

TALDA LEARNING CENTRE

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CS Executive

Cost and Management Accounting

FORMULA SHEET



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COST SHEET

ABSORPTION COSTING:

Opening Stock
Add: Purchases
Less: Closing Stock
DIRECT MATERIAL CONSUMED
Add: Direct Labour
Add: Direct Expenses
PRIME COST
Add: Factory Overheads
GROSS FACTORY COST
Add: Opening WIP
Less: Closing WIP
NET FACTORY COST
Add: Administration Expenses
COST OF PRODUCTION
Add: Opening FG
Less: Closing FG
COST OF GOODS SOLD
Add: Selling and Distribution Expenses
COST OF SALES
Add/Less: Profit/Loss
SALES

MARGINAL COSTING:

SALES
Less: Variable Cost
CONTRIBUTION
Less: Fixed Cost
PROFIT

MATERIAL COST:

EOQ (Economic Order Quantity - Wilson's Formula) = $\sqrt{2AO/C}$

Where:

A = Annual usage units

O = Ordering cost per unit

C = Annual carrying cost of one unit i.e. Carrying cost % * Carrying cost of unit

Reorder level = Maximum usage * Maximum lead time
(Or) Minimum level + (Average usage * Average Lead time)

Minimum level = Reorder level - (Average usage * Average lead time)

Maximum level = Reorder level + Reorder quantity - (Minimum usage * Minimum lead time)

Average level = $\frac{\text{Minimum level} + \text{Maximum level}}{2}$

Danger level (or) safety stock level
= Minimum usage * Minimum lead time (preferred)

Average Stock Level = $\frac{\text{Min Level} + \text{Max Level}}{2}$

LABOUR COST

Time Wage = Hours worked * Rate/Hour

Piece Wages = Units produced * Rate/Piece

Rate/piece = Rate per hour / time taken for one piece

Taylor's differential piece rate system:

No minimum rate is guaranteed. The standard output is determined on the basis of time and motion studies. Those attaining or exceeding the standard get a higher piece rate and those not attaining it get a lower rate.

The lower rate is based on 83% of the day wage rate. This rate is applicable to those who don't attain the standard. The higher rate is based on 125% of the day rate and an incentive of 50% of the day rate.

The efficiency of the worker can be determined either by comparing standard time and actual time taken or by comparing actual output and standard output. Hence, this method penalizes the slow worker and rewards the efficient one. This principle is based on the fact that slow production increases the cost of production.

Merrick's differential rate scheme:

This is a modification of the Taylor's scheme. This system smoothens the sharp differences in Taylor's scheme by determining 3 gradual rates. It does not guarantee time rate but each one is paid according to efficiency. The performance below standard is not penalized.

Efficiency Level	Piece Rate
Upto 83%	Normal Rate
83% to 100%	110% of Normal Rate
Above 100%	120% of the Normal Rate

Efficiency % = $\frac{\text{Standard time}}{\text{Time taken}} * 100$

Emerson's Efficiency System:

Though minimum daily wages is guaranteed, efficiency is also rewarded. Standard is set based on the time and motion study.

Efficiency	Piece Rate
66 2/3 rd %	Guaranteed Time Rate
90%	Time Rate + 10% Bonus
100%	Time Rate + 20% bonus
Above 100%	Time Rate + 20% Bonus + 1% for every increase of 1% beyond 100%.

Efficiency % = Standard time / Time taken * 100

Bedauxe Point System:

Time wages is guaranteed, earnings increase after the worker attains 100% efficiency level. Standard time and standard work is measured in terms of bedauxe points, which is also known as B's. one B unit represents the amount of work which an average worker can do under normal conditions in one minute allowing for the relaxation needed. Workers get a bonus which is equal to 75% of B's saved.

Wages = Basic wages + 75% of Bedauxe points * hourly rate / 60

Halsey Plan:

Under this plan, time rate is guaranteed. The bonus is 50% of the standard time saved.

