

Lampiran 1

Perhitungan Rasio

A. Rasio-rasio dalam Model Altman Z-Score

1. Rasio *Working Capital To Total Assets* (X1)

$$\text{Rumus WC/TA} = \frac{\text{Aktiva lancar} - \text{Hutang Lancar}}{\text{Total Aktiva}}$$

Kode	Tahun	Aktiva Lancar	Hutang Lancar	Total Aktiva	WC/TA
BTEL	2012	769.050.497.930	2.874.428.104.739	9.052.428.014.700	-0,233
	2013	466.135.508.578	5.209.889.004.020	9.128.135.053.900	-0,520
	2014	149.520.345.786	5.945.291.430.919	7.588.560.916.085	-0,764
FREN	2012	852.986.796.523	3.030.849.454.832	14.339.806.990.815	-0,152
	2013	2.014.295.403.669	5.539.559.431.186	15.866.493.429.557	-0,222
	2014	2.023.170.122.409	6.522.092.930.300	17.758.684.934.364	-0,253
ISAT	2012	8.308.810.000.000	11.015.751.000.000	55.225.061.000.000	-0,049
	2013	7.169.017.000.000	13.494.437.000.000	54.520.891.000.000	-0,116
	2014	8.591.684.000.000	21.147.849.000.000	53.254.841.000.000	-0,236

Sumber: Data diolah, 2016

2. Rasio *Retained Earnings to Total Assets* (X2)

$$\text{Rumus RE/TA} = \frac{\text{Laba ditahan}}{\text{Total Aktiva}}$$

Kode	Tahun	Laba Ditahan	Total Aktiva	RE/TA
BTEL	2012	-4.523.062.257.209	9.052.428.014.700	-0,500
	2013	-7.168.627.872.614	9.128.135.053.900	-0,785
	2014	-10.039.928.758.791	7.588.560.916.085	-1,323
FREN	2012	-7.964.788.864.473	14.339.806.990.815	-0,555
	2013	-10.498.967.710.498	15.866.493.429.557	-0,662
	2014	-11.877.792.548.301	17.758.684.934.364	-0,669
ISAT	2012	15.981.167.000.000	55.225.061.000.000	0,289
	2013	13.011.589.000.000	54.520.891.000.000	0,239
	2014	11.024.419.000.000	53.254.841.000.000	0,207

Sumber: Data diolah, 2016

3. Rasio *Earning Before Interest Taxes to Total Assets* (X3)

$$\text{Rumus EBIT/TA} = \frac{\text{EBIT}}{\text{Total Aktiva}}$$

Kode	Tahun	EBIT	Total Aktiva	EBIT/TA
BTEL	2012	-3.533.547.122.456	9.052.428.014.700	-0,390
	2013	-2.984.620.405.032	9.128.135.053.900	-0,327
	2014	-2.260.153.573.279	7.588.560.916.085	-0,298
FREN	2012	-1.811.605.549.836	14.339.806.990.815	-0,126
	2013	-2.708.059.002.617	15.866.493.429.557	-0,171
	2014	-1.405.210.758.310	17.758.684.934.364	-0,079
ISAT	2012	461.618.000.000	55.225.061.000.000	0,008
	2013	-3.333.837.000.000	54.520.891.000.000	-0,061
	2014	-1.935.901.000.000	53.254.841.000.000	-0,036

Sumber: Data diolah, 2016

4. Rasio Market Value Equity to Book Value Total Debt (X4)

Rumus MVE/BVTD = $\frac{\text{Nilai pasar saham biasa dan preferen}}{\text{Total Hutang}}$

