Part IV

Information for Planning and Control

- The budgeting process
- Standard costs and variance analysis

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Management and Cost Accounting, 7th edition

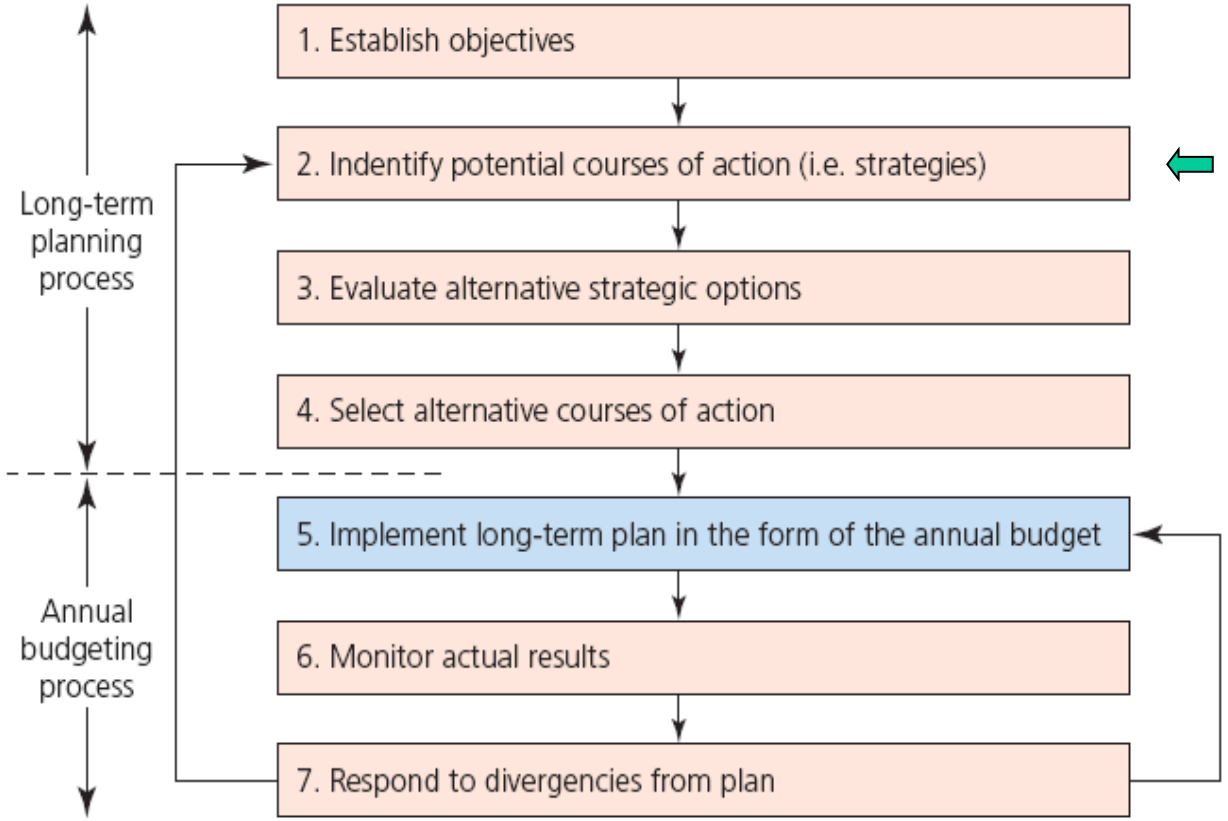
- Pages 351 to 371 (in chapter 15)
- Pages 399 to 401 (in chapter 16)
- Chapter 17

The budgeting process

Objectives

- To explain how budgeting fits into the overall planning and control processes
- To identify and describe the various stages in the budgeting process
- To prepare the various budgets, as well as the budgeted profit and loss account and balance sheet
- To understand the behavioural aspects of budgeting

The planning process



⇦ SWOT analysis

(Drury, 2008)

Why do we produce budgets?

