11

Financial Planning and Control

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11

Learning Outcomes

After completing this chapter, you should be able to:

- explain why organisations set out financial plans in the form of budgets, typically for a financial year;
- prepare functional budgets for material usage and purchase, labour and overheads, including budgets for capital expenditure and depreciation;
- prepare a master budget: income statement, balance sheet and cash flow statement, based on the functional budgets;
- interpret budget statements and advise managers on financing projected cash shortfalls and/or investing projected cash surpluses;
- prepare a flexed budget based on the actual levels of sales and production and calculate appropriate variances;
- compare and contrast fixed and flexed budgets;
- explain the use of budgets in designing reward strategies for managers.

11.1 Introduction

In this chapter, you will learn about budgets: what they are for, how they are prepared, and their use in planning and controlling the activities of an organisation.

11.2 The purposes of budgeting

Budgets have two main roles:

(1) they act as authorities to spend, that is, they give authority to budget managers to incur expenditure in their part of the organisation;
(2) they act as comparators for current performance, by providing a yardstick against which current activities can be monitored.

These two roles are combined in a system of budgetary planning and control.

11.2.1 Budgetary planning and control

Planning the activities of an organisation ensures that the organisation sets out in the right direction. Individuals within the organisation will have definite targets which they will aim to achieve. Without a formalised plan the organisation will lack direction and managers will not be aware of their own targets and responsibilities. Neither will they appreciate how their activities relate to those of other managers within the organisation.

A formalised plan will help to ensure a coordinated approach, and the planning process itself will force managers to continually think ahead, planning and reviewing their activities in advance.

However, the budgetary process should not stop with the plan. The organisation has started out in the right direction but to ensure that it continues on course it is the management's responsibility to exercise control.

Control is best achieved by comparison of the actual results with the original plan. Appropriate action can then be taken to correct any deviations from the plan.

The comparison of actual results with a budgetary plan, and the taking of action to correct deviations, is known as feedback control.

The two activities of planning and control must go hand in hand. Carrying out the budgetary planning exercise without using the plan for control purposes is performing only part of the task.

11.2.2 What is a budget?

A budget could be defined as 'a quantified plan of action relating to a given period of time'.

For a budget to be useful it must be quantified. For example, it would not be particularly useful for the purposes of planning and control if a budget was set as follows:

'We plan to spend as little as possible in running the printing department this year'; or 'We plan to produce as many units as we can possibly sell this quarter'.

These are merely vague indicators of intended direction; they are not quantified plans. They will not provide much assistance in management's task of planning and controlling the organisation.

These 'budgets' could perhaps be modified as follows:

'Budgeted revenue expenditure for the printing department this year is £60,000'; and 'Budgeted production for the quarter is 4,700 units'.

The quantification of the budgets has provided:

(a) a definite target for planning purposes; and
(b) a yardstick for control purposes.

11.2.3 The budget period

You may have noticed that in each of these 'budgets' the time period was different. The first budget was prepared for a year and the second budget was for a quarter. The time period for which a budget is prepared and used is called the budget period. It can be any length to suit management purposes but it is usually one year.

The length of time chosen for the budget period will depend on many factors, including the nature of the organisation and the type of expenditure being considered. Each budget period can be subdivided into control periods, also of varying lengths, depending on the level of control which management wishes to exercise. The usual length of a control period is one month.

11.2.4 Strategic planning, budgetary planning and operational planning

It will be useful at this stage to distinguish in broad terms between three different types of planning:

(1) strategic planning;
(2) budgetary planning;
(3) operational planning.

These three forms of planning are interrelated. The main distinction between them relates to their timespan which may be short term, medium term or long term.

The short term for one organisation may be the medium or long term for another, depending on the type of activity in which it is involved.

Strategic planning

Strategic planning is concerned with preparing long-term action plans to attain the organisation's objectives.

Strategic planning is also known as corporate planning or long-range planning.

Budgetary planning

Budgetary planning is concerned with preparing the short- to medium-term plans of the organisation. It will be carried out within the framework of the strategic plan. An organisation's annual budget could be seen as an interim step towards achieving the long-term or strategic plan.

Operational planning

Operational planning refers to the short-term or day-to-day planning process. It is concerned with planning the utilisation of resources and will be carried out within the framework set by the budgetary plan. Each stage in the operational planning process can be seen as an interim step towards achieving the budget for the period.

Operational planning is also known as tactical planning.

Remember that the full benefit of any planning exercise is not realised unless the plan is also used for control purposes. Each of these types of planning should be accompanied by the appropriate control exercise covering the same time span.

11.3 The preparation of budgets

The process of preparing and using budgets will differ from organisation to organisation. However there are a number of key requirements in the design of a budgetary planning and control process.

11.3.1 Coordination: the budget committee

The need for coordination in the planning process is paramount. The interrelationship between the functional budgets (e.g. sales, production, purchasing) means that one budget cannot be completed without reference to several others.

For example, the purchasing budget cannot be prepared without reference to the production budget, and it may be necessary to prepare the sales budget before the production budget can be prepared. The best way to achieve this coordination is to set up a budget committee. The budget committee should comprise representatives from all functions in the organisation. There should be a representative from sales, a representative from marketing, a representative from personnel and so on.

The budget committee should meet regularly to review the progress of the budgetary planning process and to resolve problems that have arisen. These meetings will effectively bring together the whole organisation in one room, to ensure a coordinated approach to budget preparation.

11.3.2 Participative budgeting

The CIMA *Terminology* defines participative budgeting as a 'budgeting process where all budget holders have the opportunity to participate in setting their own budgets'.

This may also be referred to as 'bottom-up budgeting'. It contrasts with imposed or top-down budgets where the ultimate budget holder does not have the opportunity to participate in the budgeting process. The advantages of participative budgeting are as follows:

- *Improved quality of forecasts* to use as the basis for the budget. Managers who are doing a job on a day-to-day basis are likely to have a better idea of what is achievable, what is likely to happen in the forthcoming period, local trading conditions, etc.
- *Improved motivation.* Budget holders are more likely to want to work to achieve a budget that they have been involved in setting themselves, rather than one that has been imposed on them by more senior managers. They will own the budget and accept responsibility for the achievement of the targets contained therein.

Detail on the behavioural aspects of budgeting is outside the scope of the *Fundamentals of Management Accounting* syllabus.

The main disadvantage of participative budgeting is that it tends to result in a more extended and complex budgetary process. However, the advantages are generally accepted to outweigh this.

11.3.3 Information: the budget manual

Effective budgetary planning relies on the provision of adequate information to the individuals involved in the planning process.

Many of these information needs are contained in the budget manual.

A budget manual is a collection of documents which contains key information for those involved in the planning process. Typical contents could include the following:

(a) An introductory explanation of the budgetary planning and control process including a statement of the budgetary objective and desired results.

Participants should be made aware of the advantages to them and to the organisation of an efficient planning and control process. This introduction should give participants an understanding of the workings of the planning process, and of the sort of information that they can expect to receive as part of the control process.

(b) A form of organisation chart to show who is responsible for the preparation of each functional budget and the way in which the budgets are interrelated.

(c) A timetable for the preparation of each budget. This will prevent the formation of a 'bottleneck', with the late preparation of one budget holding up the preparation of all others.

(d) Copies of all forms to be completed by those responsible for preparing budgets, with explanations concerning their completion.

(e) A list of the organisation's account codes, with full explanations of how to use them.

(f) Information concerning key assumptions to be made by managers in their budgets, for example, the rate of inflation, key exchange rates, etc.

(g) The name and location of the person to be contacted concerning any problems encountered in preparing budgetary plans. This will usually be the coordinator of the budget committee (the budget officer) and will probably be a senior accountant.

11.3.4 Early identification of the principal budget factor

The principal budget (key budget) factor is the factor which limits the activities of the organisation. The early identification of this factor is important in the budgetary planning process because it indicates which budget should be prepared first.

The principal budget factor was referred to in Chapter 4 as the limiting factor.

For example, if sales volume is the principal budget factor, then the sales budget must be prepared first, based on the available sales forecasts. All other budgets should then be linked to this.

Alternatively machine capacity may be limited for the forthcoming period and therefore machine capacity is the principal budget factor. In this case, the production budget must be prepared first and all other budgets must be linked to this.

Failure to identify the principal budget factor at an early stage could lead to delays at a later stage when managers realise that the targets they have been working with are not feasible.

