# Tutorial letter 202/1/2020

## Principles of strategy, risk & financial management techniques

# MAC2602

## Semester 1

## Department of Management Accounting

**IMPORTANT INFORMATION:**

This tutorial letter contains important information about your module.

BAR CODE

**TUTORIAL LETTER 202/2020 FOR MAC2602**

**Dear Student**

Enclosed please find the suggested solutions in respect of compulsory assignment **02/2020** for the **first semester**. It is in your own interest to work through this solution in conjunction with the assignment and your own answer.


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**With kind regards**

**Your lecturers: MAC2602**

**SUGGESTED SOLUTIONS – COMPULSORY ASSIGNMENT 02/2020 (FIRST SEMESTER)**

**QUESTION 1 (20 marks)**

**(a) Effective annual interest rate (EAR)**
SG 1, p. 97 - 98

$$\text{Effective interest rate} = \left[1+\left(\frac{i}{n}\right)\right]^{n} - 1$$

i) Fixed deposit:

$$\text{Effective interest rate} = \left[1+\left(\frac{0{,}04}{2}\right)\right]^{2} - 1$$

$$= [1 + (0{,}02)]^{2} - 1$$

$$= [(1{,}02)]^{2} - 1$$

$$= 1{,}0404 - 1$$

$$= 0{,}0404$$

$$= 4{,}04\%$$

ii) Special savings account:

$$\text{Effective interest rate} = [1 + (0{,}005)]^{12} - 1$$

$$= [1{,}005]^{12} - 1$$

$$= 1{,}0617 - 1$$

$$= 0{,}0617$$

$$= 6{,}17\%$$

The special savings account, option (ii), renders a higher effective annual interest rate (6,17%) than the fixed deposit option (i) with an effective annual interest rate of 4,04%.
Therefore option (ii) will be chosen. (5)

**(b) Present value – perpetuity**
SG 1, p. 91 - 92

$$\text{PV of perpetuity} = \frac{\text{Annuity or guaranteed annual return received or paid (I)}}{\text{Required rate of return (i)}}$$

$$PV_P = \frac{I}{i}$$

$$= \frac{6\ 000}{0{,}075}$$

= R80 000 (2)

**(c) Future value – annuity (Factor table method)**
SG 1, p.112 – 113 and 119 - 120

Future value (FV) of annuity = annuity (I) x future value of R1pp factor from Table D)
R75 000 x 7,3359 ① (Table D) = R550 193

① Table D after 6 years at 8% (SG 1, p.145) (3)

**OR**

Financial calculator:

INPUTS:

PMT R75 000
i 8%
n 6
∴FV R550 194,68 (Rounded to the nearest rand = R550 195)
(Difference is due to rounding)

**(d) Present value – ordinary annuity (Mathematical formula)**
SG 1, p. 89 - 91

$$\text{PV annuity} = I \times \left[\frac{1-\frac{1}{(1+i)^n}}{i}\right]$$

$$= R750 \times \left[\frac{1-\frac{1}{(1+0,055)^4}}{0,055}\right]$$

$$= R750 \times \left[\frac{1-\frac{1}{(1,055)^4}}{0,055}\right]$$

$$= R750 \times \left[\frac{1-\frac{1}{1,2388}}{0,055}\right]$$

$$= R750 \times \left[\frac{1-0,8072}{0,055}\right]$$

$$= R750 \times \left[\frac{0,1928}{0,055}\right]$$

= R750 x 3,5055
= R2 629,13
= R2 629 (rounded to the nearest rand) (4)

**OR**

Financial calculator (SG 1, p. 126):

INPUTS:

PMT R750
i 5,5%
n 4
∴PV = R2 628,86 (Rounded to the nearest rand = R2 629

**(e) Present value – single amount (Factor tables method)**
SG 1, p. 113 – Future value of the single amount x present value of R1 factor from Table A and p. 124

R15 975 (= FV of single amount) x 0,665* (Table A) = R10 623,3750
= R10 623 (rounded to the nearest rand).