1. For the *planning* of actual operations:

   • Considering how conditions might change in the next year and what steps should be taken now
   • Anticipating problems before they arise

2. To *co-ordinate* the activities of the various parts of the organization:

   • Examining relationships between own operation and those of other departments
   • Resolving conflicts

3. To *communicate* plans to the various managers:

- Clear understanding of what is expected from her/him in achieving the annual budget
- To make appropriate individuals responsible for implementing the budget

4. To *motivate* managers to achieve the budget objectives:

- Focus on participation
- They are a challenge/target

5. To *control* activities:

- by comparing actual results with expected (budgeted) results
- directing the attention to the significant deviations from the expected results and to implement corrective actions

6. To *evaluate* the performance of managers:

- A means of informing managers of how well they are performing in meeting targets they have previously set

Stages in the budgeting process

1. Communicating details of the budget policy and guidelines to those people responsible for preparing the annual budget

2. Determining the factor that restricts output (sales demand, etc)

3. Preparing the various annual budgets

Stages in the budgeting process (cont.)

3. Preparing the various annual budgets (cont.)

- ✓ Sales budget
- ✓ Production budget (expressed in quantities) and budgeted stock levels
- ✓ Direct materials usage budget and direct materials purchase budget
- ✓ Conversion cost budget (*programa e orçamento dos custos de transformação*)
- ✓ Selling and administrative budget (*orçamentos não industriais*)
- ✓ Cash budgets (*orçamentos de tesouraria e financeiro*)
- ✓ Budgeted profit and loss account (*DR*) and balance sheet (*DR e Balanço*)

Stages in the budgeting process
(cont.)