11.3.5 The interrelationship of budgets

The critical importance of the principal budget factor stems from the fact that all budgets are interrelated. For example, if sales is the principal budget factor this is the first budget to be prepared. This will then provide the basis for the preparation of several other budgets including the selling expenses budget and the production budget.

However, the production budget cannot be prepared directly from the sales budget without a consideration of inventory policy. For example, management may plan to increase finished goods inventory in anticipation of a sales drive. Production quantities would then have to be higher than the budgeted sales level. Similarly, if a decision is taken

to reduce the level of material inventories held, it would not be necessary to purchase all of the materials required for production.

11.3.6 Using computers in budget preparation

A vast amount of data is involved in the budgetary planning process and managing this volume of data in a manual system is an onerous and cumbersome task.

A computerised budgetary planning system will have the following advantages over a manual system:

- computers can easily handle the volume of data involved;
- a computerised system can process the data more rapidly than a manual system;
- a computerised system can process the data more accurately than a manual system;
- computers can quickly and accurately access and manipulate the data in the system.

Organisations may use specially designed budgeting software. Alternatively, a well-designed spreadsheet model can take account of all of the budget interrelationships described above.

The model will contain variables for all of the factors about which decisions must be made in the planning process, for example, sales volume, unit costs, credit periods and inventory volumes.

If managers wish to assess the effect on the budget results of a change in one of the decision variables, this can be accommodated easily by amending the relevant variable in the spreadsheet model. The effect of the change on all of the budgets will be calculated instantly so that managers can make better informed planning decisions.

This process of reviewing the effect of changes in the decision variables is called 'what-if?' analysis. For example, managers can rapidly obtain the answer to the question, 'What if sales volumes are 10 per cent lower than expected?'.

Budgetary planning is an iterative process. Once the first set of budgets has been prepared, those budgets will be considered by senior managers. The criteria used to assess the suitability of budgets may include adherence to the organisation's long-term objectives, profitability and liquidity. Computerised spreadsheet models then provide managers with the ability to amend the budgets rapidly, and adjust decision variables until they feel that they have achieved the optimum plan for the organisation for the forthcoming period.

11.3.7 The master budget

The master budget is a summary of all the functional budgets. It usually comprises the budgeted income statement, budgeted balance sheet and budgeted cash flow statement.

It is this master budget which is submitted to senior managers for approval because they should not be burdened with an excessive amount of detail. The master budget is designed to give the summarised information that they need to determine whether the budget is an acceptable plan for the forthcoming period.

11.4 Preparation of functional budgets

The best way to see how budgets are prepared is to work through an example.

Example: Preparing a functional budget

A company manufactures two products, Aye and Bee. Standard cost data for the products for next year are as follows:

	Product Aye per unit	*Product Bee per unit*
Direct materials:		
X at £2 per kg	24 kg	30 kg
Y at £5 per kg	10 kg	8 kg
Z at £6 per kg	5 kg	10 kg
Direct wages:		
Unskilled at £6 per hour	10 hours	5 hours
Skilled at £10 per hour	6 hours	5 hours

Budgeted inventories for next year are as follows:

	Product Aye units	*Product Bee units*
1 January	400	800
31 December	500	1,100

	Material X kg	*Material Y* kg	*Material Z* kg
1 January	30,000	25,000	12,000
31 December	35,000	27,000	12,500

Budgeted sales for next year: product Aye 2,400 units; product Bee 3,200 units.
You are required to prepare the following budgets for next year:

(a) production budget, in units;
(b) material usage budget, in kilos;
(c) material purchases budget, in kilos and £;
(d) direct labour budget, in hours and £.

Solution

(a) *Production budget for next year*

	Product Aye units	*Product Bee units*
Sales units required	2,400	3,200
Closing inventory at end of year	500	1,100
	2,900	4,300
Less opening inventory	400	800
Production units required	2,500	3,500

(b) *Material usage budget for next year*

	Material X kg	*Material Y* kg	*Material Z* kg
Requirements for production:			
Product Aye[1]	60,000	25,000	12,500
Product Bee	105,000	28,000	35,000
Total material usage	165,000	53,000	47,500

Note 1: Material X for product Aye:
2,500 units produced × 24 kg = 60,000 kg
The other material requirements are calculated in the same way.

(c) *Material purchases budget for next year*

	Material X kg	*Material Y* kg	*Material Z* kg	*Total*
Material required for production	165,000	53,000	47,500	
Closing inventory at end of year	35,000	27,000	12,500	
	200,000	80,000	60,000	
Less opening inventory	30,000	25,000	12,000	
Material purchases required	170,000	55,000	48,000	
Standard price per kg	£2	£5	£6	
Material purchases value	£340,000	£275,000	£288,000	£903,000

(d) *Direct labour budget for next year*

	Unskilled labour hours	*Skilled labour hours*	*Total*
Requirements for production:			
Product Aye[1]	25,000	15,000	
Product Bee	17,500	17,500	
Total hours required	42,500	32,500	
Standard rate per hour	£6	£10	
Direct labour cost	£255,000	£325,000	£580,000

Note 1: Unskilled labour for product Aye:
2,500 units produced × 10 hours = 25,000 hours
The other labour requirements are calculated in the same way.

11.4.1 Budget interrelationships

This example has demonstrated how the data from one functional budget becomes an input in the preparation of another budget. The last budget in the sequence, the direct labour budget, would now be used as an input to other budgets. The material purchases budget will also provide input data for other budgets.

For example, the material purchases budget would probably be used in preparing the payables budget, taking account of the company's intended policy on the payment of suppliers. The payables budget would indicate the payments to be made to suppliers, which would then become an input for the cash budget, and so on.

The cash budget is the subject of the next section of this chapter.

11.5 The cash budget

The cash budget is one of the most vital planning documents in an organisation. It will show the cash effect of all of the decisions taken in the planning process.

Management decisions will have been taken concerning such factors as inventory policy, credit policy, selling price policy and so on. All of these plans will be designed to meet the objectives of the organisation. However, if there are insufficient cash resources to finance the plans they may need to be modified or perhaps action might be taken to alleviate the cash restraint.

A cash budget can give forewarning of potential problems that could arise so that managers can be prepared for the situation or take action to avoid it.

The use of forecasts to modify actions so that potential threats are avoided or opportunities exploited is known as feedforward control.

There are four possible cash positions that could arise:

Cash position	Possible management action
• *Short-term deficit*	Arrange a bank overdraft, reduce receivables and inventories, increase payables
• *Long-term deficit*	Raise long-term finance, such as long-term loan capital or share capital
• *Short-term surplus*	Invest short term, increase receivables and inventories to boost sales, pay suppliers early to obtain cash discount
• *Long-term surplus*	Expand or diversify operations, replace or update non-current assets

Notice that the type of action taken by management will depend not only on whether a deficit or a surplus is expected, but also on how long the situation is expected to last.

For example, management would not wish to use surplus cash to purchase non-current assets, if the surplus was only short term and the cash would soon be required again for day-to-day operations.

Cash budgets therefore forewarn managers of whether there will be cash surpluses or cash deficits, and how long the surpluses or deficits are expected to last.

11.5.1 Preparing cash budgets

Before we work through a full example of the preparation of a cash budget, it will be useful to discuss a few basic principles.

(a) The format for cash budgets

There is no definitive format which should be used for a cash budget. However, whichever format you decide to use it should include the following:

(i) *A clear distinction between the cash receipts and cash payments for each control period.* Your budget should not consist of a jumble of cash flows. It should be logically arranged with a subtotal for receipts and a subtotal for payments.

(ii) *A figure for the net cash flow for each period.* It could be argued that this is not an essential feature of a cash budget. However, you will find it easier to prepare and use a cash budget if you include the net cash flow. Also, managers find in practice that a figure for the net cash flow helps to draw attention to the cash flow implications of their actions during the period.

(iii) *The closing cash balance for each control period.* The closing balance for each period will be the opening balance for the following period.

(b) Depreciation is not included in cash budgets

Remember that depreciation is not a cash flow. It may be included in your data for overheads and must therefore be excluded before the overheads are inserted into the cash budget.

(c) Allowance must be made for bad and doubtful debts

Bad debts will never be received in cash and doubtful debts may not be received. When you are forecasting the cash receipts from customers you must remember to adjust for these items, if necessary.