Total wages = (time taken * Hourly rate) + 50% (time SAVED * hourly rate)

Rowan Plan:

The time rate is guaranteed. The % of bonus to the wages earned is that which the time saved bears to the standard time.

Total wages = (time taken * hourly rate) + [(time saved / standard time) * (time taken * hourly rate)]

Measurement of Labour Turnover:

- 1) Separation rate method = $\frac{\text{Separation during the period}}{\text{Average No. of worker's during the period}}$
- 2) Replacement method = $\frac{\text{Number of replacements}}{\text{Average No. of worker's during the period}}$
- 3) Labour flux rate = $\frac{\text{No. of separation} + \text{No. of New employees} + \text{No. of replacements}}{\text{Average No. of worker's during the period}}$

OVERHEADS

Basis	Expense items
Area or cubic measurement of department Direct labour hours or, where wage rates are more or less uniform, total direct wages of department.	Rent, rates, lighting and building maintenance Supervision
Number of employees in departments	Supervision
Cost of material used by departments	Material handling charges
Value of assets	Depreciation and insurance

Horse power of machines	Power
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Service department cost	Basis of apportionment
Maintenance Department	Hours worked for each department
Employment department	Rate of labour turnover or number of employees in each department
Payroll Department	Direct labour hours, machine hours number of employees
Stores keeping department	No. of requisitions, quantity or value of materials
Welfare department	No. of employees
Internal transport department	Truck hours, truck mileage
Building service department	Relative area of each department
Power house	Floor area, Cubic contents

CONTRACT COSTING

Profit of Incomplete contract:-

1) When % of completion is less than or equal to 25% then full Notional profit is transferred to **reserve**.

2) When % of completion is above 25% but less than 50% following amount should be credited to profit & loss a/c =

$$1/3 * \text{Notional Profit} * \{\text{Cash received} / \text{Work certified}\}$$

3) When % of completion is more than or equal to 50% then the amount transferred to profit is =

$$2/3 * \text{Notional Profit} * \{\text{Cash received} / \text{Work certified}\}$$

4) When the contract is almost complete the amount credited to profit & loss a/c is

a) Estimated total profit * {Work certified / Contract price}

b) Estimated total profit * {Cash received / Contract price}

c) Estimated total profit * {Cost of work done / Estimated total profit}

d) Estimated total profit * {Cost of work done * Cash received / Estimated total cost * Work certified}

MARGINAL COSTING:

Contribution = Sales – variable Cost = fixed cost + profit
Profit Volume Ratio = Contribution/sales (or) Change in contribution/change in sales
Break Even Point = Fixed Cost/Contribution (or) Fixed Cost/PV Ratio (or) Fixed Cost/ Contribution at 1% Capacity
Contribution = Sales * PV Ratio
Margin of Safety = Actual Sale – Break even sales (or) Profit/Contribution per unit (or)

Profit/PV Ratio
Sale Value at Desired Profit = $\frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{PV Ratio}}$
Variable Cost Ratio = $\frac{\text{Change in total cost}}{\text{Change in total Sales}}$
Variable Cost per unit = $\frac{\text{Change in total cost}}{\text{Change in output}}$
Contribution per unit = $\frac{\text{Change in Profit}}{\text{Change in output}}$
Net profit = MOS * PV Ratio

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STANDARD COSTING:

Material Cost Variance: $(\text{Std Qty for AO} * \text{SP}) - (\text{AQ} * \text{AP})$

Material Price Variance: $\text{AQ consumed} (\text{SP} - \text{AP})$

Material Usage Variance: $\text{SP} (\text{Std Qty for AO} - \text{AQ})$

Labour Cost Variance: $\text{SH for AO} - (\text{AH} * \text{AR})$

Labour Rate Variance: $\text{AH} (\text{SR} - \text{AR})$

Labour Efficiency Variance: $\text{SR}(\text{SR for AO} - \text{AH})$

Variable OH Cost Variance: $(\text{AO} * \text{SRR}/\text{Unit}) - \text{Actual OH}$