4. Negotiation of budgets with top management

5. Coordination and review of budgets

6. Final acceptance of budgets

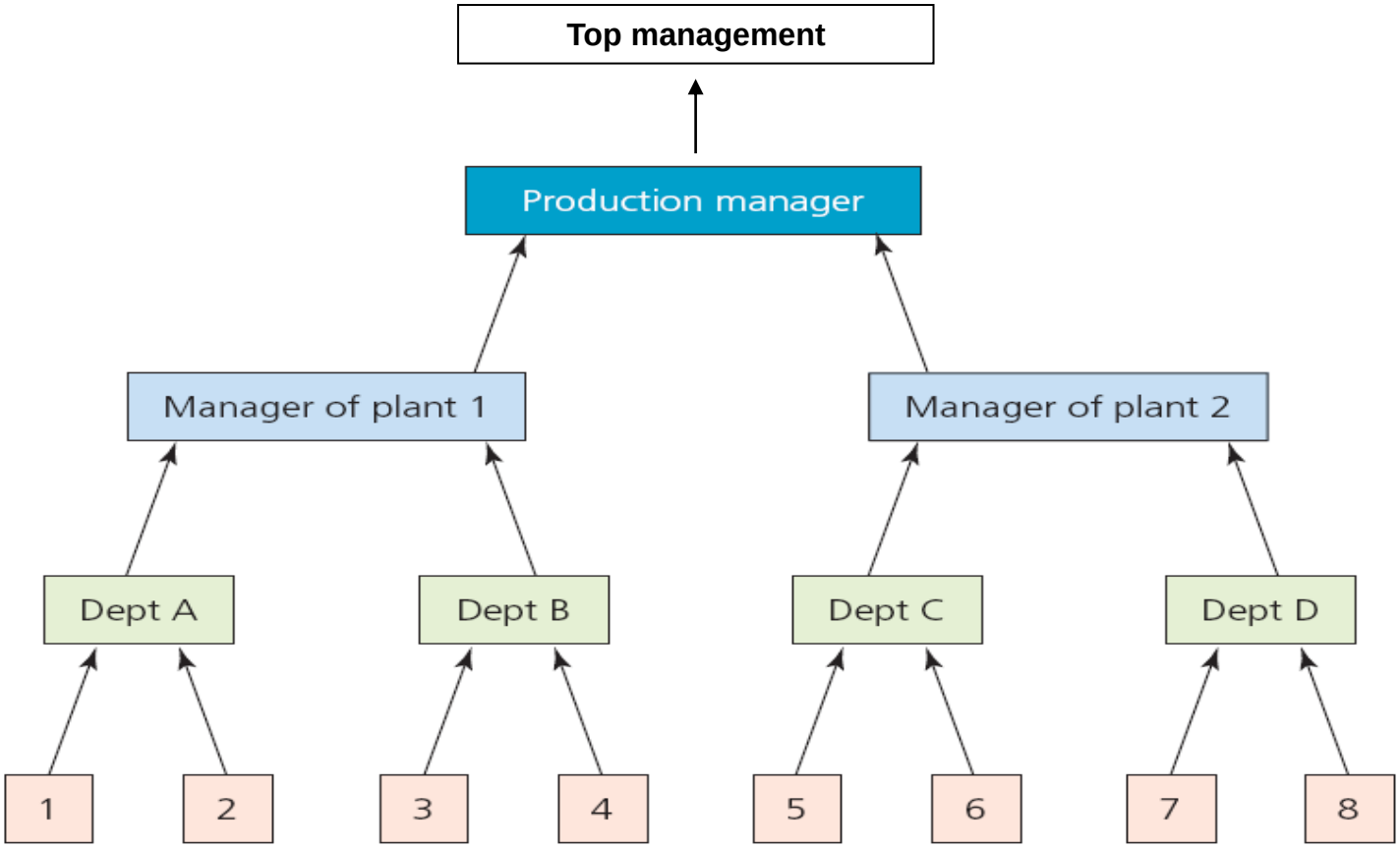
7. Ongoing review of the budgets

Participation in the budgeting process

- Bottom-up budget setting
  - The budgetees are able to influence the figures incorporated in their budgets
- Top-down budget setting
  - The budgetees have little influence on the figures incorporated in their budgets

Example of a bottom-up budget setting

(participatory approach)



(Drury, 2008)

Advantages of a participatory approach

Disadvantages of a participatory approach

Alternative budgeting systems

- Incremental budgeting
  - Starts with the prior year figures, and only new additions (increments) are justified

- Zero-based budgeting
  - Where each projected revenue and expense have to be justified. A starting point of zero is assumed and all the budgeted amounts are developed from the ground up.

The Imaginária Company *(handbook of exercises)*

Sales budget in physical units (*Programa de vendas*)

	March	April	May	June
Product A	80	84	96	94

Sales budget in EUR

	March	April	May	June	Total
Product A	17.520	18.396	21.024	20.586	77.526

Budgeted inventory (stock) levels

Stock level of Product A	CGM unit	March	April	May	June	Total
		units				
Opening inventory (+)	95	**110**	**100**	**91**	**85**	**110**
Production (+)		70	75	90	90	325
Sales (-)		80	84	96	94	354
Closing inventory		**100**	**91**	**85**	**81**	**81**

Stock level of direct materials	Purchase price (€)	March	April	May	June	Total
		units				
Opening inventory (+)	45	**100**	**110**	**115**	**110**	**100**
Purchases (+)		80	80	85	85	330
Usage (-)		70	75	90	90	325
Closing inventory		**110**	**115**	**110**	**105**	**105**

Note that the usage of DM is the variable that must be calculated at first instance as the stock policy is a function of it.

Cash budget (in EUR)

	March	April	May	June	Total	Amounts to BS*
Opening cash balance	**6.790**	**4.820**	**5.545**	**12.415**	**6.790**	
Receipts						
From sales	7.680	10.400	17.520	18.396	53.996	41.610
From interest-bearing borrowing				120.000	120.000	120.000
Total receipts	**7.680**	**10.400**	**17.520**	**138.396**	**173.996**	
Payments						
To suppliers	3.900	3.600	3.600	3.825	14.925	3.825
Of the variable conversion costs incurred	4.550	4.875	5.850	5.850	21.125	0
Of the fixed conversion costs incurred	1.200	1.200	1.200	1.200	4.800	0
To purchase new equipment				112.000	112.000	112.000
Total payments	**9.650**	**9.675**	**10.650**	**122.875**	**152.850**	
Closing cash balance	**4.820**	**5.545**	**12.415**	**27.936**	**27.936**	27.936