(*Table A after 7 years at 6%) (3)

**OR**

Financial calculator:

INPUTS:

FV R15 975,00
i 6%
n 7
∴PV = R10 624,29 (Rounded to the nearest rand = R10 624)

**(f) Future value – single payment multiple periods (Mathematical formula)**
SG 1, p. 82 - 83

$FV = PV(1 + i)^n$

$= R3\,500\,(1 + 0{,}11)^5$
$= R3\,500 \times 1{,}6851$
$= R5\,897{,}85$
= R5 898 (rounded to the nearest rand) (3)

**OR**

Financial calculator:

INPUTS:

PV R3 500
i 11%
n 5
∴FV = R5 897,70 (Rounded to the nearest rand = R5 898)

[20]

**QUESTION 2 (22 marks)**

a) **CAPM**
SG 1, p. 200 - 203

$k_e = R_f + \beta(R_m - R_f)$

$= 0,07 + 1,8\ (0,16 - 0,07)$

$= 0,07 + 1,8\ (0,09)$

$= 0,07 + 0,1620$

$= 0,2320$

$= 23,20\%$ (4)

b) **Dividend growth model**
SG 1, p. 197 - 200

$$k_e = \frac{D_1}{P_0} + g \quad [\text{and } D_1 = D_0(1+g)]$$

$$k_e = \frac{\text{R2,5200 (calc.1)}}{\text{R13,84}} + 0,05$$

$= 0,1821 + 0,05$

$= \underline{0,2321}$

$= 23,21\%$

① $D_1 = D_0 \times (1 + g)$ = the expected dividend per share for year 1
$= R2,40 \times (1 + 0,05)$
$= R2,40 \times (1,05)$
$= R2,52$ (4)

**c) Market value**
SG 1, p 188 - 195

Where:
$K_d$ or i = 11%
I = R2 000 x 12% = R240
R = R2 000
n = 6

$$M_V = I \times \left\{ \left[ \frac{1 - \frac{1}{(1+i)^n}}{i} \right] \right\} + \left[ \frac{R}{(1+i)^n} \right]$$

$$= R240 \times \left[ \frac{1 - \frac{1}{(1+0{,}11)^6}}{0{,}11} \right] + \left[ \frac{R2\,000}{(1+0{,}11)^6} \right]$$

$$= R240 \times \left[ \frac{1 - \frac{1}{1{,}8704}}{0{,}11} \right] + \left[ \frac{R2\,000}{1{,}8704} \right]$$

$$= R240 \times \left[ \frac{1 - 0{,}5346}{0{,}11} \right] + R1\,069{,}2900$$

$$= R240 \times \left[ \frac{0{,}4654}{0{,}11} \right] + R1\,069{,}2900$$

= (R240 x 4,2309) + R1 069,2900

= R1 015,4160 + R1 069,2900

= R2 084,7060

= R2 085 (rounded to nearest rand) (6)

**OR**

Financial calculator:

INPUTS:

i = 11%
n = 6
PMT = R240
FV = R2 000
∴PV = R2 084,61 (Rounded to the nearest rand = R2 085)

**d) Weighted average cost of capital**

SG1, p. 192 - 193

Where:
Ke = 23,20% (Calculated in (a) and (b))
Ve = 10 000 shares x R13,84
= R138 400
Kd = 12% x 0,72
= 8,64%
Vd = R2 085 (calculated in (c))

$$WACC = \frac{Ke\,Ve + Kd\,Vd}{Ve + Vd}$$

$$= \frac{(0{,}2320\ x\ R138\ 400) + (0{,}864\ x\ R2\ 085)}{R139\ 400 + R2\ 085}$$

$$= \frac{(32\ 108{,}80 + 180{,}144)}{140\ 485}$$

$$= \frac{32\ 288{,}944}{140\ 485}$$

$$= 0{,}2298$$

$$= 22{,}98\%$$ (8)

[20]

**QUESTION 3 (33 marks)**

**BIGBOOTS (PTY) LTD**

For simplification of the ratio calculations below, the thousands in the figures were not shown.