Variable OH Expenditure Variance: $(\text{AH} * \text{SRR}/\text{Hr}) - \text{Actual OH}$

Variable OH Efficiency Variance: $\text{SRR}/\text{hr} (\text{SH} - \text{AH})$

$\text{SRR}/\text{Unit} = \text{Budgeted OH}/\text{Budgeted Output}$

$\text{SRR}/\text{Hr} = \text{Budgeted OH}/\text{Budgeted Hours}$

Fixed OH Cost Variance: $(\text{AO} * \text{SRR}/\text{Unit}) - \text{Actual OH}$

Fixed OH Expenditure Variance : $\text{Budgeted OH} - \text{Actual OH}$

Fixed OH Volume Variance: $\text{SRR}/\text{Unit}(\text{BO} - \text{AO})$

Fixed OH Calendar Variance: $\text{SRR}/\text{day}(\text{Budgeted working days} - \text{actual working days})$

Fixed OH Capacity Variance: $\text{SRR}/\text{Hr}(\text{BH} - \text{AH})$

Fixed OH Efficiency Variance: $\text{SRR}/\text{Hr}(\text{SH} - \text{AH})$

Sales Variance : $(\text{BQ} * \text{SSP}) - (\text{AQ} * \text{ASP})$

Sales price Variance: $\text{AQS}(\text{SSP} - \text{ASP})$

Sales Volume Variance: $\text{SSP}(\text{BQ} - \text{AQ})$

Efficiency Ratio = $\frac{\text{Standard Hours for AO}}{\text{Actual Hours}}$

Activity Ratio = $\frac{\text{Output in Standard Hours}}{\text{Budgeted Output in Standard hours}}$

Calendar Ratio = $\frac{\text{Actual working days}}{\text{No. of working days in budgeted period}}$

ANALYSIS OF FINANCIAL STATEMENTS

Current Ratio : $\frac{\text{Current Assets}}{\text{Current Liabilities}}$

Where,

Current Assets= Inventories + Sundry Debtors + Cash & Bank Balances + Loans & Advances + Disposable Investments

Current Liabilities= Sundry Creditors + Short term loans + Bank Overdraft + Cash Credit + Outstanding Expenses + Proposed Dividends + Provision for Taxation + Unclaimed Dividend

The main question the ratio addresses is “does your business have enough current assets to meet the payment schedule of its current debts with a margin of safety for possible loss in current assets?”

Standard Current Ratio is 1.33 but whether or not a specific ratio is satisfactory depends upon the nature of business and characteristics of its current assets and liabilities.

Quick Ratio = $\frac{\text{Quick Assets}}{\text{Quick Liabilities}}$

Quick Assets= Current Assets – Inventories

Quick Liabilities= Current Liabilities – Bank Overdraft – Cash Credit

The Quick Ratio is a much more exacting measure than the Current Ratio. By excluding inventories, it concentrates on the really liquid assets, with value that is fairly certain. It helps answer the question: "If all sales revenues should disappear, could my business meet its current obligations with the readily convertible 'quick' funds on hand?"

Debt Equity Ratio = $\frac{\text{Total Debt}}{\text{Shareholder's Equity}}$

A high ratio here means less protection for creditors. A low ratio, on the other hand, indicates a wider safety cushion (i.e., creditors feel the owner's funds can help absorb possible losses of income and capital).

This ratio indicates the proportion of debt fund in relation to equity. This ratio is very often referred in capital structure decision as well as in the legislation dealing with the capital structure decisions (i.e. issue of shares and debentures). Lenders are also very keen to know this ratio since it shows relative weights of debt and equity.

Debt Service Coverage Ratio = $\frac{\text{Earnings Available for Debt Service}}{\text{Interest + Installment}}$

Earnings Available for debt Service = Net profit + Non-cash operating expenses like depreciation and other amortizations + Non-operating adjustments like loss on sale of Fixed assets + Interest on Debt Fund.

