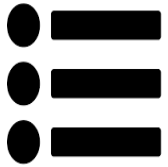
PART 2
US CMA
Section A
[Financial Statement Analysis]
(25%)

Profitability Analysis

Index



Classification of Expenses

Broadly the functional classification of expenses would be :

- Selling expenses: include sales representatives' salaries and commissions, sales department expenses, advertising, shipping costs etc. Commissions based on sales will tend vary with volume of sales.
- General & administrative expenses: are not related to a function - they are neither selling nor manufacturing expenses. They include office expenses, legal charges, accounting and audit expenses etc. Usually fixed expenses.
- Maintenance expense: If these are reduced, they may increase the short term profits but the long term profits may be compromised. Increased maintenance is likely to reduce repair costs and reduce breakdown hours. May have a fixed and variable component.

Classification of Expenses

- Depreciation: is the cost of the asset less residual value being spread over the useful life of the asset. Depreciation on assets like machinery would be a part of the cost of goods manufactured while other depreciation may be a part of administrative expense. A company using full absorption costing, will include a part of its depreciation in its inventory to be carried forward to next period.
- Amortization: refers to the cost of intangible assets like patents or software being spread over the life of the asset.

Classification of Expenses

- Financing charges: Interest is computed based on the passage of time. The average interest rates of the firm may be compared with those of similar firms. Usually these charges are fixed though interest rates may be linked to the market rates.
- Income tax: could be a substantial amount. There could be a difference between the tax as per accrual accounting and tax as per tax authorities. This would give rise to deferred tax asset/liability.

Operating Income Ratio

$$\textit{Operating Profit Margin Percentage} = \frac{\textit{Operating Income x 100}}{\textit{Net Sales}}$$

Operating income refers to the income from the core operations of the business.

If operating expenses could be reduced, operating profit margin could be improved.

It does not include gains/losses from investments or other non operating incomes/losses.

Net Profit Ratio

$$\textit{Net Profit Margin Percentage} = \frac{\textit{Net Income x 100}}{\textit{Net Sales}}$$

Net income includes revenues and expenses of the company from all sources (except other comprehensive income items).

Investors would want an assurance that there is enough profit for dividends and further growth.

Creditors need an assurance that the company generates enough profits to be able to repay their loans

EBITDA Margin Percentage

$$EBITDA\ Margin = \frac{EBITDA \times 100}{Sales}$$

EBITDA = EBIT + Depreciation + Amortization

It is a rough estimate of the cash profits expressed as % of sales.

EBITDA is a way to evaluate a company's performance without the financing decisions.

Comparability between similar companies is enhanced by EBITDA% particularly when their forms of financing and tax brackets are different.

Return on Equity (ROE)

$$\textit{Return on Equity} = \frac{\textit{Net Income}}{\textit{Average Equity}} \times 100$$

(Opening + Closing Equity) / 2

Equity includes ordinary Share Capital + Retained Earnings

Net Income is the income available to equity shareholders after Payment of preference dividend if any

Consists of two components: Asset Turnover and Financial Leverage)

ROE = ROA x Financial Leverage Ratio

Profit Ratios - summary

Gross profit Margin percentage	$= \frac{\text{Gross profit}}{\text{Sales}}$
Operating profit Margin percentage	$= \frac{\text{Operating Income}}{\text{Sales}}$
Net profit Margin percentage	$= \frac{\text{Net Income}}{\text{Sales}}$
EBITDA Margin	$= \frac{\text{EBITDA}}{\text{Sales}}$
Return on Assets	$= \frac{\text{Net Income}}{\text{Average Total Assets}}$
Return on Equity	$= \frac{\text{Net Income}}{\text{Average Equity}}$

ROA, ROE, ROI

ROI measures the Return on Capital Employed (CE).

CE = Equity + Preferred Stock + L/T Holdings

ROA measures the return on the assets employed and is likely to be the same as ROI.

ROE measures the returns to Equity shareholders.

In each case, the denominator may have different definitions.

Diluted Earnings per share (DEPS)

FS must not only disclose their Basic EPS but also disclose their Diluted EPS.

The BEPS does not consider certain current obligations that a company may have which would result in issue of shares in future.

E.g. convertible bonds, when converted would result in additional shares thus diluting the shareholding of the existing shareholders.

So a diluted EPS is computed to ascertain the EPS if all these obligations were met…. the number of shares taken is as if the bonds were converted , the stock options exercised by employees etc.

The WANOS would be the diluted number of shares.

Earnings per share (EPS)

Higher the EPS, the better it is.