**a) Return on assets (ROA) (Based on carrying values / book values)**
SG 2, p. 26 - 28

| | | **2019** | | **2018 (given)** |
|---|---|---|---|---|
| (i) $\frac{\text{EBIT}}{\text{Total assets}} \times 100$ | = | $\frac{1\ 560}{7\ 020} \times 100$ | = | $\frac{750}{4\ 340} \times 100$ |
| | = | 22,22% | = | 17,28% |

(ii) Indicate/ Measures:
The ROA is a measure of the performance generated on all the assets employed in the business and expressed as a percentage of the total assets employed.

(iii) Compare to the 2018 ratio and comment:
- The ROA increased from 17,28% in 2018 to 22,22% in 2019
- The reason is that there was an increase in the EBIT from R750 000 (2018) to R1 560 000 (2019) .
- There was also an increase in the total assets from R4 340 000 (2018) to R7 020 000 (2019).
- The income in ROA implies that the organisation bought new assets and also generated an overall higher return on the new total assets.

(6)

**b) Receivable days (debtor's collection period – in days)**

SG 2, p. 32 - 33

| | **2019** | **2018 (given)** |
|---|---|---|
| (i) $\frac{\text{Receivables}}{\text{Credit sales}} \times 360$ | $= \frac{580}{7\,866^{①}} \times 360$ | $= \frac{560}{3\,277{,}50^{②}} \times 360$ |
| | = 26,5446 days | = 61,5103 days |
| | = 27 days | = 62 days |

①7 200 x 95% x 1,15 = R7 866
②3 000 x 95% x 1,15 = R3 277,50

(ii) Indicate/ Measures:
This calculation measures the number of days it takes for credit sales to be converted into cash, or for the average debtor to pay his debt.

(iii) Compare to the 2018 ratio and comment:
- The receivable days decreased from 62 days (2018) to 27 days in 2019.
- This was due to a small increase in the amount of receivables from R560 000 to R580 000 and the revenue that increased significantly (which resulted in an increase in credit sales as well).
- The decrease means that there was better management of the debtors and that outstanding debtors pay their accounts within a more reasonable time than in 2018.

(6)

**c) Gross profit margin**

SG 2, p. 22 - 23

| | **2019** | **2018 (given)** |
|---|---|---|
| (i) $\frac{\text{Gross profit}}{\text{Revenue}} \times 100$ | $= \frac{2\,400}{7\,200} \times 100$ | $= \frac{1\,500}{3\,000} \times 100$ |
| | = 33,33% | = 50% |

(ii) Indicate/ Measures:
This ratio states the gross profit as a percentage of revenue for the period. It shows the proportion of sales that is available to cover other expenses and to earn a profit, after accounting for cost of goods sold.

(iii) Compare to the 2018 ratio and comment:
- The gross profit margin decreased from 50% in 2018 to 33,33% in 2019.
- There was an increase in the sales from 2018 to 2019 of 140% and an increase in cost of sales for the same period of 220%. This sharp increase in cost of sales is the reason for the decrease in the gross profit margin.

(6)

**d) Debt to equity ratio (leverage ratio)**

SG 2, p. 36 - 37

| | **2019** | **2018 (given)** |
|---|---|---|
| (i) Long-term debt[#] (including its current portion):Equity | = 300 : 3 880 | = 200 : 3 120 |
| | = 0,0773 : 1 | = 0,0641 : 1 |
| | = 0,08 : 1 | = 0,06 : 1 |

[#]Long-term debt is long-term interest bearing debt.
[1] In this case there is no current portion of long-term debt.

(ii) Indicate/ Measures:
This ratio measures the level of financial risk. It measures the relationship between an organisation's debt financing (financing with the obligation to settle) and equity financing (financing without an obligation to settle).