Example: cash budget

Watson Ltd is preparing its budgets for the next quarter. The following information has been drawn from the budgets prepared in the planning exercise so far:

Sales value	June (estimate)	£12,500
	July (budget)	£13,600
	August	£17,000
	September	£16,800
Direct wages	£1,300 per month	
Direct material purchases	June (estimate)	£3,450
	July (budget)	£3,780
	August	£2,890
	September	£3,150

Other information

- Watson sells 10 per cent of its goods for cash. The remainder of customers receive one month's credit.
- Payments to material suppliers are made in the month following purchase.
- Wages are paid as they are incurred.
- Watson takes one month's credit on all overheads.

- Production overheads are £3,200 per month.
- Selling, distribution and administration overheads amount to £1,890 per month.
- Included in the amounts for overhead given above are depreciation charges of £300 and £190, respectively.
- Watson expects to purchase a delivery vehicle in August for a cash payment of £9,870.
- The cash balance at the end of June is forecast to be £1,235.

You are required to prepare a cash budget for each of the months July to September.

Solution

Watson Ltd cash budget for July to September

	July £	*August* £	*September* £
Sales receipts:			
10% in cash	1,360	1,700	1,680
90% in one month	11,250	12,240	15,300
Total receipts	12,610	13,940	16,980
Payments			
Material purchases (one month credit)	3,450	3,780	2,890
Direct wages	1,300	1,300	1,300
Production overheads[1]	2,900	2,900	2,900
Selling, distribution and administration overhead[1]	1,700	1,700	1,700
Delivery vehicle	–	9,870	–
Total payments	9,350	19,550	8,790
Net cash inflow/(outflow)	3,260	(5,610)	8,190
Opening cash balance	1,235	4,495	(1,115)
Closing cash balance at the end of the month	4,495	(1,115)	7,075

Note 1: Depreciation has been excluded from the overhead payment figures because it is not a cash item.

11.5.2 Interpretation of the cash budget

This cash budget forewarns the management of Watson Limited that their plans will lead to a cash deficit of £1,115 at the end of August. They can also see that it will be a short-term deficit and can take appropriate action.

They may decide to delay the purchase of the delivery vehicle or perhaps negotiate a period of credit before the payment will be due. Alternatively overdraft facilities may be arranged for the appropriate period.

The important point to appreciate is that management should take appropriate action for a forecast short-term deficit. For example, it would not be appropriate to arrange a five year loan to manage a cash deficit that is expended to last for only one month.

If it is decided that overdraft facilities are to be arranged, it is important that due account is taken of the timing of the receipts and payments within each month.

For example, all of the payments in August may be made at the beginning of the month but receipts may not be expected until nearer the end of the month. The cash deficit could then be considerably greater than it appears from looking only at the month-end balance.

If the worst possible situation arose, the overdrawn balance during August could become as large as £4,495 − £19,550 = £15,055. If management had used the month-end balances as a guide to the overdraft requirement during the period then they would not have arranged a large enough overdraft facility with the bank. It is important therefore, that they look in detail at the information revealed by the cash budget, and not simply at the closing cash balances.

Exercise 11.1

Practise what you have just learned about cash budgets by attempting this exercise before you look at the solution.

The following information relates to XY Ltd:

Month	*Wages incurred* £000	*Materials purchases* £000	*Overhead* £000	*Sales* £000
February	6	20	10	30
March	8	30	12	40
April	10	25	16	60
May	9	35	14	50
June	12	30	18	70
July	10	25	16	60
August	9	25	14	50

(a) It is expected that the cash balance on 31 May will be £22,000.
(b) The wages may be assumed to be paid within the month they are incurred.
(c) It is company policy to pay suppliers for materials three months after receipt.
(d) Credit customers are expected to pay two months after delivery.
(e) Included in the overhead figure is £2,000 per month which represents depreciation on two cars and one delivery van.
(f) There is a one-month delay in paying the overhead expenses.
(g) Ten per cent of the monthly sales are for cash and 90 per cent are sold on credit.
(h) A commission of 5 per cent is paid to agents on all the sales on credit but this is not paid until the month following the sales to which it relates; this expense is not included in the overhead figures shown.
(i) It is intended to repay a loan of £25,000 on 30 June.
(j) Delivery is expected in July of a new machine costing £45,000 of which £15,000 will be paid on delivery and £15,000 in each of the following two months.
(k) Assume that overdraft facilities are available if required.

You are required to prepare a cash budget for each of June, July and August.

Solution

Cash budget for June, July and August

	June £	*July* £	*August* £
Receipts			
Receipts from credit sales[1]	54,000	45,000	63,000
Cash sales[2]	7,000	6,000	5,000
	61,000	51,000	68,000
Payments			
Wages	12,000	10,000	9,000
Materials[3]	30,000	25,000	35,000
Overhead[4]	12,000	16,000	14,000
Commission[5]	2,250	3,150	2,700
Loan repayment	25,000		
Payments for new machine		15,000	15,000
	81,250	69,150	75,700
Net cash inflow/(outflow)	(20,250)	(18,150)	(7,700)
Opening balance	22,000	1,750	(16,400)
Closing balance	1,750	(16,400)	(24,100)

Explanatory notes

1. The cash received from credit sales is 90 per cent of the sales made 2 months before, that is, for June, 90 per cent of April sales = 90 per cent × £60,000.
2. Cash sales are 10 per cent of the sales made in the month.
3. March purchases are paid for three months later in June, and so on.
4. May overheads, less depreciation = £14,000 − £2,000 = £12,000. These are paid in cash in June, and so on.
5.

	May	*June*	*July*
Credit sales (90%)	£45,000	£63,000	£54,000
5% commission	£2,250	£3,150	£2,700

These amounts for commission are paid 1 month later, that is, in June, July and August.

11.6 A complete exercise

Now that you have seen how to prepare functional budgets and cash budgets, have a go at the following exercise. It requires you to work from basic data to produce a number of functional budgets, as well as the master budget, that is, budgeted cash flow, income statement and balance sheet.

Exercise 11.2

C Ltd makes two products, Alpha and Beta. The following data is relevant for year 3:

Material prices:	Material M	£2 per unit
	Material N	£3 per unit

Direct labour is paid £10 per hour.

Production overhead cost is estimated to be £200,000, which includes £25,000 for depreciation of property and equipment. Production overhead cost is absorbed into product costs using a direct labour hour absorption rate.

Each unit of finished product requires:

	Alpha	*Beta*
Material M	12 units	12 units
Material N	6 units	8 units
Direct labour	7 hours	10 hours

The sales director has forecast that sales of Alpha and Beta will be 5,000 and 1,000 units, respectively, during year 3. The selling prices will be:

Alpha	£182 per unit
Beta	£161 per unit

She estimates that the inventory at 1 January, year 3, will be 100 units of Alpha and 200 units of Beta. At the end of year 3 she requires the inventory level to be 150 units of each product.

The production director estimates that the raw material inventories on 1 January, year 3, will be 3,000 units of material M and 4,000 units of material N. At the end of year 3 the inventories of these raw materials are to be:

M:	4,000 units
N:	2,000 units

The finance director advises that the rate of tax to be paid on profits during year 3 is likely to be 30 per cent. Selling and administration overhead is budgeted to be £75,000 in year 3, which includes £5,000 for depreciation of equipment.

A quarterly cash-flow forecast has already been completed and is set out below:

	1	*2*	*3*	*4*
Quarter, year 3	£	£	£	£
Receipts	196,000	224,000	238,000	336,000
Payments:				
Materials	22,000	37,000	40,000	60,000
Direct wages	100,000	110,500	121,000	117,000
Overhead	45,000	50,000	70,000	65,000
Taxation	5,000			
Machinery purchase			120,000	

The company's balance sheet at 1 January, year 3, is expected to be as follows:

	£ *Cost*	£ *Depreciation*	£ *Net*
Non current assets			
Land	50,000	–	50,000
Buildings and equipment	400,000	75,000	325,000
	450,000	75,000	375,000
Current assets			
Inventories			
– raw materials	20,000		
– finished goods	15,000		
		35,000	
Receivables		25,000	
Cash at bank		10,000	
		70,000	
Current liabilities			
Payables	9,000		
Taxation	5,000		
		14,000	
			56,000
			431,000
Financed by			
Share capital			350,000
Retained earnings			81,000
			431,000

You are required to prepare the company's budgets for year 3 including a budgeted income statement for the year and a balance sheet at 31 December, year 3.