Kode	Tahun	Modal Saham	Total Hutang	MVE/BVTD
BTEL	2012	1.529.229.532.750	7.414.442.541.805	0,206
	2013	1.529.229.532.750	10.135.605.627.318	0,151
	2014	1.529.229.532.750	11.467.346.262.180	0,133
FREN	2012	1.494.853.087.644	9.355.398.812.684	0,160
	2013	960.976.984.914	12.816.548.480.145	0,075
	2014	1.619.424.178.281	13.796.743.041.760	0,117
ISAT	2012	164.048.871.062.100	35.829.677.000.000	4,579
	2013	105.550.824.016.700	38.003.293.000.000	2,777
	2014	103.007.430.666.900	39.058.877.000.000	2,637

Sumber: Data diolah, 2016

Berikut hasil perhitungan Modal Saham:

Kode	Tahun	Close Price per tahun	Saham beredar	Modal saham = Close price x saham beredar
BTEL	2012	50	30.584.590.655	1.529.229.532.750
	2013	50	30.584.590.655	1.529.229.532.750
	2014	50	30.584.590.655	1.529.229.532.750
FREN	2012	84	17.795.870.091	1.494.853.087.644
	2013	54	17.795.870.091	960.976.984.914
	2014	91	17.795.870.091	1.619.424.178.281
ISAT	2012	6.450	25.433.933.498	164.048.871.062.100
	2013	4.150	25.433.933.498	105.550.824.016.700

	2014	4.050	25.433.933.498	103.007.430.666.900
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Sumber: Data diolah, 2016

5. Rasio *Sales to Total Aseets* (X5)

$$\text{Rumus S/TA} = \frac{\text{Penjualan}}{\text{Total Aktiva}}$$

Kode	Tahun	Penjualan	Total Aktiva	S/TA
BTEL	2012	2.360.974.831.031	9.052.428.014.700	0,261
	2013	2.072.434.729.924	9.128.135.053.900	0,227
	2014	1.179.181.751.298	7.588.560.916.085	0,155
FREN	2012	1.649.165.727.254	14.339.806.990.815	0,115
	2013	2.428.857.501.221	15.866.493.429.557	0,153
	2014	2.954.410.048.419	17.758.684.934.364	0,166
ISAT	2012	22.418.812.000.000	55.225.061.000.000	0,406
	2013	23.855.272.000.000	54.520.891.000.000	0,438
	2014	24.085.101.000.000	53.254.841.000.000	0,452

Sumber: Data diolah, 2016

B. Rasio-rasio dalam Model Springate

1. Rasio *Working Capital To Total Assets* (X1)

$$\text{Rumus WC/TA} = \frac{\text{Aktiva lancar} - \text{Hutang Lancar}}{\text{Total Aktiva}}$$

Kode	Tahun	Aktiva Lancar	Hutang Lancar	Total Aktiva	WC/TA
BTEL	2012	769.050.497.930	2.874.428.104.739	9.052.428.014.700	-0,233
	2013	466.135.508.578	5.209.889.004.020	9.128.135.053.900	-0,520
	2014	149.520.345.786	5.945.291.430.919	7.588.560.916.085	-0,764
FREN	2012	852.986.796.523	3.030.849.454.832	14.339.806.990.815	-0,152
	2013	2.014.295.403.669	5.539.559.431.186	15.866.493.429.557	-0,222
	2014	2.023.170.122.409	6.522.092.930.300	17.758.684.934.364	-0,253
ISAT	2012	8.308.810.000.000	11.015.751.000.000	55.225.061.000.000	-0,049
	2013	7.169.017.000.000	13.494.437.000.000	54.520.891.000.000	-0,116
	2014	8.591.684.000.000	21.147.849.000.000	53.254.841.000.000	-0,236

Sumber: Data diolah, 2016

2. Rasio *Earning Before Interest Taxes to Total Assets* (X2)

$$\text{Rumus EBIT/TA} = \frac{\text{EBIT}}{\text{Total Aktiva}}$$

Kode	Tahun	EBIT	Total Aktiva	EBIT/TA
BTEL	2012	-3.533.547.122.456	9.052.428.014.700	-0,390
	2013	-2.984.620.405.032	9.128.135.053.900	-0,327
	2014	-2.260.153.573.279	7.588.560.916.085	-0,298
FREN	2012	-1.811.605.549.836	14.339.806.990.815	-0,126
	2013	-2.708.059.002.617	15.866.493.429.557	-0,171
	2014	-1.405.210.758.310	17.758.684.934.364	-0,079
ISAT	2012	461.618.000.000	55.225.061.000.000	0,008
	2013	-3.333.837.000.000	54.520.891.000.000	-0,061
	2014	-1.935.901.000.000	53.254.841.000.000	-0,036