However, this ratio cannot be used on a stand alone basis.

If two companies have the same EPS, the one working with lower capital employed would be the more efficient.

So by itself the EPS conveys little.

The EPS of companies in the same industry may be compared.

The Diluted EPS gives a fair warning of what the likely EPS could be when the shareholding gets diluted.

EPS is used inother ratios like the P/E ratio.

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Why Common Size Financial Statements ?

Different companies may be of different sizes

Different companies may be in different stages of growth

Common Size Financial Statements help to make comparisons & analyses

- Between companies of different sizes in the same industry
- Between different time periods of the same company
- Between the company and the industry average
- Between different elements of a FS in a single year

What are Common Size Financial Statements ?

Financial Statements --> Income Statement or the Balance Sheet

Each element in a FS is expressed as a percentage, to facilitate easy comparison

E.g. In a Common Size Income Statement , each line item is expressed as a percentage of sales

In a Common Size Balance Sheet , each line item is expressed as a percentage of total assets

Vertical Analysis

Also known as Static Analysis or Structural Analysis

A simple vertical common-size financial statement covers **one year's** operating results

It expresses each component as a percentage of a total

In case of Income Statement, each element is expressed as a % of sales

In case of a Balance Sheet, each element is expressed as an element of total assets

An analyst might compare a company's common-size IS with industry common-size income statements to identify a problem.

Horizontal Analysis

Also known as Variation Analysis or Trend Analysis

A simple horizontal common-size financial statement covers **one company** over different years

One year is taken as base and the remaining year figures are expressed as a percent of the base year

The growth rate of individual line items on the balance sheet and income statement are computed as below:

$$\frac{\text{Year 2 amount - Year 1 amount}}{\text{Year 1 amount}} \times 100\%$$

Financial Ratio Analysis

Types of Ratios

Liquidity ratios

Indicate the ability to meet short term debts

Solvency ratios

Reflect the financial health and indicate the ability to meet long term debts

Activity / Efficiency ratios

Profitability ratios

Indicates the efficiency with which resources are utilised

Market ratios

Liquidity Ratios

Liquidity ratios help to ascertain an organization's ability to pay off current debt obligations without raising external capital.

It refers to the ease with which assets can be converted to cash.

Popular liquidity ratios are:

- Current ratio
- Quick ratio
- Cash ratio
- Cash flow ratio

Solvency Ratios

Solvency Ratios

Solvency is the ability of a business to pay its long-term debts.

(Liquidity referred to the ability to pay short term obligations)

Two main components of solvency ratios are a firm's:

a) Capital structure

b) Degree of Leverage

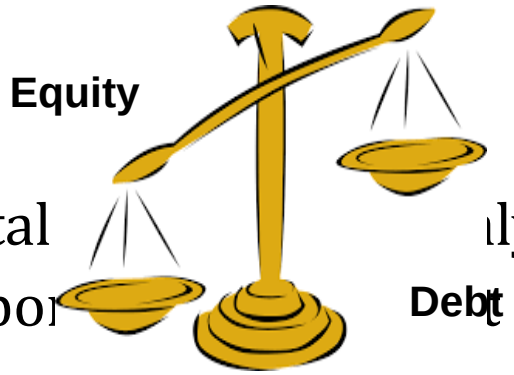
Capital structure

Capital structure refers to the sources of finance:

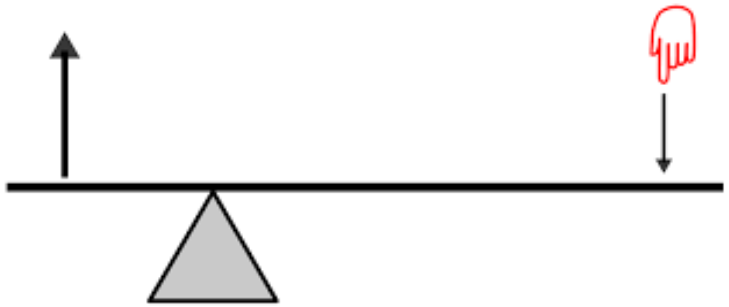
a) Debt - (loan fund - external financing)

b) Equity - (own fund - internal financing)

What combination of debt and equity should the business have ?



Capital [illegible]lysis is a periodic evaluation of all compo[illegible]t and equity financing used by a business.



Leverage Ratios

Leverage Ratios

Leverage is the relative amount of fixed costs in the capital structure.