Solution

Note the order in which the budgets are prepared. The sales budget determines production requirements, which in turn determines materials usage, which in turn determines materials purchases and then payments to suppliers. Since the sales budget is prepared first, sales are termed the principal (key) budget factor.

Sales budget for the year ended 31 December, year 3

	Alpha	*Beta*	*Total*
Sales volume	5,000	1,000	
Selling price	£182	£161	
Sales revenue	£910,000	£161,000	£1,071,000

Production budget for the year ended 31 December, year 3

	Alpha units	*Beta units*
Required by sales	5,000	1,000
Required closing inventory	150	150
	5,150	1,150
Less expected opening inventory	100	200
Production required	5,050	950

Raw materials usage budget for the year ended 31 December, year 3

	Materital M units	*Material N units*
Required by production of Alpha[1]	60,600	30,300
Required by production of Beta	11,400	7,600
Total raw material usage	72,000	37,900

Note 1: The material usage for Alpha is determined as follows:

	Units
Material M: 5,050 × 12	60,600
Material N: 5,050 × 6	30,300

The material requirements for Beta are calculated in the same way.

Raw materials purchases budget for the year ended 31 December, year 3

	Material M units	*Material N units*	*Total*
Raw materials required by production	72,000	37,900	
Required closing inventory	4,000	2,000	
	76,000	39,900	
Less expected opening inventory	3,000	4,000	
Quantity to be purchased	73,000	35,900	
Price per unit	£2	£3	
Value of purchases	£146,000	£107,700	£253,700

Direct labour budget for the year ended 31 December, year 3

	Labour hours	*Rate per hour* £	*Labour cost* £
Product Alpha – 5,050 units	35,350	10	353,500
Product Beta – 950 units	9,500	10	95,000
	44,850		448,500

Production cost budget: preliminary workings

$$\text{Production overhead absorption rate} = \frac{£200{,}000}{44{,}850} = £4.459 \text{ per labour hour}$$

Overhead absorbed by Alpha = 35,350 hours × £4.459 = £157,626
Overhead absorbed by Beta = 9,500 hours × £4.459 = £42,361

Production cost budget for the year ended 31 December, year 3

	Alpha £	*Beta* £
Direct materials		
– M[2]	121,200	22,800
– N	90,900	22,800
Direct wages	353,500	95,000
Production overhead	157,626	42,361
	723,226	182,961
Cost per unit (used for closing inventory valuation)	£143.21	£192.59

Note 2: The direct material cost for Alpha is determined as follows:

Material	*Usage (units)*	£
M	60,600 @ £2	121,200
N	30,300 @ £3	90,900

The material cost for Beta is calculated in the same way.

Cash budget for the year ended 31 December, year 3

Quarter	*1* £	*2* £	*3* £	*4* £
Receipts	196,000	224,000	238,000	336,000
Payments:				
Materials	22,000	37,000	40,000	60,000
Direct wages	100,000	110,500	121,000	117,000
Overhead	45,000	50,000	70,000	65,000
Taxation	5,000			
Machinery purchase			120,000	
Total payments	172,000	197,500	351,000	242,000
Net cash inflow/(outflow)	24,000	26,500	(113,000)	94,000
Balance b/fwd[3]	10,000	34,000	60,500	(52,500)
Balance c/fwd	34,000	60,500	(52,500)	41,500

Note 3: The balance b/fwd in quarter 1 is the cash at bank on the forecast balance sheet for 1 January, year 3.

Budgeted income statement for the year ended 31 December, year 3

	£	£
Revenue		1,071,000
Opening inventory of raw materials[4]	20,000	
Purchases of raw materials	253,700	
	273,700	
Closing inventory of raw materials[5]	14,000	
	259,700	
Direct wages	448,500	
Production overhead	200,000	
Production cost of goods completed	908,200	
Opening inventory of finished goods[4]	15,000	
	923,200	
Closing inventory of finished goods[5]	50,370	
Production cost of goods sold		872,830
Gross profit		198,170
Selling and administration overhead		75,000
Net profit before taxation		123,170
Taxation		36,951
		86,219
Retained earnings b/f		81,000
Retained earnings c/f		167,219

Note 4: The opening inventory figures for raw materials and finished goods are taken from the opening balance sheet.

Note 5: The closing inventories are calculated as follows:

	£
Raw materials:	
M: 4,000 × £2	8,000
N: 2,000 × £3	6,000
	14,000
Finished goods:	
Alpha: 150 × £143.21	21,481.50
Beta: 150 × £192.59	28,888.50
	50,370.00

Budgeted balance sheet at 31 December, year 3

	Cost	*Depreciation*	*Net*
	£	£	£
Non-current assets			
Land	50,000	–	50,000
Buildings and equipment[6]	520,000	105,000	415,000
	570,000	105,000	465,000
Current assets			
Inventories			
– raw materials	14,000		
– finished goods	50,370		
		64,370	
Receivables[7]		102,000	
Cash at bank		41,500	
		207,870	
Current liabilities			
Payables[8]	118,700		
Taxation	36,951		
		155,651	
			52,219
			517,219
Financed by			
Share capital			350,000
Retained earnings			167,219
			517,219

	£000
Note 6: Buildings and equipment	
Opening cost balance	400
Purchases during year	120
	520
Opening depreciation balance	75
Production depreciation	25
Selling depreciation	5
	105
Note 7: Receivables	
Opening balance	25
Sales	1,071
Receipts (cash budget)	(994)
	102

	£	£
Note 8: Closing payables balance		
Opening balance of payables		9,000
Material purchases from budget		253,700
Overhead, excluding depreciation:*		
Production		175,000
Selling and administration		70,000
		507,700
Less payments (from cash budget):		
Materials	159,000	
Overhead	230,000	
		389,000
Closing balance of payables		118,700

*The depreciation must be excluded from the overhead because it is not a cash item, i.e. it is not a payment which must be made to suppliers.

11.7 Rolling budgets

The CIMA *Terminology* defines a rolling budget as a 'budget continuously updated by adding a further accounting period (month or quarter) when the earliest accounting period has expired. Its use is particularly beneficial where future costs and/or activities cannot be forecast accurately'.

For example, a budget may initially be prepared for January to December, year 1. At the end of the first quarter, that is, at the end of March, year 1, the first quarter's budget is deleted. A further quarter is then added to the end of the remaining budget, for January to March, year 2. The remaining portion of the original budget is updated in the light of current conditions. This means that managers have a full year's budget always available and the rolling process forces them continually to plan ahead.

A system of rolling budgets is also known as *continuous budgeting*. Rolling budgets can be particularly useful when future events cannot be forecast reliably.

It is not necessary for all of the budgets in a system to be prepared on a rolling basis. For example, many organisations will use a rolling system for the cash budget only.

In practice, most organisations carry out some form of updating process on all their budgets, so that the budgets represent a realistic target for planning and control purposes. The formalised budgetary planning process will still be performed on a regular basis to ensure a coordinated approach to budgetary planning.

11.8 Budgets for non-operating functions

So far in this chapter, we have been concentrating mainly on budgets for operating functions. You have seen that once the principal budget factor has been identified and budgeted, most of the operating budgets can be linked to and coordinated with this one. The level of expenditure is thus directly linked to the level of activity.

Budgets for non-operating functions such as computer services, and research and development are only indirectly linked to activity levels. Determining the level of expenditure to be included in these non-operating budgets is not quite so straightforward.

11.8.1 Incremental budgeting

Many non-operating budgets are set using an incremental approach. This means that the budget for each period is based on the budget or actual results for the previous period, adjusting for any expected changes and inflation.

This approach is unlikely to result in the optimum allocation of resources. It tends to perpetuate inefficient and unnecessary practices, and may result in *budget slack*, which is unnecessary expenditure built into the budget.

11.8.2 Zero-based budgeting

Zero-based budgeting (ZBB) was developed as an alternative to the incremental approach.

The CIMA *Terminology* defines ZBB as a 'method of budgeting that requires all costs to be specifically justified by the benefits expected.'

Zero-based budgeting is so called because it requires each budget to be prepared and justified from zero, instead of simply using last year's budget or actual results as a base. Incremental levels of expenditure on each activity are evaluated according to the resulting incremental benefits. Available resources are then allocated where they can be used most effectively.