Sumber: Data diolah, 2016

3. Rasio *Earning Before Taxes to Current Liabilities* (X3)

$$\text{Rumus EBT/CL} = \frac{\text{EBT}}{\text{Hutang Lancar}}$$

Kode	Tahun	EBT	Hutang Lancar	EBT/CL
BTEL	2012	-3.533.547.122.456	2.874.428.104.739	-1,229
	2013	-2.984.620.405.032	5.209.889.004.020	-0,573
	2014	-2.260.153.573.279	5.945.291.430.919	-0,380
FREN	2012	-1.811.605.549.836	3.030.849.454.832	-0,598
	2013	-2.708.059.002.617	5.539.559.431.186	-0,489
	2014	-1.405.210.758.310	6.522.092.930.300	-0,215
ISAT	2012	461.618.000.000	11.015.751.000.000	0,042
	2013	-3.333.837.000.000	13.494.437.000.000	-0,247
	2014	-1.935.901.000.000	21.147.849.000.000	-0,092

Sumber: Data diolah, 2016

4. Rasio *Sales to Total Aseets* (X4)

$$\text{Rumus S/TA} = \frac{\text{Penjualan}}{\text{Total Aktiva}}$$

Kode	Tahun	Penjualan	Total Aktiva	S/TA
BTEL	2012	2.360.974.831.031	9.052.428.014.700	0,261
	2013	2.072.434.729.924	9.128.135.053.900	0,227
	2014	1.179.181.751.298	7.588.560.916.085	0,155
FREN	2012	1.649.165.727.254	14.339.806.990.815	0,115
	2013	2.428.857.501.221	15.866.493.429.557	0,153
	2014	2.954.410.048.419	17.758.684.934.364	0,166
ISAT	2012	22.418.812.000.000	55.225.061.000.000	0,406

	2013	23.855.272.000.000	54.520.891.000.000	0,438
	2014	24.085.101.000.000	53.254.841.000.000	0,452

Sumber: Data diolah, 2016

C. Rasio-rasio dalam Model Zmijewski

1. Rasio *Return on Assets* (X1)

$$\text{Rumus ROA} = \frac{\text{EAT}}{\text{Total Aktiva}}$$

Kode	Tahun	EAT	Total Aktiva	EAT/TA
BTEL	2012	-3.138.935.665.528	9.052.428.014.700	-0,347
	2013	-2.645.565.576.416	9.128.135.053.900	-0,290
	2014	-2.871.300.857.774	7.588.560.916.085	-0,378
FREN	2012	-1.563.090.528.610	14.339.806.990.815	-0,109
	2013	-2.534.463.228.719	15.866.493.429.557	-0,160
	2014	-1.379.003.056.808	17.758.684.934.364	-0,078
ISAT	2012	487.416.000.000	55.225.061.000.000	0,009
	2013	-2.666.459.000.000	54.520.891.000.000	-0,049
	2014	-1.858.022.000.000	53.254.841.000.000	-0,035

Sumber: Data diolah, 2016

2. Rasio Hutang (*Debt Ratio*) (X2)

$$\text{Rumus Debt Ratio} = \frac{\text{Total Hutang}}{\text{Total Aktiva}}$$

Kode	Tahun	Total Hutang	Total Aktiva	TL/TA
BTEL	2012	7.414.442.541.805	9.052.428.014.700	0,819
	2013	10.135.605.627.318	9.128.135.053.900	1,110
	2014	11.467.346.262.180	7.588.560.916.085	1,511
EXCL	2012	20.085.669.000.000	35.455.705.000.000	0,567
	2013	24.977.479.000.000	40.277.626.000.000	0,620
	2014	49.745.863.000.000	63.706.488.000.000	0,781
ISAT	2012	35.829.677.000.000	55.225.061.000.000	0,649
	2013	38.003.293.000.000	54.520.891.000.000	0,697
	2014	39.058.877.000.000	53.254.841.000.000	0,733