This ratio is the vital indicator to the lender to assess the extent of ability of the borrower to service the loan in regard to timely payment of interest and repayment of principal amount.

It shows whether a business is earning sufficient profits to pay not only the interest charges but also the installment due of the principal amount.

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest}}$$

This ratio also known as “times interest earned ratio” indicates the firm’s ability to meet interest (and other fixed-charges) obligations. Earnings before interest and taxes are used in the numerator of this ratio because the ability to pay interest is not affected by tax burden as interest on debt funds is deductible expense. This ratio indicates the extent to which earnings may fall without causing any embarrassment to the firm regarding the payment of interest charges. A high interest coverage ratio means that an enterprise can easily meet its interest obligations even if earnings before interest and taxes suffer a considerable decline. A lower ratio indicates excessive use of debt or inefficient operations.

$$\text{Preference Dividend Coverage Ratio} = \frac{\text{EAT}}{\text{Preference Dividend}}$$

This ratio measures the ability of a firm to pay dividend on preference shares which carry a stated rate of return. Earnings after tax is considered because unlike debt on which interest is charged on the profit of the firm, the preference dividend is treated as appropriation of profit. This ratio indicates margin of safety available to the preference shareholders. A higher ratio is desirable from preference shareholders point of view.

Capital Gearing Ratio

$$\text{Formula} = \frac{(\text{Preference Share Capital} + \text{Debentures} + \text{Long term Loan})}{(\text{Equity Share Capital} + \text{Reserves \& Surplus} - \text{Losses})}$$

In addition to debt-equity ratio, sometimes capital gearing ratio is also calculated to show the proportion of fixed interest (dividend) bearing capital to funds belonging to equity shareholders.

Inventory Turnover Ratio: This ratio also known as stock turnover ratio establishes the relationship between the cost of goods sold during the year and average inventory held during the year. It is calculated as follows:

$$\text{Formula} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

$$*\text{Average Inventory} = \frac{(\text{Opening Stock} + \text{Closing Stock})}{2}$$

This ratio indicates that how fast inventory is used/sold. A high ratio is good from the view point of liquidity and vice versa. A low ratio would indicate that inventory is not used/ sold/ lost and stays in a shelf or in the warehouse for a long time.

Debtor’s Turnover Ratio: In case firm sells goods on credit, the realization of sales revenue is delayed and the receivables are created. The cash is realised from these receivables later on. The speed with which these receivables are collected affects the liquidity position of the firm. The debtors turnover ratio throws light on the collection and credit policies of the firm.

$$\text{Formula} = \frac{\text{Credit Sales}}{\text{Average Account Receivables}}$$

Creditor’s Turnover Ratio: This ratio is calculated on the same lines as receivable turnover ratio is calculated. This ratio shows the velocity of debt payment by the firm.

$$\text{Formula} = \frac{\text{Credit Purchase}}{\text{Average Account Payables}}$$

A low creditor’s turnover ratio reflects liberal credit terms granted by supplies. While a high ratio

shows that accounts are settled rapidly.

$$\text{Return on Equity} = \frac{\text{Profit after Tax}}{\text{Net worth}}$$

Return on equity is one of the most important indicators of a firm's profitability and potential growth. Companies that boast a high return on equity with little or no debt are able to grow without large capital expenditures, allowing the owners of the business to withdraw cash and reinvest it elsewhere. Many investors fail to realize, however, that two companies can have the same return on equity, yet one can be a much better business.