* Balance Sheet or also called Statement of Financial Position according to IAS/IFRS

The Imaginária Company *(handbook of exercises)*

Budgeted P & L Account by function

(using **Variable costing**)

Sales	77.526
Cost of Sales (CIPV)*	38.940
Gross profit	38.586
Under-recovery of overheads **	4.800
Depreciation	19.233
Financial costs ***	750
Net profit	13.803

* = CGM per unit x units sold

** Of 4 months

*** = Interest of 1 month

Budgeted Balance Sheet for June 30

Noncurrent assets		
Vehicles	42.000	
Buildings	500.000	
Equipment	236.000	
Less accumulated depreciation	-120.133	657.867
Current Assets		
Direct materials inventory *	4.545	
Finished good inventory **	7.260	
Debtors (Receivables)	41.610	
Cash (includes deposits in banks)	27.936	81.351
Total Assets		739.218
Equity		
Equity at 01.03	600.840	
Net profit	13.803	614.643
Liabilities		
Creditors (Payables to suppliers)	3.825	
Interests payable	750	
Interest-bearing borrowing	120.000	124.575
Total Equity and Liabilities		739.218

* Op inv + purchases – usage = 4.320 + 14.850 -14.625

** Op inv + CGM - CGS = 10.450 + 35.750 - 38.940

Standard costs and variance analysis

Objectives

- To explain the importance of a standard costing system
- To develop a procedure to compare actual results with budgeted targets (variance analysis)
- To distinguish between static and flexible budgets
- To calculate the different types of variances and identify their causes

Standard costs

Definition

- Predetermined costs
- Represent the costs that should be incurred under efficient operating conditions
- Differ from budgeted costs

Standard costing is most suited for organizations with common or repetitive activities and where the input required to produce each unit of output can be specified

Establishing cost standards

1. Two approaches:

   (i) past historical records
   (ii) engineering studies

2. Engineering studies, where a detailed study of each operation is undertaken for, for instance :

   • direct material standards (standard quantity × standard prices)

   - Based on product specifications
   - Standard prices are obtained from the purchasing department and are based on a search of alternative suppliers

   • direct labour standards (standard quantity × standard prices)

   - Based on time measurements to determine the number of standard hours required by an average worker to complete the job

Standard hours produced

- Used to measure output where more than one product is produced

  Example
  Standard (target) times: X = 5 hours, Y = 2 hours, Z = 3 hours
  Output = 100 units of X, 200 units of Y, 300 units of Z
  Standard hours produced = (100 × 5 hours) + (200 ×2 hours) +
  (300 ×3 hours) = 1 800

- If actual DLH are less than 1 800 the department will be efficient,whereas if hours exceed 1 800 the department will be inefficient.

(Drury, 2008)

Purposes of standard costing

- ✓ A challenging target that individuals are motivated to achieve
- ✓ Assists in setting budgets and evaluating performance
- ✓ A control device by highlighting those activities that do not conform to plan

Variance analysis (*análise de desvios*)

- Process that seeks to analyse the differences between actual results and budgeted results, as well as the factors which cause these differences

Static budgets and flexible budgets

- Static budget, or also called master budget (*orçamento estático*)
  - Based on the level of output planned at the start of the budget period

- Flexible budget (*orçamento flexível ou ajustado*)
  - Calculates budgeted revenues and costs based on the actual output level in the budget period
  - In other words, it is a budget which is adjusted to recognize actual output level
  - It is calculated at the end of the period when the actual output is know

An example of flexible budget

Budgeted output = 10 000 units
Budgeted unit variable cost =5 €

Actual output =12 000 units
Actual variable costs = 54.000 €

Original static budget	Flexible budget	Actual cost	Reported variance

• The static or master budget is adjusted to reflect what the costs should have been for an actual output (activity) of 12 000 units

Ensures that managers are accountable for the conditions applying during the period and not those envisaged when the budget was set.

