Σx =6633.14	Σy = 7255.86	Σxy = 9832067.97	Σy^2 = 9704204.18	Σx^2 = 9595020.5

$\bar{x} = \frac{\sum x}{n} = \frac{6633.14}{5}$ = 1326.63 $\bar{y} = \frac{\sum y}{n} = \frac{7255.86}{5}$ = 1451.17

Coefficient of correlation (r) = $\frac{\sum xy}{n.\pm_x.\pm_y}$

= $\frac{206379.74}{5 \times 398.82 \times 333.61}$

= $\frac{206379.74}{665251.701}$

$\therefore$ r = 0.31

r^2 = (0.31)2

= 0.096

Probable error of correlation coefficient,

P.E. (r)

S.E. (r) = $\frac{1 - r^2}{\sqrt{n}}$

Then the probable error of r is P.E. (r) = 0.6745 x S.E. (r)

P.E. (r) = 0.6745 x $\frac{1 - r^2}{\sqrt{n}}$

= 0.6745 x $\frac{1 - 0.31^2}{\sqrt{5}}$

= 0.6745 x $\frac{0.9039}{2.24}$

= 0.27

Since 6 PE is less than r i.e. 0.27 < 0.31, the correlation coefficient is significant.

Now,

Null hypothesis, H_0: ρ = 0, i.e. budgeted investment and actual investments are not correlated. Or the correlation coefficient is zero.

Alternative hypothesis, H_1: ρ ≠ 0, i.e. budgeted investment and actual investments are correlated. Or the correlation coefficient is existed (two-tailed test).

Test of statistics, $t = \frac{r}{\sqrt{1-r^2}}\sqrt{n-2}$

$$= \frac{0.31}{\sqrt{1-0.31^2}}\sqrt{5-2}$$

$$= \frac{0.31}{\sqrt{0.9039}}\sqrt{3}$$

$$= \frac{0.31}{0.95}\times 1.73$$

$$= 0.56$$

Degree of freedom: n – 2 = 5 – 2 = 3

Critical value: The tabulated value of t at 5% level of significance for two-tailed test and for 3 d.f. is 3.182.

Decision: Since calculated value of t is less than tabulated value i.e. 0.56 < 3.182, null hypothesis H_0 is accepted. Therefore we can conclude that budgeted investment and actual investments are not correlated.

Here,

r2 = sample coefficient of determination

a = y-intercept

b = Slope of the best fitting estimating line

n = Number of data point

x = Values of the independent variable

r = Values of the dependent variable

$\bar{y}$ = Mean of the observed values of the dependent variable

Appendix-VIII

Budgeted and Actual Deposition Collection

Calculation Table

Fy	Budgeted deposit (X)	x = (X- $\overline{X}$)/100000	(X- $\overline{X}$)^2
2062/63	6704163.17	-52.13	2717.54
2063/64	9471957.20	-24.45	597.80
2064/65	11370541.81	-5.47	29.92
2065/66	13322690.71	14.06	197.68
2066/67	18716149.02	67.99	4622.64
n = 5	Σx = 59585501.91		Σ(X- $\overline{X}$)^2 = 8165.58

Budgeted mean ($\overline{X}$) = $\frac{59585501.91}{5}$ = 11917100.38 or 119.17 (taking 00000 common)

Budgeted S.D. (σ_x) = $\sqrt{\frac{1}{n}\sum(x-\overline{x})^2} = \sqrt{\frac{1}{5}\times 8165.58}$ = 40.41

Budgeted C.V.$_x$ = $\frac{\pm}{\overline{x}}\times 100\%$ = $\frac{40.41}{119.17}\times 100\%$ = 33.91%

Fy	Actual deposit (Y)	y = (Y- $\overline{Y}$)/ 100000	(Y- $\overline{Y}$)^2	xy
2062/63	7893297.67	-46.27	2140.91	2412.06
2063/64	9475451.51	-30.45	927.20	744.03
2064/65	11102242.26	-14.18	201.07	77.56
2065/66	15596790.85	30.76	946.18	432.49
2066/67	18535917.0	60.15	3618.02	4089.60
n = 5	Σx = 62603699.29		Σ(Y- $\overline{Y}$)^2 = 7833.38	Σxy = 7755.74