The major advantage of ZBB exercises is that managers are forced to consider alternative ways of achieving the objectives for their activity and they are required to justify the activities which they currently undertake. This helps to eliminate or reduce the incidence of *budget slack*, which is the intentional overestimation of expenses and/or underestimation of revenues in the budgeting process.

A detailed discussion of ZBB is outside the scope of your *Fundamentals of Management Accounting* syllabus, but you should be aware that there are a number of different approaches to budgetary planning.

11.9 Budgetary control information

You have now learned about the basic principles underlying the budgetary planning process. You have seen how budgets are created to guide and coordinate the activities of individuals within the organisation, to ensure that the organisation starts out in the right direction.

In the remainder of this chapter, you will see how budgets are used for control purposes to ensure that the organisation continues in the right direction.

Budgetary control is achieved by comparing the actual results with the budget. The differences are calculated as variances and management action may be taken to investigate and correct the variances if necessary or appropriate.

- If costs are higher or revenues are lower than the budget, then the difference is an adverse variance.
- If costs are lower or revenues are higher than the budget, then the difference is a favourable variance.

11.9.1 Budget centres

The CIMA *Terminology* defines a budget centre as a 'section of an entity for which control may be exercised through prepared budgets'.

Each budget centre is often a responsibility centre. Each centre will have its own budget and a manager will be responsible for managing the centre and controlling the budget. This manager is often referred to as the budget holder. Regular budgetary control reports will be sent to each budget holder so that they may monitor their centre's activities and take control action if necessary.

11.9.2 Budgetary control reports

If managers are to use the budgets to control effectively, they must receive regular control information.

The budgetary control reports should be:

(a) *Timely*. The information should be made available as soon as possible after the end of the control period. Corrective action will be much more effective if it is taken soon after the event, and adverse trends could continue unchecked if budgetary reporting systems are slow.

(b) *Accurate*. Inaccurate control information could lead to inappropriate management action. There is often a conflict between the need for timeliness and the need for accuracy. More accurate information might take longer to produce. The design of budgetary reporting systems should allow for sufficient accuracy for the purpose to be fulfilled.

(c) *Relevant to the recipient*. Busy managers should not be swamped with information that is not relevant to them. They should not need to search through a lot of irrelevant information to reach the part which relates to their area of responsibility. The natural reaction of managers in this situation could be to ignore the information altogether.

The budgetary reporting system should ideally be based on the *exception principle* which means that management attention is focused on those areas where performance is significantly different from budget. Subsidiary information could be provided on those items which are in line with the budget.

Many control reports also segregate controllable and non-controllable costs and revenues, that is, the costs and revenues over which managers can exercise control are highlighted separately in the reports from those over which they have no control.

A number of accounting packages have the facility to record actual and budget details against each account code for each budget centre. These may then be printed in the form of a report.

(d) *Communicated to the correct manager*. Control information should be directed to the manager who has the responsibility and authority to act upon it. If the information is communicated to the wrong manager its value will be immediately lost and any adverse trends may continue uncorrected. Individual budget holders' responsibilities must be clearly defined and kept up to date in respect of any changes.

11.10 Fixed and flexible budgets

When managers are comparing the actual results with the budget for a period, it is important to ensure that they are making a valid comparison. The use of flexible budgets can help to ensure that actual results are monitored against realistic targets.

11.10.1 Flexible budgets: an example

An example will demonstrate how flexible budgets may be used.

A company manufactures a single product and the following data show the actual results for costs for the month of April compared with the budgeted figures.

Operating statement for April

	Actual	*Budget*	*Variance*
Units produced	1,000	1,200	(200)
	£	£	£
Direct material	16,490	19,200	2,710
Direct labour	12,380	13,200	820
Production overhead	24,120	24,000	(120)
Administration overhead	21,600	21,000	(600)
Selling and distribution o/head	16,200	16,400	200
Total cost	90,790	93,800	3,010

Note: Variances in brackets are *adverse*.

Looking at the costs incurred in April, a cost saving of £3,010 has been made compared with the budget. However, the number of units produced was 200 less than budget so some savings in expenditure might be expected. It is not possible to tell from this comparison how much of the saving is due to efficient cost control, and how much is the result of the reduction in activity.

The type of budget being used here is a fixed budget. A fixed budget is one which remains unchanged regardless of the actual level of activity. In situations where activity levels are likely to change, and there is a significant proportion of variable costs, it is difficult to control expenditure satisfactorily with a fixed budget.

If costs are mostly fixed, then changes in activity levels will not cause problems for cost comparisons with fixed budgets.

A flexible budget can help managers to make more valid comparisons. It is designed to show the allowed expenditure for the actual number of units produced and sold. Comparing this flexible budget with the actual expenditure, it is possible to distinguish genuine efficiencies.

11.10.2 Preparing a flexible budget

Before a flexible budget can be prepared, managers must identify which costs are fixed and which are variable. The allowed expenditure on variable costs can then be increased or decreased as the level of activity changes. You will recall that fixed costs are those costs

which will not increase or decrease over the relevant range of activity. The allowance for these items will therefore remain constant.

We can now continue with the example.

Management has identified that the following budgeted costs are fixed:

	£
Direct labour	8,400
Production overhead	18,000
Administration overhead	21,000
Selling and distribution overhead	14,000

It is now possible to identify the expected variable cost per unit produced.

	Original budget (a)	*Fixed cost (b)*	*Variable cost (c) = (a) − (b)*	*V'ble cost per unit =(c)/1,200*
Units produced	1,200			
	£	£	£	£
Direct material	19,200	–	19,200	16
Direct labour	13,200	8,400	4,800	4
Production overhead	24,000	18,000	6,000	5
Administration overhead	21,000	21,000	–	–
Selling and distribution o/head	16,400	14,000	2,400	2
	93,800	61,400	32,400	27

Now that managers are aware of the fixed costs and the variable costs per unit it is possible to 'flex' the original budget to produce a budget cost allowance for 1,000 units produced.

The budget cost allowance for each item is calculated as follows:

$$\text{Cost allowance} = \text{Budgeted fixed cost} + (\text{number of units produced} \times \text{variable cost per unit})$$

For the costs that are wholly fixed or wholly variable, the calculation of the budget cost allowance is fairly straightforward. The remaining costs are semi-variable, which you will recall means that they are partly fixed and partly variable. For example, the budget cost allowance for direct labour is calculated as follows:

$$\text{Cost allowance for direct labour} = £8{,}400 + (1{,}000 \times £4) = £12{,}400$$

A full flexible budget can now be produced.

Flexible budget comparison for April

	Cost allowances				
	Fixed	*Variable*	*Total*	*Actual cost*	*Variance*
	£	£	£	£	£
Direct material	–	16,000	16,000	16,490	(490)
Direct labour	8,400	4,000	12,400	12,380	20
Production overhead	18,000	5,000	23,000	24,120	(1,120)
Administration overhead	21,000	–	21,000	21,600	(600)
Selling and distn. o/h	14,000	2,000	16,000	16,200	(200)
Total cost	61,400	27,000	88,400	90,790	(2,390)

Note: Variances in brackets are adverse.

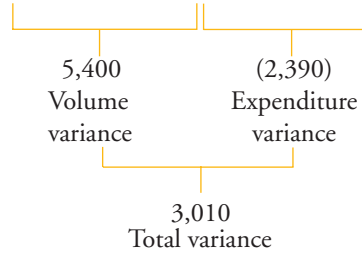
This revised analysis shows that in fact the cost was £2,390 higher than would have been expected from a production volume of 1,000 units.

The cost variances in the flexible budget comparison are almost all adverse. These overspendings were not revealed when a fixed budget was used and managers may have been under the false impression that costs were being adequately controlled.

11.10.3 The total budget variance

If we now produce a statement showing the fixed budget, the flexible budget and the actual results together, it is possible to analyse the total variance between the original budget and the actual results.

	Fixed budget	*Flexible budget*	*Actual results*	*Expenditure variances*
	£	£	£	£
Direct material	19,200	16,000	16,490	(490)
Direct labour	13,200	12,400	12,380	20
Production overhead	24,000	23,000	24,120	(1,120)
Administrative overhead	21,000	21,000	21,600	(600)
Selling and distribution overhead	16,400	16,000	16,200	(200)
	93,800	88,400	90,790	(2,390)



The total variance is therefore made up of two parts:

(1) the volume variance of £5,400 favourable, which is the expected cost saving resulting from producing 200 units less than budgeted;
(2) the expenditure variance of £2,390 adverse, which is the net total of the over- and under-expenditure on each of the costs for the actual output of 1,000 units.