Leverage ratios are:

a) Degree of Operating Leverage (fixed cost of plant & machinery)

b) Degree of Financial Leverage (fixed cost of borrowings)

c) Degree of Total Leverage (combination of both)

Business Risk and Financial Risk

Business risks refer to all the hazards inherent in the business (the operating risk) .

The DOL is an index of operating risk.

It refers to the variability of EBIT as a result of the environment in which the firm operates - environment of the firm, the industry and the economy in which a firm operates.

A steel mill may have to have investment in heavy plant and equipment

The DFL is an index of the financial risk of the firm.

Financial risk is controllable -the finance manager can determine the proportion of borrowed funds in the company's capital structure.

Financial leverage is by choice

Debt Equity Ratio

Debt equity ratio also indicates how well the creditors are protected

It is computed as:

Debt Equity Ratio = Debt / Shareholders' Equity

Higher the ratio, higher the amount of debt, higher the risk

A debt equity ratio = 1 would mean that owners and lenders have an equal stake in the business.

Lower the ratio, the greater the financial stability

Long Term Debt to Equity Ratio

Usually Long Term Debt Equity Ratio is computed

It is computed as:

Long Term Debt / Shareholders' Equity

If this ratio is low, it indicates that the company will be able to raise loan capital easily, if required.

Earnings Coverage Ratios

Earnings coverage ratios indicate whether a firm has enough earnings to service the debt.

Servicing a debt includes interest and loan repayments

Earnings coverage ratios include

a) Interest Coverage Ratio (Times Interest Earned Ratio)

b) Fixed Charges Coverage Ratio

c) Cash Flow to Fixed Charges Ratio

Activity Ratios

Inventory turnover ratio

Receivables turnover ratio

Payables turnover ratio

Working capital turnover ratio

Operating cycle and Cash cycle

Fixed assets turnover ratio

Total assets turnover ratio

Receivables Turnover Ratio

The receivables turnover ratio measures the average number of times the receivables are collected during a year.

$$\textit{Receivables Turnover Ratio} = \frac{\textit{Annualised Credit Sales}}{\textit{Gross Average Trade Receivables}}$$

Credit Sales = Annualised Credit sales net of returns and discounts

Average Receivables = (Opening Receivables + Closing Receivables)/2

(assuming the sales occur uniformly during the year, else monthly balances have to be taken)

Gross Receivables are taken and provisions for doubtful debts not deducted

PART 2
US CMA
Section F
[Professional Ethics]
(10%)

What is Ethics ?

A discipline which tries to distinguish between right and wrong.

Business ethics refer to rules, standards, a set of values that govern business decisions on a daily basis.

All areas cannot be identified in black and white.

There may be conflicting principles, there may be obligations to organization as well as to the public…..

Ethics refers to the area beyond government control….it about a moral judgement about right and wrong.

Honesty

Integrity of character

Straightforwardness of conduct

Sincerity of purpose

Truthfulness in communication

Disclosures of all information relevant to decision making

Freedom from deceit & fraud

Fairness

Free from bias

View from all points of view

Decision after considering all contextual information

Person should be just, empathetic and open minded.

Objectivity

Judgement should be based on pure data

Emotions and personal beliefs should not be allowed to cloud decision making.

Dispassionate and impartial assessment of facts and facts alone

Responsibility

Involves taking charge and delivering

It is about being accountable

If deadlines have been agreed to, they must be met.

Responsibility towards client and the profession

Corruption

Corruption is not only unethical but also bad for business

It is anti competitive

Erodes the public confidence in the integrity of the market system

It restricts economic growth

Honest business men that refuse to pay bribes are disadvantaged.

Corruption is a global problem

Public funds get diverted from priority sectors like health, education and infrastructure.

Corruption also introduces uncertainty.

Increases costs globally and increases costs of government contracts in developing countries.

Contract acquired through bribery may be unenforceable, and demands for bribes may be non ending

Honesty

Integrity of character

Straightforwardness of conduct

Sincerity of purpose

Truthfulness in communication

Disclosures of all information relevant to decision making

Freedom from deceit & fraud

Will breed trust

Risk Response

Having identified, assessed and ranked the risks, its is time for action…..

How will an organization respond to the different types of risk?

This will depend on:

- the ranking of the risks,
- the risk appetite of the organization and
- the attitude of the management towards risk

Risk Avoidance

Avoiding the risk would mean either not taking up an activity at all or eliminating an activity already taken up.

No activity …. No risk

If there is zero tolerance for an activity, it is best to avoid.

Examples:

If an activity is against the law of the land, it would be best not to take up the activity.