Main steps for analysing variances

1. Adjust (flex) the budget
2. Calculate all variances:
    a) Sales margin volume variance (*desvio do volume de vendas*)
    b) Sales price variance (*desvio do preço de venda*)
    c) Variable costs variance (*desvio dos custos variáveis*)
    d) Fixed costs variance (*desvio dos custos fixos*)
3. Analyse the (significant) variances
4. Reconcile budgeted profit and actual profit
5. Investigate and explain the significant variances
6. Implement corrective actions

The Consultex Company (handbook of exercises)

	Static budget	Actual	
Nr of hours sold	1.200	1.100	
Average selling price per hour	100 €	90 €	
= Revenues	120.000 €	99.000 €	-21.000 € U
DL hours	1.200	1.150	
Average wage rate	40 €	38,5 €	
= cost of DL	48.000 €	44.275 €	3.725 € F
Transport variable costs	5%		
5% of revenues	6.000 €	5.200 €	800 € F
Fixed indirect costs	35.000 €	36.500 €	1.500 € U
Total costs	89.000 €	85.975 €	3.025 € F
Operating profit	31.000 €	13.025 €	-17.975 € D

Variances' causes

Possible causes of sales variance (*desvio de vendas*)

➢ **Causes of sales price variance**
(*desvio do preço de venda*)

- Unexpected increase in selling prices
- Inadequate definition of selling prices at the budget's preparation
- Unexpected decrease in selling prices to try to increase market demand

➢ **Causes of sales margin volume variance**
(*desvio da margem de contribuição relacionado com o desvio de volume nas vendas*)

- Unexpected decrease in market demand due to economic recession
- Increase in market demand as a result of lower selling prices
- Failure to meet market demand due to production problems

Possible causes of materials variance

(*desvio de matérias directas*)

➢ Causes of price variance

(*desvio de preço*)

- Changes in the prices of materials, discounts, etc
- Purchase of inferior quality materials
- Failure by the purchasing department to seek the most advantageous sources of supply

➢ Causes of usage variance

(*desvio de utilização ou de rendimento*)

- Purchase of inferior quality materials, which may lead to inferior product quality or more wastage
- Careless handling of materials by production personnel
- Changes in quality control requirements

Possible causes of labour variance

(*desvio de mão-de-obra directa*)

➢ **Causes of wage rate variance** (*desvio de taxa horária - preço*)

- Actual wages rates different from budgeted wages rates
- Appointment of workers with different salaries

➢ **Causes of labour efficiency variance** (*desvio de eficiência*)

- Use of inferior quality materials
- Failure to maintain machinery in proper condition
- Poor supervision
- Introduction of a new equipment or tools
- Changes or inefficiencies in the production process
- Not enough training

Possible causes of variable overhead variance

(*desvio de GG variáveis*)

➢ **Causes of variable overhead expenditure variance** (*desvio nas despesas com os GG variáveis*)

- Changes in the prices of individual items (e.g. of indirect materials, indirect labour, electricity, maintenance, etc)
- Waste or inefficiency in the use of individual items (e.g. of kilowatt-hours of power)

➢ **Causes of variable overhead efficiency variance** (*desvio de eficiência dos GG variáveis*)

- Poor supervision
- Changes in the production process and methods
- Use of inferior quality materials

Possible causes of fixed overhead expenditure variance

(*desvio de GG fixos*)

- Changes in salaries paid to supervisors
- Appointment of additional supervisors
- Changes in the prices of other fixed overheads

Another example of variance analysis

A company prepared the following annual budget:

Sales volume (in units)	1.000
Selling price	12 €

	Qty	Price	
Variable costs per unit of product			
Direct Materials	4 kgs	1 €/kg	4 €
Direct Labor*	0,5 Hh	6 €/Hh	3 €
Variable manufacturing overheads	0,5 Hh	4 €/Hh	2 €
Fixed manufacturing overheads			1.400 € per year

* Piecework labour

Actual results were as follows:

Sales volume (in units)	1.100
Selling price	14 €

	Qty	Price	
Variable costs per unit of product			
Direct Materials	4,532 kgs	1 €/kg	4,532 €
Direct Labor*	0,66 Hh	6,2 €/Hh	4,092 €
Variable manufacturing overheads	0,66 Hh	3,636 €/Hh	2,400 €
Fixed manufacturing overheads			1.200 € per year