Notice that the volume variance is the saving in standard variable cost: 200 units × £27 per unit = £5,400.

In Chapter 5, you learned how some of the expenditure variances can be analysed between their price and usage elements – for example, how much of the variance is caused by paying the wrong price per hour of labour (the labour rate variance), or per kilogram of material (the material price variance), and how much is caused by using the wrong quantity of material or labour (the usage and efficiency variances).

11.10.4 Using flexible budgets for planning

You should appreciate that while flexible budgets can be useful for control purposes they are not particularly useful for planning. The original budget must contain a single target level of activity so that managers can plan such factors as the resource requirements and the product pricing policy. This would not be possible if they were faced with a range of possible activity levels – although managers will of course consider a range of possible activity levels *before* they select the target budgeted activity level.

The budget can be designed so that the fixed costs are distinguished from the variable costs. This will facilitate the preparation of a budget cost allowance for control purposes at the end of each period, when the actual activity is known.

11.10.5 Flexible budgets: another example

Now that you have got the idea of how a flexible budget can be prepared, work through the following example to consolidate your understanding.

In this example, as in practice, you will need to investigate the cost behaviour patterns to determine which costs are fixed, which are variable and which are semi-variable.

The first step in investigating cost behaviour patterns is to look at the cost data. You should be able to easily spot any fixed costs because they remain constant when activity levels change.

The easiest way to identify the behaviour patterns of non-fixed costs is to divide each cost figure by the related activity level. If the cost is a linear variable cost, then the cost per unit will remain constant. For a semi-variable cost the unit rate will reduce as the activity level increases, because the same basic amount of fixed costs is being spread over a greater number of units.

You will then need to recall how to use the high–low method to determine the fixed and variable elements of any semi-variable costs. Look back to Chapter 1 if you have forgotten how the high–low method works.

Example

Lawrence Ltd operates a system of flexible budgets and the flexed budgets for expenditure for the first two quarters of year 3 were as follows:

Flexed budgets – quarters 1 and 2

	Quarter 1	*Quarter 2*
Activity		
Sales units	9,000	14,000
Production units	10,000	13,000
Budget cost allowances	£	£
Direct materials	130,000	169,000
Production labour	74,000	81,500
Production overhead	88,000	109,000
Administration overhead	26,000	26,000
Selling and distribution overhead	29,700	36,200
Total budget cost allowance	347,700	421,700

Despite a projected increase in activity, the cost structures in quarters 1 and 2 are expected to continue during quarter 3 as follows:

(a) The variable cost elements behave in a linear fashion in direct proportion to volume. However, for production output in excess of 14,000 units the unit variable cost for production labour increases by 50 per cent. This is due to a requirement for overtime working and the extra amount is payable only on the production above 14,000 units.
(b) The fixed cost elements are not affected by changes in activity levels.
(c) The variable elements of production costs are directly related to production volume.
(d) The variable element of selling and distribution overhead is directly related to sales volume.

You are required to prepare a statement of the budget cost allowances for quarter 3, when sales were 14,500 units and production was 15,000 units.

Solution

If you divide each cost figure by the relevant activity figure, you will find that the only wholly variable cost is direct material, at £13 per unit.

You can also see that the only wholly fixed cost is administration overhead since this is a constant amount for both activity levels, £26,000.

For the remaining costs you will need to use the high–low method to determine the fixed and variable elements.

Production labour

	Production, units	£
Quarter 2	13,000	81,500
Quarter 1	10,000	74,000
Change	3,000	7,500

$$\text{Variable cost per unit} = \frac{£7{,}500}{3{,}000} = £2.50 \text{ per unit}$$

$$\text{Fixed cost} = £81{,}500 - (£2.50 \times 13{,}000) = £49{,}000$$

Production overhead

	Production, units	£
Quarter 2	13,000	109,000
Quarter 1	10,000	88,000
Change	3,000	21,000

$$\text{Variable cost per unit} = \frac{£21{,}000}{3{,}000} = £7 \text{ per unit}$$

$$\text{Fixed cost} = £109{,}000 - (£7 \times 13{,}000) = £18{,}000$$

Selling and distribution overhead

Note that the example data says that selling and distribution overhead is related to sales volume.

	Sales, units	£
Quarter 2	14,000	36,200
Quarter 1	9,000	29,700
	5,000	6,500

$$\text{Variable cost per unit sold} = \frac{£6{,}500}{5{,}000} = £1.30 \text{ per unit}$$

$$\text{Fixed cost} = £36{,}200 - (£1.30 \times 14{,}000) = £18{,}000$$

We can now prepare a statement of the budget cost allowances for quarter 3.

	Quarter 3 Budget cost allowance	
	£	£
Direct material (15,000 units × £13)		195,000
Production labour:[1]		
Fixed	49,000	
Variable up to 14,000 units (14,000 × £2.50)	35,000	
Variable above 14,000 units (1,000 × £3.75)	3,750	
		87,750
Production overhead:		
Fixed	18,000	
Variable (15,000 × £7)	105,000	
		123,000
Administration overhead: fixed		26,000
Selling and distribution overhead:		
Fixed	18,000	
Variable (14,500 × £1.30)[2]	18,850	
		36,850
Total budget cost allowance		468,600

Note 1: The unit variable cost for production labour increases by 50 per cent for production over 14,000 units.

Note 2: The flexible budget allowance for selling and distribution overhead must be based on the sales volume of 14,500 units.

11.10.6 Extrapolating outside the relevant range

In the preceding example, you were told that the cost structures would remain unaltered despite the increase in activity. In practice, if you need to do a similar extrapolation outside the range for which you have available data, you should always state the assumption that the observed behaviour patterns will still be applicable.

11.10.7 Example: producing a flexible budget control statement

G Limited produces and sells a single product. The budget for the latest period is as follows.

	£
Sales revenue (12,600 units)	277,200
Variable costs	
Direct material	75,600
Direct labour	50,400
Production overhead	12,600
Fixed costs	
Production overhead	13,450
Other overhead	10,220
	162,270
Budget profit	114,930

The actual results for the period were as follows.

	£
Sales revenue (13,200 units)	303,600
Variable costs	
Direct material	78,350
Direct labour	51,700
Production overhead	14,160
Fixed costs	
Production overhead	13,710
Other overhead	10,160
	168,080
Actual profit	135,520

Required

Prepare a flexible budget control statement and comment on the results.

Solution

The budgeted sales revenue and the budget cost allowances for the variable costs are increased by a factor of 13,200/12,600 to derive the flexed budget for the actual activity achieved during the period. The budget cost allowance for the fixed costs remains unaltered.

Flexible budget control statement for the latest period

	Original budget	*Flexed budget*	*Actual results*	*Variance*
Activity (units)	12,600	13,200	13,200	
	£	£	£	£
Sales revenue	277,200	290,400	303,600	13,200
Variable costs				
Direct material	75,600	79,200	78,350	850
Direct labour	50,400	52,800	51,700	1,100
Production overhead	12,600	13,200	14,160	(960)
Fixed costs				
Production overhead	13,450	13,450	13,710	(260)
Other overhead	10,220	10,220	10,160	60
	162,270	168,870	168,080	790
Profit	114,930	121,530	135,520	13,990

Note: variances in brackets are adverse

Comments

1. The total budget variance can be analysed as follows.

	£	£
Sales volume variance* (£121,530 − £114,930)		6,600
Sales price variance	13,200	
Expenditure variance	790	
		13,990
Total budget variance (£135,520 − £114,930)		20,590

*You can calculate the sales volume variance separately as a check on the budget figures: increase in sales volume above budget × standard contribution per unit = (13,200 − 12,600) × £((277,200 − 75,600 − 50,400 − 12,600)/12,600) = 600 units × £11 standard contribution = £6,600 favourable

2. The favourable sales price variance indicates that a higher selling price than standard was charged for the units sold. Despite the higher price the sales volume achieved was higher than budgeted.
3. Expenditure on direct material, direct labour and other overhead costs was lower than the budget cost allowance for the activity level achieved. It is not possible to tell from the data provided whether the savings were achieved as a result of a lower price or a lower usage of resources.
4. Expenditure on production overhead costs, both fixed and variable, was higher than the budget cost allowance for the activity level achieved.