(iii) Compare to the 2018 ratio and comment:
- The debt to equity ratio has increased from 0,06:1 in 2018 to 0,08:1 in 2019.
- Both ratios indicate that the organisation's interest bearing debt is covered as BigBoots (Pty) Ltd has sufficient equity to cover its debt.
- Care should however be taken as the debt for 2019 is nearly the same as the equity, and if attention is not drawn to this matter and additional long-term debt are taken out, the debt might become more than the available equity. (6)

**e) Dividend pay-out ratio**

SG 2, p. 39 - 41

| | **2019** | **2018 (given)** |
|---|---|---|
| (i) $\frac{\text{Dividend per share (DPS)}}{\text{Earnings per share (EPS)}}$ | = $\frac{\text{8 cents}}{\text{38 cents}^{①}}$ | = $\frac{\text{5 cents}}{\text{18 cents}^{①}}$ |
| | = 21,0526% | = 27,7778% |
| | = 21,05% | = 27,785% |

① Firstly, the earnings per share should be calculated as follows:

| | **2019** | **2018 (given)** |
|---|---|---|
| $\frac{\text{Earnings (or net profit)}}{\text{Number of shares issued}}$ | = $\frac{\text{R760}}{\text{2 000}}$ | = $\frac{\text{R360}}{\text{2 000}}$ |
| | = R0,38 | = R0,18 |
| | = 38 cents[a] | = 18 cents[a] |

[a] Notice that in the financial markets, earnings per share are normally expressed in cents, not rands.

(ii) Indicate/ Measures
This ratio indicates the proportion/percentage of earning per share paid out to the shareholders as a dividend.

(iii) Compare to the 2018 ratio and comment:
- The dividend pay-out ratio has decreased from 27,79% in 2018 to 21,05% in 2019.

- Both the dividend per share as well as the earning per share increased. The earning per share, however, increased more than the dividend per share, which caused the dividend pay-out ratio to decrease.
- The low pay-out ratio may indicate that the company might have decided to retain more of the profits instead of paying it out to the shareholders as a dividend. These earnings can be invested back into the business and grow the share price.

(6)

**f) The three techniques used in the analysis of information**
SG 2, p. 11

- Failure prediction
- Ratio analysis
- Trend analysis (3)

[33]

**<u>QUESTION 4</u> (25 marks)**

(SG 2, page 135 similar principles applied as in Question 3, Cyco Limited – Machine TS.40 and TS.50 – retain an existing machine or replace it with a new machine with higher capacity. Solution on p. 141)

| **Capital budget – Coti** | **Years** | | | | |
|---|---|---|---|---|---|
| | **0** | **1** | **2** | **3** | **4** |
| | **R** | **R** | **R** | **R** | R |
| Realisable value- proceeds forfeited | (350 000) | - | - | - | - |
| Net **cash** inflow from operations (given) | - | 290 000 | 290 000 | 290 000 | 290 000 |
| Proceeds on realisation | - | - | - | - | 160 000 |
| Taxation ① | - | (39 200) | (25 200) | (81 200) | (126 000) |
| Net cash inflow/(outflow) | (350 000) | 250 800 | 264 800 | 208 800 | 324 000 |
| Factor at 16% (Table A) | 1,000 | 0,862 | 0,743 | 0,641 | 0,552 |
| Present values | (350 000) | 216 190 | 196 746 | 133 841 | 178 848 |
| Net present value (R725 625 – 350 000) | **375 625** | | | | |

Realisable value- proceeds forfeited:
This is the present market value of machine Coti and is seen as the "opportunity cost"/price of retaining Coti. This is the cash flow that is forfeited by retaining the machine.