Actual mean ($\overline{Y}$) = $\frac{62603699\ \ .29}{5}$ = 12520739.86 or 125.21 (taking 00000 common)

Budgeted S.D. (σ_y) = $\sqrt{\frac{1}{n}\sum(y-\overline{y})^2} = \sqrt{\frac{1}{5}\times 7833.38}$ = 39.58

Budgeted C.V.$_x$ = $\frac{\pm}{\bar{y}} \times 100\%$ = $\frac{39.58}{125.21} \times 100\%$ = 31.61%

Coefficient of correlation (r) = $\frac{\sum xy}{n.\pm_x.\pm_y}$

$= \frac{7755.74}{5 \times 40.41 \times 39.58}$

$= \frac{7755.74}{7997.14}$

$\therefore$ r = 0.97

r^2 = (0.97)2

= 0.94

Probable error of correlation coefficient,

P.E. (r)

S.E. (r) = $\frac{1 - r^2}{\sqrt{n}}$

Then the probable error of r is P.E. (r) = 0.6745 x S.E. (r)

P.E. (r) = 0.6745 x $\frac{1 - r^2}{\sqrt{n}}$

= 0.6745 x $\frac{1 - 0.97^2}{\sqrt{5}}$

= 0.6745 x $\frac{1 - 0.94}{2.24}$

= 0.02

Since 6 PE is less than r i.e. 0.02 < 0.97, the correlation coefficient is significant.

Now,

Null hypothesis, H_0: $\rho = 0$, i.e. actual deposit collection and budgeted deposit collections are not correlated, or correlation coefficient is zero.

Alternative hypothesis, H_1: $\rho \neq 0$, i.e. actual deposit collection and budgeted deposit collections are correlated, or correlation coefficient is existed (two-tailed test).

Test of statistics, t = $\frac{r}{\sqrt{1 - r^2}} \sqrt{n - 2}$

$$= \frac{0.97}{\sqrt{1-0.97^2}}\sqrt{5-2}$$

$$= \frac{0.97}{0.243} \times 1.73$$

$$= 6.91$$

Degree of freedom: n – 2 = 5 – 2 = 3

Critical value: The tabulated value of t at 5% level of significance for two-tailed test and for 3 d.f. is 3.182.

Decision: Since calculated value of t is greater than tabulated value i.e. 6.91 > 3.182, null hypothesis H_0 is rejected. Therefore we can conclude that actual deposit collection and budgeted deposit collections are correlated.

Appendix-IX

Actual Investment and Actual Deposit Collection

Calculation Table

Fy	Actual investment (X)	x = (X- $\overline{X}$)/100000	(X- $\overline{X}$)^2
2062/63	1190829.82	-2.60	6.76
2063/64	1278468.56	-1.73	2.99
2064/65	1443550.56	-0.08	0.006
2065/66	1246158.65	-2.05	4.20
2066/67	2096792.29	6.45	41.60
n = 5	Σx =7255799.88		Σ(X- $\overline{X}$)^2 = 55.56

$\overline{X} = \frac{7255799.88}{5}$ = 1451159.98 or 14.51 (taking 00000 common)

S.D. (σ_x) = $\sqrt{\frac{1}{n}\Sigma(x-\overline{x})^2} = \sqrt{\frac{1}{5}\times 55.56}$ = 3.33

C.V.$_x$ = $\frac{\pm}{\overline{x}}\times 100\% = \frac{3.33}{14.51}\times 100\%$ = 22.95%

Fy	Actual deposit (Y)	y = (Y- $\overline{Y}$)/100000	(Y-$\overline{Y}$)^2	xy
2062/63	7893297.67	-46.27	2140.91	120.30
2063/64	9475451.51	-30.45	927.20	52.68
2064/65	11102242.26	-14.18	201.07	1.13
2065/66	15596790.85	30.76	946.18	-63.06
2066/67	18535917.0	60.15	3618.02	387.97
n = 5	Σx = 62603699.29		(Y-$\overline{Y}$)^2 = 7833.38	Σxy = 499.02