11.11 Using budgets as a basis for rewards

Budgets may be used as a basis for reward strategies for managers. In this situation, the budget acts as a target for achievement and the budget holder's success in meeting the budget might be rewarded by the payment of a bonus.

11.11.1 Example

The maintenance manager has a budget cost allowance each period based on the actual number of maintenance hours worked in the period. He is paid a bonus of 10% of any savings he achieves against the flexible budget cost allowance.

Budgeted fixed maintenance costs are £17,800 per period and the budgeted variable maintenance cost allowance is £14 per maintenance hour worked.

The number of maintenance hours worked in the latest period was 120 and the actual total maintenance cost incurred was £17,600.

Requirement

Calculate the amount of any bonus payable to the manager.

Solution

Flexible budget cost allowance = £17,800 + (£14 × 120 hours) =	£19,480
Actual maintenance cost incurred	£17,600
Savings achieved against the flexible budget cost allowance	£1,880

Bonus payable = 10% × £1,880 = £188

11.11.2 Factors to consider in the design of budget reward schemes

The potential to earn a bonus by the achievement of a budget target can create a powerful incentive for budget holders. However, a number of factors should be considered in the design of reward strategies.

- A flexible budget system should be used where appropriate so that the budget holder's performance is monitored against a realistic revenue and expenditure target for the actual level of activity achieved.
- Managers who are responsible for setting their own budgets in a participative budgeting system might set easy targets for themselves and build in budgetary slack in order to improve their chances of earning a bonus. If the targets are not realistic as a result of this budget padding then the budget will not be useful as a planning or control document.
- Managers who are aiming to achieve a bonus based on their short-term budget performance might be tempted to cut back on expenditure which is necessary for the longer-term strategy of the organisation, for example, training and development expenditure, that is, the budget reward system might encourage short termism.
- Managers might become demotivated if they fail to achieve their budget targets, and thus do not earn a bonus, due to factors which are outside their control. A manager should not be monitored against any budget target over which they are not able to exercise control.

Therefore a reward system based on the achievement of budget targets should be designed and operated with due regard for the possible impact on managers' behaviour.

11.12 Summary

Having read this chapter, the main points that you should understand are as follows.

1. A budget is a quantified plan of action relating to a given period of time. An organisation's annual budget is set within the framework of the long-term strategic plans.
2. The budget committee coordinates the preparation of budgets and issues the budget manual which provides information to those involved in the planning and control process.
3. The principal (key) budget factor is the factor which limits the activities of the organisation. The budget for the principal factor should be prepared first.
4. The master budget is the summary of all the functional budgets, usually including a budgeted income statement, balance sheet and cash flow statement.
5. Cash budgets allow for feedforward control by forewarning managers of the cash effect of all their planning decisions.
6. Rolling or continuous budgets are continuously updated by adding a further period when the earliest period has expired.
7. Incremental budgeting involves using the prior period's budget or actual results as a basis for the next year's budget. Zero-based budgeting begins each year's budget from scratch.
8. A fixed budget is prepared for a single activity level. A flexible budget is more useful for control because it recognises cost and revenue behaviour patterns and the budget cost allowance for each cost and revenue is designed to change as the volume of activity changes.
9. Budgets may be used as a basis for reward strategies for managers.

Revision Questions 11

Question 1 Multiple choice

1.1 When preparing a production budget, the quantity to be produced equals:

(A) sales quantity + opening inventory + closing inventory.
(B) sales quantity − opening inventory + closing inventory.
(C) sales quantity − opening inventory − closing inventory.
(D) sales quantity + opening inventory − closing inventory.

1.2 A job requires 2,400 actual labour hours for completion and it is anticipated that there will be 20 per cent idle time. If the wage rate is £10 per hour, what is the budgeted labour cost for the job?

(A) £19,200
(B) £24,000
(C) £28,800
(D) £30,000.

1.3 The term 'budget slack' refers to:

(A) the extended lead time between the preparation of the functional budgets and the master budget.
(B) the difference between the budgeted output and the breakeven output.
(C) the additional capacity available which can be budgeted for.
(D) the deliberate overestimation of costs and underestimation of revenues in a budget.

1.4 Of the four costs shown below, which would not be included in the cash budget of an insurance firm?

(A) depreciation of non-current assets
(B) commission paid to agents
(C) office salaries
(D) capital cost of a new computer.

1.5 The following details have been extracted from the receivables collection records of C Limited:

Invoice paid in the month after sale	60%
Invoice paid in the second month after sale	25%
Invoice paid in the third month after sale	12%
Bad debts	3%

Invoices are issued on the last day of each month.

Customers paying in the month after sale are entitled to deduct a 2 per cent settlement discount.
Credit sales values for June to September are budgeted as follows:

June	*July*	*August*	*September*
£35,000	£40,000	£60,000	£45,000

The amount budgeted to be received from credit sales in September is

(A) £47,280
(B) £47,680
(C) £48,850
(D) £49,480.

1.6 A flexible budget is:

(A) a budget which, by recognising different cost behaviour patterns, is designed to change as the volume of activity changes.
(B) a budget for a defined period of time which includes planned revenues, expenses, assets, liabilities and cash flow.
(C) a budget which is prepared for a period of one year which is reviewed monthly, whereby each time actual results are reported, a further forecast period is added and the intermediate period forecasts are updated.
(D) a budget of semi-variable production costs only.

1.7 The following extract is taken from the production cost budget of S Limited:

Production (units)	2,000	3,000
Production cost (£)	11,100	12,900

The budget cost allowance for an activity level of 4,000 units is

(A) £7,200
(B) £14,700
(C) £17,200
(D) £22,200.

1.8 A master budget comprises:

(A) the budgeted income statement.
(B) the budgeted cash flow, budgeted income statement and budgeted balance sheet.
(C) the budgeted cash flow.
(D) the entire set of budgets prepared.

1.9 A recent budgetary control report shows the following information:

	Fixed budget	*Flexible budget*	*Actual results*
	£	£	£
Total sales revenue	585,847	543,776	563,945
Total variable costs	440,106	418,482	425,072
Total contribution	145,741	125,294	138,873

The sales volume contribution variance for the period was:

(A) £6,868 adverse
(B) £13,579 favourable
(C) £20,447 adverse
(D) £42,071 adverse

1.10 Budgeted sales of product Y next period are 8,690 units. Each unit of product Y requires 8 kg of material Z. Budgeted inventories are as follows:

	Product Y	*Material Z*
	units	*kg*
Opening inventory	875	6,300
Closing inventory	920	6,180

The budgeted purchases of material Z, in kg, next period are:

(A) 8,615
(B) 69,280
(C) 69,760
(D) 69,880

Question 2 Short objective-test questions

2.1 *Tick the correct box.*
A participative budgeting system may also be described as a:

bottom-up budget ☐
top-down budget ☐

2.2 Which of the following items of information would be contained in the budget manual? (Tick all that are correct.)

(a) An organisation chart. ☐
(b) The timetable for budget preparation. ☐
(c) The master budget. ☐
(d) A list of account codes. ☐
(e) Sample forms to be completed during the budgetary process. ☐

2.3 Is the following statement *true* or *false?*
The principal budget factor is always the forecast sales volume.

True ☐
False ☐

2.4 Assuming that sales volume is the principal budget factor, place the following budgets in the order that they would be prepared in the budgetary planning process. Indicate the correct order by writing 1, 2, 3, etc. in the boxes provided.

☐ Sales budget
☐ Materials purchases budget
☐ Materials inventory budget

☐ Production budget
☐ Finished goods inventory budget
☐ Materials usage budget.

2.5 PR Ltd's cash budget forewarns of a short-term surplus. Which of the following would be appropriate actions to take in this situation? (Select all that are correct).

(a) Increase receivables and inventory to boost sales. ☐
(b) Purchase new non-current assets. ☐
(c) Repay long-term loans. ☐
(d) Pay suppliers early to obtain a cash discount. ☐

2.6 Each finished unit of product H contains 3 litres of liquid L. Ten per cent of the input of liquid L is lost through evaporation in the production process. Budgeted output of product H for June is 3,000 units. Budgeted inventories of liquid L are:

- Opening inventory, 1 June 1,200 litres
- Closing inventory, 30 June 900 litres

The required purchases of liquid L for June are ☐ litres.