**Calculations:**

① <u>Taxation</u>

| | **Years** | | | |
|---|---|---|---|---|
| | **1** | **2** | **3** | **4** |
| | R | R | R | R |
| Net cash inflow from operations | 290 000 | 290 000 | 290 000 | 290 000 |
| Wear and tear (R800 000 x 25%)(only for 2yrs) | (200 000) | (200 000) | - | - |
| Scrapping allowance forfeited ② | 50 000 | - | - | - |
| Wear and tear recouped ③ | - | - | - | 160 000 |
| Taxable amount | 140 000 | 90 000 | 290 000 | 450 000 |
| Taxation at 28% | **39 200** | **25 200** | **81 200** | **126 000** |

② Scrapping allowance (*on loss)* forfeited – Coti

| | R |
|---|---|
| Cost | 800 000 |
| Less : Wear and tear to date [(R800 000 x 25%) x (6 - 4) years] | (400 000) |
| Tax value at date of decision | 400 000 |
| Current realisable value | 350 000 |
| Realisation allowance forfeited at date of decision | **50 000** |

**Note – wear and tear calculation**
The machine has a total useful life of 6 years and a remaining useful life of 4 years. We therefore know that it has been used productively for 2 years at the time that this decision is being taken, during which period wear and tear would have been written off for 2 years.
R800 000 x 25% = R200 000 per year – deducted only in year 1 and 2 as the other 2 years was deducted previously before the decision was taken.

③ Wear and tear recouped (Coti)

| | R |
|---|---|
| Cost | 800 000 |
| Less : Wear and tear (R800 000 x 25% x 4) | (800 000) |
| Tax value at end of useful life | NIL |
| Realisable value | 160 000 |
| Wear and tear recouped | **160 000** |

**Note – Realisable value recouped**
Asclam is making a "profit" at the end of the project.
Therefore, SARS will add this amount to the taxable income in the last year (year 4).

**Capital budget – Dumdi**

| | Years | | |
|---|---|---|---|
| | **0** | **1 – 3** (Note 1) | **4** |
| | **R** | **R** | R |
| Cost | (1 000 000) | - | - |
| Annual net operating **cash** inflow before taxation | - | 600 000 | 600 000 |
| - *Annual **net operating income** before taxation (note 2)* | | *400 000* | *400 000* |
| - *Add back depreciation* | | *200 000* | *200 000* |
| Proceeds on realisation (MV at end of useful life) | - | - | 200 000 |
| Taxation ④ | - | (98 000) | (154 000) |
| Net cash inflow/(outflow) | (1 000 000) | 502 000 | 646 000 |
| Factor at 16% (Table B) ; (Table A) | 1,000 | 2,246 | 0,552 |
| Present values | (1 000 000) | 1 127492 | 356 592 |
| Net present value (1 484 084 – 1 000 000) | **484 084** | | |

**Note 1**

For the calculations of the NPV for machine Dumdi, year's 1-3 can be combined because the cash flows for these three years are exactly the same. Remember that when years are combined it becomes an annuity, and therefore you will use Table B to get the factor that you have to use to get to the net present value.

Year 4 cannot be included in the combined years as the cash flows is not the same as those of year's 1-3. This is because of the proceeds on realisation of R200 000 (market value at the end of the useful life of machine Dumdi) that is added in the cash flow as well as the wear and tear recoupment of R200 000 in the taxation amount.

**Note 2**

The information given states the line item for income as "annual net operating income before taxation". This means that ALL income and expenses, except taxation, is included in the amount in the statement of profit or loss and other comprehensive income.
Therefore depreciation that is an accounting entry is also deducted from this net amount.
As depreciation is only a book entry and not a relevant cash-flow item, depreciation should not be included in the net present value calculation as this calculation only includes relevant cash-flow items.

Depreciation was deducted from the income amount. Therefore, to take it out of the net operating income amount, you will need to add it back. You will then have the annual net cash inflow before taxation.

Calculation:

| | |
|---|---|
| Cost price | 1 000 000 |
| Realisable value | (200 000)* |
| Depreciable amount | **800 000** |

Depreciation = 800 000/4 years useful life
= R200 000

' * The additional information, point 4, states that the accounting policy of the company provide for depreciation over the useful life of the asset **after taking the realisable value into account.**
Therefore the realisable value at the end of the useful life (the market value of machine Dumdi at the end of the useful life), should be deducted from the cost price before the depreciation amount is calculated.