$\overline{Y} = \frac{62603699\ \ .29}{5}$ = 12520739.86 or 125.21 (taking 00000 common)

$\sigma_y = \sqrt{\frac{1}{n}\Sigma(y-\overline{y})^2} = \sqrt{\frac{1}{5}\times 7833.38}$ = 39.58

C.V.$_x$ = $\frac{\pm}{\bar{y}} \times 100\%$ = $\frac{39.58}{125.21} \times 100\%$ = 31.61%

Coefficient of correlation (r) = $\frac{\sum xy}{n.\pm_x.\pm_y}$

$$= \frac{499.02}{5 \times 3.33 \times 39.58}$$

$$= \frac{499.02}{659.007}$$

$\therefore$ r = 0.76

r^2 = (0.76)2

= 0.58

Probable error of correlation coefficient,

P.E. (r)

S.E. (r) = $\frac{1-r^2}{\sqrt{n}}$

Then the probable error of r is P.E. (r) = 0.6745 x S.E. (r)

P.E. (r) = 0.6745 x $\frac{1-r^2}{\sqrt{n}}$

= 0.6745 x $\frac{1-0.58}{\sqrt{5}}$

= 0.6745 x $\frac{0.42}{2.24}$

= 0.13

Since 6 PE is less than r i.e. 0.13 < 0.58, the correlation coefficient is significant.

Now,

Null hypothesis, H_0: $\rho = 0$, i.e. actual deposit collection and actual investment are not correlated.

Alternative hypothesis, H_1: $\rho \neq 0$, i.e. actual deposit collection and actual investment are correlated. (two-tailed test).

Test of statistics, t = $\frac{r}{\sqrt{1-r^2}}\sqrt{n-2}$

$$= \frac{0.76}{\sqrt{1-0.58}}\sqrt{5-2}$$

$$= \frac{0.76}{0.65} \times 1.73$$

$$= 2.02$$

Degree of freedom: n – 2 = 5 – 2 = 3

Critical value: The tabulated value of t at 5% level of significance for two-tailed test and for 3 d.f. is 3.182.

Decision: Since calculated value of t is less than tabulated value i.e. 2.02 < 3.182, null hypothesis H_0 is accepted. Therefore we can conclude that actual deposit collection and actual investment are not correlated.

Appendix-X
Trend Analysis of Revenue

Rs. in '000'

Fy	Total revenue (y)	Mid value (x)	xy	x^2
2062/63	622462.28	-2	-1244925.56	4
2063/64	724151.63	-1	-724151.63	2
2064/65	860976.45	0	0	0
2065/66	1149480.67	1	1149480.67	1
2066/67	1775235.74	2	3550471.48	4
n = 5	Σy = 5132306.77	Σx = 0	Σxy = 2730875.96	$\Sigma x^2 = 10$

Where, x denotes fiscal year

y denotes total revenue

Assuming 2064/65 as base year,

Straight line trend (Y_c) = a + bx

$$a = \frac{\sum y}{n} = \frac{5132306.77}{5} = 1026461.35$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{2730875.96}{10} = 273087.60$$

Now, Yc = 1026461.35 + 273087.60x

By using trend equation, trend revenue figure for Fy 2062/63 to 2066/67 is as under:

For 2062/63:

= 1026461.35 + 273087.60 (2062/63 – 2064/65)

= 480286.15

For 2063/64

= 1026461.35 + 273087.60 (2063/64 – 2064/65)

= 753373.75

For 2064/65

= 1026461.35 + 273087.60 (2064/65 – 2064/65)

= 1026461.35

For 2065/66

= 1026461.35 + 273087.60 (2065/66 – 2064/65)

= 1299548.95

For 2066/67

= 1026461.35 + 273087.60 (2066/67 – 2064/65)

= 1572636.55

Rs. in '000'

Fy	2062/63	2063/64	2064/65	2065/66	2066/67
Trend value (Rs.)	480286.15	753373.75	1026461.35	1299548.95	1572636.55

Appendix-XI

Trend of Cost/Expenditure

'000'