For that reason, a finance executive at E.I. Du Pont de Nemours and Co., created the DuPont system of financial analysis in 1919. That system is used around the world today and serves as the basis of components that make up return on equity.

$$\text{Earnings Per Share (EPS): } \frac{\text{Net profit available for equity shareholders}}{\text{Number of ordinary shares outstanding}}$$

The profitability of a firm from the point of view of ordinary shareholders can be measured in terms of number of equity shares. This is known as Earnings per share

$$\text{Dividend Per share: } \frac{\text{Total Profits distributed to equity shareholders}}{\text{Number of Equity Shares}}$$

Earnings per share as stated above reflects the profitability of a firm per share; it does not reflect how much profit is paid as dividend and how much is retained by the business. Dividend per share ratio indicates the amount of profit distributed to shareholders per share.

$$\text{Price Earnings Ratio (PE): } \frac{\text{Market price per share}}{\text{Earnings per share}}$$

The price earning ratio indicates the expectation of equity investors about the earnings of the firm. It relates earnings to market price and is generally taken as a summary measure of growth potential of an investment, risk characteristics, shareholders orientation, corporate image and degree of liquidity.

$$\text{Return on Investment (ROI): } \frac{\text{Return}}{\text{Capital Employed}} * 100$$

Where,

Return = Profit after Tax

- + Interest on long term debts + Provision for Tax
- Interest/Dividend from non trade investments

Capital Employed = Equity Share Capital

- + Reserves and Surplus
- + Preference Share Capital
- + Debenture and long term loan
- Misc Expenditure and Losses
- Non Trade Investments

$$\text{Market value to book value: } \frac{\text{Average Share Price}}{\text{Net Worth/Number of Equity Shares}}$$

This ratio indicates market response of the shareholders' investment. Undoubtedly, higher the ratios better is the shareholders' position in terms of return and capital gains

IMPORTANT FORMULA'S:

1. Cash Collected from Debtors = Opening Balance of Debtor + Credit Sale – Closing Balance of Debtors
2. Cash Paid to Suppliers = Opening Balance of Creditor + Credit Purchase – Closing Balance of Creditor
3. Payment to Employees = Opening Outstanding Salary + Salary of Current Year – Closing Outstanding Salary
4. Interest Paid = Opening Outstanding Interest + Interest of Current Year – Closing Outstanding Interest
5. Insurance Paid = Insurance Expense of Current Year + Closing Prepaid Insurance – Opening Prepaid Insurance

FORMAT OF FUND FLOW STATEMENT

SOURCES OF FUND	₹	APPLICATION OF FUNDS	₹
Fund Flow from Operations		Buy Back of Equity Shares	
Issue of Equity Shares		Redemption of Preference Shares	
Issue of Preference Shares		Redemption of Debentures	
Issue of Debentures		Tax Paid	
Sale of Fixed Assets		Purchase of Fixed Assets	
Sale of Investments		Purchase of Investments	
Interest Received		Dividend Paid	
Dividend Received		Interest Paid	
Decrease in Working Capital		Interim Dividend Paid	
		Increase in Working Capital	
Total		Total	

FUND FLOW FROM OPERATIONS

Net Profit transferred to Balance Sheet (Closing balance of Profit & Loss – Opening Balance of Profit & loss Account)		
Add:		
Depreciation		
Provision for Tax		
Proposed Dividend		
Loss on Sale of Fixed Assets		
Loss on Sale of Investments		
Goodwill Written off		
Interest on Debentures		
Less:		
Profit on Sale of Fixed Asset		
Profit on Sale of Investment		
Refund of tax credited to Profit & Loss		
Interest Received on Investments		
Dividend Received on Investments		
Net Fund Flow from Operations		

**COST ACCOUNTING
LIST OF “OTHER NAMES”**

Direct Expenses	Chargeable Expenses
Indirect Expenses	Overheads
Semi Variable Cost	Step Cost or Step Ladder Cost
Implicit Cost	Economic Cost
Explicit Cost	Out of Pocket Cost or Accounting Cost
Rated Capacity	Installed Capacity/ Maximum Capacity/ Theoretical Capacity
Practical Capacity	Operating Capacity
Normal Capacity	Average Capacity
Survey Method	Point Value Method
Horizontal Analysis	Dynamic Analysis
Vertical Analysis	Static Analysis
Key Factor	Limiting Factor
General Ledger Adjustment	Cost Ledger Control Account