If manufacturing a particular product causes safety hazards to employees, the organization may stop the particular product line.

COSO

1992 - the Committee of Sponsoring Organizations of the Treadway Commission (COSO) introduced Internal Control—Integrated Framework model

2004 - COSO expanded on the above model and introduced the Enterprise Risk Management— Integrated Framework

2013 - COSO released an updated framework, known as the 2013 Internal Control—Integrated Framework.

The two frameworks are intended to be complementary, and neither supersedes the other. As such, the ERM Framework notes that internal control is a part of ERM.

Components of the COSO Framework

The framework includes eight interrelated components:

1. Internal environment
2. Objective setting
3. Event identification
4. Risk assessment
5. Risk response
6. Control activities
7. Information and communication
8. Monitoring

Capital Budgeting Process

What is Capital Budgeting ?

Any investments, if it creates shareholder value may be implemented.

However, capital resources may be limited.

So we need Capital budgeting …..

Capital budgeting helps to evaluate alternative investment plans and choose the optimum investment plan

Capital Budgeting Applications

Capital budgeting applications include

1) Buying machinery

2) Building facilities

3) Acquiring / Expanding a business

4) Developing a product or product line

5) Expanding into new markets

Relevant Cash Flows

Relevant to the decision at hand…..

Costs already incurred are **sunk costs** and not relevant anymore..

Committed costs which cannot be changed, (like a lease agreement which needs to be honoured), are also not relevant.

Allocation of common costs, like overheads incurred being apportioned to different units/products etc are not relevant.

Additional cash flows (incremental) or **differential cash flows** are relevant.

Opportunity cost is the maximum benefit foregone by using a scarce resource for a given purpose and not the next best alternative.

Straight Line Method

The cost of the asset and initial costs of getting it into operation is considered as the Cost of the Asset.

Depreciation is equal each year.

Depreciation = Cost of asset / Number of years of life of asset

Simple and easy to compute.

(Cost of asset is reduced by salvage value while preparing books of account. However, in a capital budgeting situation, tax authorities allow for entire cost of asset to be written off.)

Discounted Payback period

The discounted payback period (DPP) is the amount of time that it takes (in years) for the initial cost of a project to equal the cumulative discounted value of expected cash flows.

Discount rate may be the interest rate, the required rate of return for the company or the weighted average cost of capital representing the minimum return that the company needs. It could be the return in alternative investments.

It is the period in which the cumulative net present value of a project equals zero.

This method considers the time value of money but again disregards the overall profitability of a project.

Accounting Rate of Return

Also called the Average Rate of Return or Accrual Rate of Return

ARR = Average annual earnings / Initial investment

Average annual earnings =

Sum of PAT for all years / Number of years

Sometimes instead of initial investment, average investment is used as denominator.

NPV, IRR, Risk Analysis

Techniques of Capital Budgeting

Capital Budgeting cash flow computations may be

1) Non Discounted Cash Flow Methods

   a) Payback Method

2) Discounted Cash Flow Methods

   a) Discounted Payback Method
   b) Net Present value Method
   c) Internal Rate of Return

Net Present Value (NPV)

NPV is a discounted cash flow approach to capital budgeting.

The net present value of an investment proposal is the present value of its cash inflows less the present value of its cash outflows.

NPV = PV of cash inflows - PV of cash outflows

Acceptance criteria:

If the NPV of a project is zero or positive it is accepted.

If the NPV is negative, the project is rejected.

If a decision is to be taken among mutually exclusive projects the one with the higher NPV is selected.

Limitations of NPV

a) It is more difficult to calculate since each future cash flow has to be discounted to its present value.

b) When two projects have different lives the NPV method by itself may not give satisfactory results.

c) It maybe difficult to arrive at the appropriate discount factor.

d) The assumptions about future events may not be reliable.

e) The results are in absolute dollar amounts and does not indicate the actual rate of return.

Internal Rate of Return

IRR expresses the project return in percentage terms.

The internal rate of return (IRR) is the discount rate that equates the present value of the expected net cash inflows with the initial cash outflow.

It is the rate which will make the NPV of a project = 0

In the NPV computation we assume that the discount rate (cost of capital) is known and determine the NPV of the project.

In the IRR computation we assume the NPV equal zero and ascertain the discount rate which satisfies this condition.

What is an NPV Profile?

NPV profile of a project is a graph of the project's net present value at different values of discount rates.