**Calculations:**

④ Taxation (Dumdi)

| | Years | |
|---|---|---|
| | **1 - 3** | **4** |
| | **R** | **R** |
| Net cash inflow from operations | 600 000 | 600 000 |
| Wear and tear (R1 000 000 x 25%)(thus for all four years) | (250 000) | (250 000) |
| Wear and tear recouped ⑤ | - | 200 000 |
| Taxable amount | 350 000 | 550 000 |
| Taxation at 28% | **98 000** | **154 000** |

⑤ Wear and tear recouped (Dumdi)

| | **R** |
|---|---|
| Cost | 1 000 000 |
| Less : Wear and tear (R1 000 000 x 25% x 4 years) | (1 000 000) |
| Tax value at end of useful life | NIL |
| Realisable value | 200 000 |
| Wear and tear recouped | **200 000** |

**Recommendation:**

Machine Coti renders a positive net present value of R375 625 and therefore achieves the required 16% rate of return expected on capital projects. Machine Dumdi also renders the required rate of return since it delivers a positive net present value of R484 084.
Since machine Dumdi renders the **highest positive** NPV it should be bought and machine Coti should be replaced.

**QUESTION 5 (20 marks)**

5.1 Alternative (d) is the correct answer (SG 1, p.8) (2)

Alternative (a) describes a vision statement (SG 1, p.7)
Alternative (b) describes core values (SG 1, p.7)
Alternative (c) describes strategic objectives (SG 1, p.10)

5.2 Alternative (b) is the correct answer (SG 1, p.13 - Government is considered to be a secondary stakeholder) (2)

5.3 Alternative (b) is the correct answer (SG 1, p.30 - 34 SWOT analysis and p. 35 – 39 Porter's five forces) (2)

Statement (a) relates specifically to Porter's five forces model. (SG 1, p. 35 - 36)

5.4 Alternative (c) is the correct answer (SG 1, p 47 - 48 – All the reasons are correct) (2)

5.5 Alternative (c) is the correct answer (Statements (3) and (4) are true - SG 1, p. 51, 58 and 69) (2)

Statement (1) is not true since it refers to strategic financial management (SG 1, p. 59)
Statement (2) is not true since it refers to traditional financial management (SG 1, p.58)

5.6 Alternative (d) is the correct answer (SG 1 p. 151 – 153 - all the statements are true) (2)

5.7 Alternative (c) is the correct answer (Statements (2) and (4) are false - SG 1, p. 158 - 160) (2)

Statements (1) and (3) are true (SG 1, p. 158)

5.8 Alternative (a) is the correct answer (SG 1, p. 158 mind map and p. 167 - 169.)
Types (1), (2) and (3) are short-term instruments that can be obtained on the money market. (2)

Type (4), corporate bonds and debentures are long-term debt instruments that are obtained from the capital market – SG 1, p. 164.

5.9 Alternative (b) is the correct answer. (SG 2, p. 190 - Benchmarking) (2)

5.10 Alternative (d) is the correct answer. (SG 2, p. 212 – Methods (3) and (4) refer to monitoring the effectiveness of the risk management process) (2)

Method (1) refers to risk responses and assessment (SG 2, p. 209)
Method (2) refers to risk reporting (SG 2, p. 213)

[20]

**QUESTION 5 MARKPLAN**

| | | |
|---|---|---|
| 5.1 | (d) | (2) |
| 5.2 | (b) | (2) |
| 5.3 | (b) | (2) |
| 5.4 | (c) | (2) |
| 5.5 | (c) | (2) |
| 5.6 | (d) | (2) |
| 5.7 | (c) | (2) |
| 5.8 | (a) | (2) |
| 5.9 | (b) | (2) |
| 5.10 | (d) | (2) |
| | | [20] |
| TOTAL | | [120] |

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