	Static budget	Flexible budget	Actual	Variance
Units sold	1.000	1.100	1.100	
Selling price	12 €	12 €	14 €	
Vendas	12.000 €	13.200 €	15.400 €	2.200 € F
Kgs per unit	4	4	4,99	
Direct materials usage	4.000	4.400	4.985	
DM price per unit	1 €	1 €	1 €	
Cost of DM	4.000 €	4.400 €	4.985 €	585 € U
DLh per unit	0,5	0,5	0,66	
Total DLh	500	550	726	
Cost of DL per unit	6,0 €	6,0 €	6,2 €	
= cost of DL	3.000 €	3.300 €	4.501 €	1.201 € U
H per unit	0,5	0,5	0,66	
Total VMO hours	500	550	726	
Cost of VMO per unit	4 €	4€	3,636 €	
=Cost of variable manufact overheads	2.000 €	2.200 €	2.640 €	440 € U
Total variable costs	9.000 €	9.900 €	12.126 €	2.226 € U
Contribution margin	3.000 €	3.300 €	3.274 €	
CM unit	3 €	3 €	2,98 €	
Fixed manufacturing overheads	1.400 €	1.400 €	1.200 €	200 € F
Operating profit	1.600 €	1.900 €	2.074 €	174 € F

Reconciliation between budgeted and actual operating profit

When more than one product or service is sold

As you know already (see previous slides):

- **Sales variance (V) = sales price V + sales margin volume V**(DMC)

But if more than one product is sold, the sales margin volume variance (DMC) must be explained by the sales mix variance and sales volume variance:

Sales margin volume Var = Sales mix Variance + Sales volume Variance

When more than one product/service is sold (cont.)

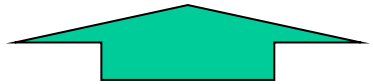
Sales mix variance = desvio de mix de vendas =

= (average budgeted CM per unit at actual mix – average budgeted CM per unit at budget mix) x total actual quantity sales

Where CM = contribution margin

Sales volume variance = desvio de volume nas vendas =

= (actual qtd sales – budgeted qtd sales) x average budgeted CM per unit at budget mix



Sales volume variance = Total Market variance + Market Share variance

Example of variance analysis when more than one product/service is sold:

The company Fruit, Ltd wishes to achieve a market share of 20% next year and, hence, has set the following budgeted figures:

	Oranges	Pears
Quantity (in kgs)	500.000	300.000
Selling price per kg	1,10 €	2,00 €
Variable cost per Kg	0,70 €	0,80 €

Actual performance after the budget period, was as follows:

	Oranges	Pears
Quantity (in kgs)	620.000	250.000
Selling price per kg	1,00 €	2,10 €
Variable cost per Kg	0,75 €	0,80 €

Note: For simplicity, we do not consider fixed costs

Example of variance analysis when more than one product is sold (solution):

	(1)	(2)	(3)	(3) - (1)	
(values in 000 €)	**Static budget**	**Flexible budget**	**Actual**		
Sales	1.150 €	1.182 €	1.145 €	-5 €	c + f
Variable Costs	590 €	634 €	665 €	75 €	d+h
Contribution Margin (CM)	560 €	548 €	480 €	-80 €	g - h

		(000 €)	
a	Sales qtd variance (desvio de volume nas vendas)	49 € F	
b	Sales mix variance (desvio de mix de vendas)	61 € U	
c	Sales margin volume variance (DMC)	12 € U = a + b = CM FB- CM SB	
d	Sales price variance (desvio do preço de venda)	37 € U= Actual sales - flexible sales	
e	**Sales variance (desvio de vendas)**	**49 € U = c + d**	
f	**VC variance (desvio custos variáveis)***	**31 € U =** Variable costs FB - Actual variable costs	
	Actual CM - Static Budget CM	**80 € U = e + f**	

* Includes price var and usage/eficiency var regarding the used resources

FB = flexible budget; SB = static budget