Sumber: Data diolah, 2016

3. Rasio Lancar (*Current Ratio*) (X3)

$$\text{Rumus } \textit{Current Ratio} = \frac{\text{Aktiva Lancar}}{\text{Hutang Lancar}}$$

Kode	Tahun	Aktiva Lancar	Hutang Lancar	CA/CL
BTEL	2012	769.050.497.930	2.874.428.104.739	0,268
	2013	466.135.508.578	5.209.889.004.020	0,089
	2014	149.520.345.786	5.945.291.430.919	0,025
FREN	2012	852.986.796.523	3.030.849.454.832	0,281
	2013	2.014.295.403.669	5.539.559.431.186	0,364
	2014	2.023.170.122.409	6.522.092.930.300	0,310
ISAT	2012	8.308.810.000.000	11.015.751.000.000	0,754
	2013	7.169.017.000.000	13.494.437.000.000	0,531
	2014	8.591.684.000.000	21.147.849.000.000	0,406

Sumber: Data diolah, 2016



Lampiran 2

Penentuan *Cutoff* Model Zmijewski

PERUSAHAAN	<i>Cutoff</i> 2012	<i>Cutoff</i> 2013	<i>Cutoff</i> 2014	<i>Cutoff</i> Rata-rata
BTEL	-7,407	-9,325	-11,211	-9,314
EXCL	-7,878	-7,947	-8,685	-8,17
FREN	-7,527	-8,184	-8,378	-8,03
ISAT	-8,035	-8,051	-8,322	-8,136
Jumlah	-30,847	-33,507	-36,596	-33,65
Rata-rata	-7,71175	-8,37675	-9,149	-8,4125
t Tabel	3,182	3,182	3,182	3,182
Standar Deviasi	0,29390177	0,63956463	1,38389667	0,60395005
Batas Bawah	-8,179347716	-9,394297326	-11,3507796	-11,89647503
Batas Atas	-7,244152284	-7,359202674	-6,947220398	-4,9285249750

Perhitungan:

Perhitungan batas atas dan batas bawah interval *X-Score*

$$\text{Batas bawah } \bar{X} - t_{\alpha} \frac{sd}{\sqrt{n}}$$

$$\text{Batas Atas } \bar{X} + t_{\alpha} \frac{sd}{\sqrt{n}}$$

Tahun 2012 Batas bawah = $-7,71175 - 3,182 \times \frac{0,29390177}{\sqrt{4}}$
 $= -8,179347716$

Batas atas = $-7,71175 + 3,182 \times \frac{0,29390177}{\sqrt{4}}$
 $= -7,244152284$

Tahun 2013 Batas bawah = $-8,37675 - 3,182 \times \frac{0,63956463}{\sqrt{4}}$
 $= -9,394297326$

Batas atas = $-8,37675 + 3,182 \times \frac{0,63956463}{\sqrt{4}}$

$$= -7,359202674$$

Tahun 2014 Batas bawah = $-9,149 - 3,182 \times \frac{1,38389667}{\sqrt{4}}$
 $= -11,3507796$

Batas atas = $-9,149 + 3,182 \times \frac{1,38389667}{\sqrt{4}}$
 $= -6,947220398$

Rata-rata Batas bawah = $-8,4125 - 3,182 \times \frac{0,60395005}{\sqrt{4}}$
 $= -11,89647503$

Batas atas = $-8,4125 + 3,182 \times \frac{0,60395005}{\sqrt{4}}$
 $= -4,9285249750$