Fy	Total cost (y)	Mid value (x)	xy	x^2
2062/63	417995.99	-2	-835991.98	4
2063/64	556263.27	-1	-556263.27	1
2064/65	603748.72	0	0	0
2065/66	853872.92	1	853872.92	1
2066/67	1520390.90	2	3040781.80	4
n = 5	Σy = 3552271.8	Σx = 0	Σxy = 2502399.47	$\Sigma x^2 = 10$

Where, x denotes fiscal year

y denotes total costs

Assuming 2064/65 as base year,

Straight line trend (Y_c) = a + bx

$$a = \frac{\sum y}{n} = \frac{3952271.8}{5} = 790454.36$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{2502399.47}{10} = 250239.95$$

Now, Yc = 790454.36 + 250239.94x

By using trend equation trend costs for Fy 2062/63 to 2066/67 is as under:

For 2062/63:

= 790454.36 + 250239.94 (2062/63 – 2064/65)

= 289974.46

For 2063/64:

= 790454.36 + 250239.94 (2063/64 – 2064/65)

= 540214.41

For 2064/65:

= 790454.36 + 250239.94 (2064/65 – 2064/65)

= 790454.36

For 2065/66:

= 790454.36 + 250239.94 (2065/66 – 2064/65)

= 1040694.31

For 2066/67:

= 790454.36 + 250239.94 (2066/67 – 2064/65)

= 1290934.26

Rs. in '000'

Fy	2062/63	2063/64	2064/65	2065/66	2066/67
Trend value (Rs.)	289974.46	240214.41	790454.36	1040694.31	1290934.26

Appendix-XII
Trend of Profit

Rs. in '000'

Fy	Net profit (y)	Mid value (x)	xy	x^2
2062/63	133996.71	-2	-267993.42	4
2063/64	74085.65	-1	-74085.65	1
2064/65	85016.00	0	0	0
2065/66	123251.10	1	123251.10	1
2066/67	73312.80	2	146625.60	4
n = 5	Σy = 489662.26	Σx = 0	Σxy = -72202.37	$\Sigma x^2 = 10$

Where, x denotes fiscal year

y denotes net profit

Assuming 2064/65 as base year,

Straight line trend (Y_c) = a + bx

$$a = \frac{\sum y}{n} = \frac{489662.26}{5} = 97932.45$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{-72202.37}{10} = -7220.24$$

Now, Yc = 97932.45 – 7220.74x

By using trend equation, trend profit for Fy 2062/63 to 2066/67 is as under:

For 2062/63:

= 97932.45 – 7220.74 (2062/63 – 2064/65)

= 112372.93

For 2063/64:

= 97932.45 – 7220.74 (2063/64 – 2064/65)

= 105152.69

For 2064/65:

= 97932.45 – 7220.74 (2064/65 – 2064/65)

= 97932.45

For 2065/66:

= 97932.45 – 7220.74 (2065/66 – 2064/65)

= 90712.21

For 2066/67:

= 97932.45 – 7220.74 (2066/67 – 2064/65)

= 83491.97

Rs. in '000'

Fy	2062/63	2063/64	2064/65	2065/66	2066/67
Trend value (Rs.)	112372.93	105152.69	97932.45	90712.21	83491.97

Appendix-XIII

Trend of Loan and Advance

Rs. in '000'

Fy	Loan and advances (y)	Mid value (x)	xy	x^2
2062/63	60333.65	-2	-120667.3	4
2063/64	72750.24	-1	-72750.24	1
2064/65	88749.14	0	0	0
2065/66	129570.99	1	129570.99	1
2066/67	149347.18	2	298694.36	4
n = 5	Σy = 500751.2	Σx = 0	Σxy = 234847.81	$\Sigma x^2 = 10$

Where, x denotes fiscal year

y denotes loan and advances

Assuming 2064/65 as base year,

Straight line trend (Y_c) = a + bx

$$a = \frac{\sum y}{n} = \frac{500751.2}{5} = 100150.24$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{234847.81}{10} = 23484.78$$

Now, Yc = 100150.24 + 23484.78x

For 2062/63:

= 100150.24 + 23484.78 (2062/63 – 2064/65)

= 53180.68

For 2063/64:

= 100150.24 + 23484.78 (2063/64 – 2064/65)

= 76665.46

For 2064/65:

= 100150.24 + 23484.78 (2064/65 – 2064/65)

= 100150.24

For 2065/66:

= 100150.24 + 23484.78 (2065/66 – 2064/65)

= 123635.02

For 2066/67:

= 100150.24 + 23484.78 (2066/67 – 2064/65)

= 147119.8

Rs. in '000'

Fy	2062/63	2063/64	2064/65	2065/66	2066/67
Trend value (Rs.)	53180.68	76665.46	100150.24	123635.02	147119.8

Appendix-XIV
Trend Analysis of Deposit

Rs. in '000'

Fy	Deposit (y)	Mid value (x)	xy	x^2
2062/63	78932.98	-2	-157865.96	4
2063/64	94754.52	-1	-94754.52	1
2064/65	111022.42	0	0	0
2065/66	155967.91	1	155967.91	1
2066/67	185359.17	2	370718.34	4
n = 5	Σy = 626037.00	Σx = 0	Σxy = 274065.77	$\Sigma x^2 = 10$

Where, x denotes fiscal year

y denotes deposit

Assuming 2064/65 as base year,

Straight line trend (Y_c) = a + bx

$a = \frac{\sum y}{n} = \frac{626037}{5} = 125207.4$

$b = \frac{\sum xy}{\sum x^2} = \frac{274065.77}{10} = 27406.58$

Now, Yc = 125207.4 +27406.58 x

By using trend equation, trend deposit for the Fy 2062/63 to 2066/67 is as under:

For 2062/63:

= 125207.4 +27406.58 (2062/63 – 2064/65)

= 70394.24

For 2063/64:

= 125207.4 +27406.58 (2063/64 – 2064/65)

= 70394.24

For 2064/65:

= 125207.4 +27406.58 (2064/65 – 2064/65)

= 125207.4

For 2065/66:

= 125207.4 +27406.58 (2065/66 – 2064/65)

= 152613.98

For 2066/67:

= 125207.4 +27406.58 (2066/67 – 2064/65)

= 180020.56

Rs. in '000'

Fy	2062/63	2063/64	2064/65	2065/66	2066/67
Trend value (Rs.)	70394.24	97800.82	125207.40	152613.98	180020.56

Appendix-XV

Straight Line Trend of Actual Credit Investment

Rs. in '000'

Fy	Actual credit investment (y)	Mid value (x)	xy	x^2
2062/63	1190829.82	-2	-2381659.64	4
2063/64	1278468.56	-1	-1278468.56	1
2064/65	1443550.56	0	0	0
2065/66	1246158.65	1	1246158.65	1
2066/67	2096792.29	2	4193584.58	4
n = 5	Σy = 7255799.88	Σx = 0	Σxy = 1779615.03	$\Sigma x^2 = 10$

Where, x denotes fiscal year

y denotes actual credit investment

Assuming 2064/65 as base year,

Straight line trend (Y_c) = a + bx

$$a = \frac{\sum y}{n} = \frac{7255799.88}{5} = 1451159.50$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{1779615.03}{10} = 177961.50$$

Now, Yc = 1451159.50 + 177961.50x

For 2062/63:

= 1451159.50 + 177961.50 (2062/63 – 2064/65)

= 1095237.98

For 2063/64:

= 1451159.50 + 177961.50 (2063/64 – 2064/65)

= 1273198.48

For 2064/65:

= 1451159.50 + 177961.50 (2064/65 – 2064/65)

= 1451159.98

For 2065/66:

= 1451159.50 + 177961.50 (2065/66 – 2064/65)

= 1629121.48

For 2066/67:

= 1451159.50 + 177961.50 (2066/67 – 2064/65)

= 1807082.98

Rs. in '000'

Fy	2062/63	2063/64	2064/65	2065/66	2066/67
Trend value (Rs.)	1095237.98	1273198.48	1451159.98	1629121.48	1807082.98