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Equations in Select Chapters

Chapter 5 (CVP Analysis)

Breakeven volume	Fixed costs Unit contribution margin
Breakeven volume (multiproduct)	Fixed costs Weighted unit contribution margin
Breakeven revenue	Fixed costs Contribution margin ratio
Breakeven revenue (multiproduct)	Fixed costs Weighted contribution margin ratio
Contribution margin	Revenue – Total variable costs
Contribution margin ratio	Unit contribution margin/Price
	Contribution margin/Revenue
Margin of safety	(Revenue – Breakeven revenue)/Revenue
	(Sales in units - Breakeven volume)/Sales in units
Operating leverage	Fixed costs/Total costs
Profit before taxes	[(Price - Unit variable cost) × Sales volume in units] - Fixed costs
	(Unit contribution margin × Sales volume in units) − Fixed costs
	Contribution margin – Fixed costs
	Contribution margin ratio \times Revenue – Fixed costs
Profit after taxes	Profit before taxes \times (1 – Tax rate)
Unit contribution margin	Price – Variable cost per unit
	(Revenue – Variable costs)/Units sold
Weighted unit contribution margin	$\Sigma(\% ext{ of sales in units} \times Unit contribution margin)$
Weighted contribution margin ratio	Σ (% of revenues × Contribution margin ratio)

Chapter 8 (Variance Analysis)

Actual input cost	Actual input quantity × Actual cost per unit of input
Flexible budget cost	Flexible budget quantity \times Budgeted cost per unit of input
Flexible budget quantity	Actual sales quantity \times Quantity of input budgeted for 1 unit of sales
Flexible budget variance	Actual profit – Flexible budget profit
Input price variance	(Budgeted price per unit of input — Actual price per unit of input) × Actual input quantity
Input quantity variance	(Flexible budget quantity of input — Actual quantity of input) × Budgeted price per unit of input (Continued)

Chapter 8 (Variance Analysis) (continued)	
Market share variance	Actual market size × (Actual market share — Budgeted market share) × Budgeted unit contribution margin
Market size variance	(Actual market size – Budgeted market size) × Budgeted market share × Budgeted unit contribution margin
Sales mix variance	
Sales price variance	(Actual sales price $-$ Budgeted sales price) \times Actual sales quantity
Sales quantity variance	$(Actual\ total\ sales - Budgeted\ total\ sales) \\ \times WUCM_{master\ budget}$
Sales volume variance	Flexible budget profit — Master budget profit (Actual sales quantity — Budgeted sales quantity) × Budgeted unit contribution margin
Total profit variance	Actual profit – Master budget profit

Chapter 11 (Capital Budgeting)

Accounting rate of return	Average annual income/Average annual investment
Depreciation tax shield	Depreciation expense \times Tax rate
Future value of \$1	$(1+r)^n$
Future value of an annuity of \$1 in arrears	$\frac{(1+r)^n-1}{r}$
Present value of \$1	$1/(1+r)^n$
Present value of an annuity of \$1 in arrears	$\frac{1-(1+r)^{-n}}{r}$

Chapter 12 (Performance Evaluation)

Asset turnover	Sales/Investment
Economic value added (EVA)	Net operating profit after taxes — [Weighted average cost of capital × (Invested capital — Current liabilities)]
Profit margin	1 – (Operating expenses/Sales)
Residual income (RI)	$Profit-(Required\ return\times Investment)$
Return on investment (ROI)	Profit/Investment
Minumum transfer price acceptable to selling division ($\mathrm{TP}_{\mathrm{MIN}}$)	Variable cost of transfer + Selling division's opportunity cost of capacity
Maximum transfer price the buying divisions is willing to pay (TP_{MIN})	Buying division's opportunity cost