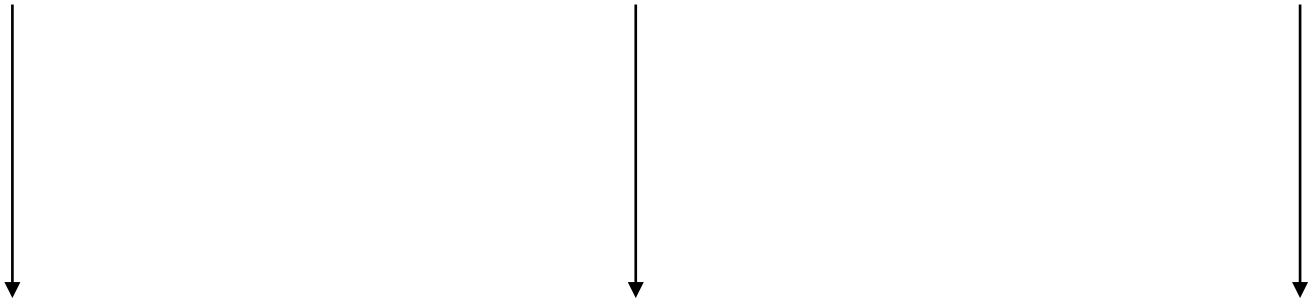
The NPV values are plotted on the Y-axis and the discount rates (usually the WACC) is plotted on the X-axis.

The NPV profile shows how the NPV changes in response to changing discount rates (cost of capital).

The point at which the NPV curve intersects the Y-axis is the internal rate of return.

When NPV profiles of any two projects are plotted together, their point of intersection is called the crossover rate or Fisher's rate of intersection.

Capital Budgeting Techniques



Discounted Cash Flow Techniques

1. Discounted Payback Method
2. Net Present Value Method
3. Internal Rate of Return
4. Profitability Index (ranking mechanism)

Non Discounted Cash Flow Techniques

1. Payback Method

Non Cash Flow Techniques

1. Accounting Rate of Return

Sensitivity Analysis

Sensitivity analysis is used to determine how cash flows may vary with changes in the underlying assumptions.

Sensitivity analysis is a “what if” technique.

First the NPV and IRR are computed based on expected cash flows.

Then, key assumptions are changed, one at a time, and the NPV and IRR are recomputed.

Thus, forecasts of many calculated NPVs under various assumptions are compared to see how sensitive NPV is to changing conditions.

This may indicate a project to be riskier than was originally expected.

Cost/Volume/Profit Analysis

Cost Volume Profit (CVP) Analysis

Cost volume profit (CVP) analysis is also known as Break even point analysis.

CVP analysis depicts the effect on profits due to

a) a change in costs and

b) a change in the volume of output.

It helps to identify that volume of output at which there will be no profit and no loss (the break even point).

Break even point

Break even point is the level of output at which Profit = 0.

Contribution at BEP = FC + Profit = FC + 0 = FC

$$\textit{Break even point (in units)} = \frac{\textit{Fixed cost (= Contribution)}}{\textit{Contribution per unit}}$$

PV ratio or Contribution Margin Ratio

Contribution Margin Ratio = $\frac{\text{Contribution}}{\text{Sales}}$ x 100

It is also known as the profit volume ratio (PV ratio).

Sales – Variable Cost = Contribution

Since selling price per unit and variable cost per unit is fixed, the contribution per unit at any level of sales is also the same.

Thus PV ratio is the same at any level of output unless the selling price or the variable cost changes.

CVP analysis formulas

1. PV ratio = (Contribution / sales) x 100
2. PV ratio = Change in contribution/Change in sales
3. PV ratio = Change in profit /Change in sales
4. BEP = FC / C per unit or FC / Contribution margin ratio
5. Sale units for a given profit = (Profit + FC) / C per unit
6. Sale value for a given profit = (Profit + FC) / Contribution margin ratio
7. Sale ($) = (Profit + FC) / PV ratio
8. MOS = Sales - BEP sales
9. MOS = Profit / PV ratio
10. If BEP sales is 40% of sales, MOS = 60% of sales

Fixed Costs

Fixed costs are those which do not change within a given range of output. Eg: Rent, insurance premiums, salaries etc.

Since the total fixed costs are fixed, an increase in output results in lower cost per unit since the same cost is spread over larger number of units.

Example:

Suppose the fixed costs are $200,000 and the variable costs for 10,000 units is $500,000. Therefore the total cost is 700,000 and cost per units $70.

Now, if the number of units is increased to 15,000 units the fixed cost remains at $200,000 while the variable cost becomes $750,000 thus resulting in a total cost of 950,000 and cost per unit of $63.33