2.7 *Tick the correct box.*
A system of budgeting whereby the budget is continuously updated by adding a further accounting period when the earliest accounting period has expired, is known as a system of:

rolling budgets ☐
incremental budgets ☐

2.8 The totals from KM Ltd's budgetary control report for February are as follows;

	Fixed budget	*Flexible budget*	*Actual results*
	£	£	£
Total sales revenue	124,310	135,490	134,580
Total variable costs	93,480	98,450	97,920
Total contribution	30,830	37,040	36,660

Complete the following table, ticking the box to indicate whether the variance is adverse or favourable.

	£	Adverse	Favourable
Sales price variance	☐	☐	☐
Sales volume contribution variance	☐	☐	☐
Total expenditure variance	☐	☐	☐
Total budget variance	☐	☐	☐

2.9 Which of the following best describes the principle of reporting by exception?

Sending budget reports only to those exceptional managers who are able to understand their content. ☐

Providing detailed reports only on those areas of the business that are performing exceptionally well and providing only subsidiary information about other areas of the business. ☐

Providing detailed reports only on those areas of the business that are not performing according to budget and providing only subsidiary information about aspects that are in line with budget. ☐

2.10 F Limited uses a flexible budgeting system to control the costs incurred in its staff canteen.

The budget cost allowance for consumable materials is flexed according to the average number of employees during the period.

Complete the following equation by inserting '+', '−' or '×' as appropriate in the boxes:

Flexible budget cost allowance for consumable materials	=	budgeted fixed cost	☐	(budgeted variable cost per employee	☐ average no. of employees)

2.11 The following extract is taken from the catering costs budget of a company that provides training courses.

Number of delegates	120	170
Catering cost	£1,470	£2,020

In a flexible budget for 185 delegates, the budget cost allowance for catering costs will be £ ☐

2.12 The distribution manager is paid a bonus of 5% of any savings he achieves against a flexible budget cost allowance for distribution costs each period.

The budget cost allowances for distribution costs for the previous two periods were as follows.

Tonnes distributed	*Budget cost allowance*
	£
11,200	118,400
16,100	152,700

In the latest period, the number of tonnes distributed was 13,200 and the distribution cost incurred was £130,900.

The bonus payable to the distribution manager for the period is £ ☐

? Question 3 Functional budgets

An ice cream manufacturer is in the process of preparing budgets for the next few months, and the following draft figures are available:

Sales forecast	
June	6,000 cases
July	7,500 cases
August	8,500 cases
September	7,000 cases
October	6,500 cases

Each case uses 2.5 kg of ingredients and it is policy to have inventories of ingredients at the end of each month to cover 50 per cent of next month's production.

There are 750 cases of finished ice cream in inventory on 1 June and it is policy to have inventories at the end of each month to cover 10 per cent of the next month's sales.

Requirements

(a) The production budget (in cases) for June and July will be:

June ☐
July ☐

(b) The ingredient purchases budget (in kg) for August will be ☐

? Question 4 Cash budget

A small manufacturing firm is to commence operations on 1 July. The following estimates have been prepared:

	July	*August*	*September*
Sales (units)	10	36	60
Production (units)	40	50	50
Opening inventory (units) NIL			

It is planned to have raw material inventories of £10,000 at the end of July, and to maintain inventories at that level thereafter.

Selling prices, costs and other information:

	Per unit
	£
Selling price	900
Material cost	280
Labour cost	160
Variable overheads	40

Fixed overheads are expected to be £5,000 per month, including £1,000 depreciation.

Settlement terms on sales: 10 per cent cash, the balance payable the month following sale. Labour is paid in the month incurred, and all other expenditures the following month.

Requirements

(a) The budgeted cash receipts from sales are:

July £ ☐
August £ ☐
September £ ☐

(b) The budgeted cash payments for raw materials are:

July £ ☐
August £ ☐
September £ ☐

(c) The total of the budgeted cash payments for labour and overhead in August is £ ☐.

(d) A cash budget can be used to give forewarning of potential cash problems that could arise so that managers can take action to avoid them. This is known as:

feedforward control ☐
feedback control ☐

(e) A cash budget is continuously updated to reflect recent events and changes to forecast events. This type of budget is known as a:

flexible budget ☐
rolling budget ☐

Question 5 Flexible budget

The Arcadian Hotel operates a budgeting system and budgets expenditure over eight budget centres as shown below. Analysis of past expenditure patterns indicates that variable costs in some budget centres vary according to occupied room nights (ORN), while in others the variable proportion of costs varies according to the number of visitors (V).

The budgeted expenditures for a period with 2,000 ORN and 4,300 V were as follows:

	Variable costs vary with:	*Budgeted expenditure*	*Partial cost analysis*
Budget centre		£	*Budget expenditure includes:*
Cleaning	ORN	13,250	£2.50 per ORN
Laundry	V	15,025	£1.75 per V
Reception	ORN	13,100	£12,100 fixed
Maintenance	ORN	11,100	£0.80 per ORN
Housekeeping	V	19,600	£11,000 fixed
Administration	ORN	7,700	£0.20 per ORN
Catering	V	21,460	£2.20 per V
General overheads	–	11,250	all fixed
		112,485	

In period 9, with 1,850 ORN and 4,575 V, actual expenditures were as follows:

Budget centre	*Actual expenditure*
	£
Cleaning	13,292
Laundry	14,574
Reception	13,855
Maintenance	10,462
Housekeeping	19,580
Administration	7,930
Catering	23,053
General overheads	11,325
	114,071

Requirements

(a) The total budget cost allowances for the following costs in the flexible budget for period 9 are:

	£
Cleaning	
Laundry	
Reception	
Maintenance	
Housekeeping	
General overheads	

(b) The total budget cost allowance in the flexible budget for period 9 is £113,521.

The total expenditure variance for period 9 is £ ☐. The variance is:

adverse ☐
favourable ☐

Solutions to Revision Questions 11

Solution 1

- In question 1.2 you cannot simply add 20 per cent to the actual labour hours to allow for the idle time. The idle time is 20 per cent of the hours to be paid for, so you will need to think more carefully about how to make the adjustment.
- In question 1.5 remember that the 3 per cent bad debts will never be received in cash.

1.1 Answer: (B)

Requirements for closing inventory increase the amount to be produced, so these must be added. The available opening inventory reduces production requirements, so this must be deducted.

1.2 Answer: (D)

Idle time is 20 per cent of the total hours to be paid for. Therefore, hours to be paid for = 2,400/0.8 = 3,000. Budgeted labour cost = 3,000 × £10 = £30,000.

1.3 Answer: (D)

A manager might build some slack into a budget to provide some 'leeway' to disguise unnecessary spending.

1.4 Answer: (A)

Depreciation is not a cash flow.

1.5 Answer: (D)

Amount to be received in September is:

	£
60% of August sales less 2% discount:	
£60,000 × 60% × 98%	35,280
25% of July sales: £40,000 × 25%	10,000
12% of June sales: £35,000 × 12%	4,200
	49,480

1.6 Answer: (A)

A flexible budget is designed to show the budgeted costs and revenues at different levels of activity.

1.7 Answer: (B)

Increase in cost	£1,800
Increase in production	1,000 units
Variable costs: £1,800/1,000	£1.80/unit
	£
Variable cost of 2,000 units	3,600
Total cost of 2,000 units	11,100
Fixed cost	7,500
Variable cost of 4,000 units	7,200
Fixed cost	7,500
	14,700

1.8 Answer: (B).

1.9 Answer: (C)

The sales volume contribution variance is the reduction in the budgeted contribution for the period.
Sales volume contribution variance = £(125,294 − 145,741) = £20,447 adverse

1.10 Answer: (C)

Product Y production budget	*Units*
Sales volume	8,690
Closing inventory	920
	9,610
Less opening inventory	875
Production required	8,735
Materials usage budget	*kg*
Production units 8,735 × 8 kg	69,880
Material Z purchases budget	*kg*
Required for production	69,880
Closing inventory	6,180
	76,060
Less opening inventory	6,300
Budgeted purchases	69,760

Solution 2

2.1 A participative budgeting system may also be described as a *bottom-up* budget.

2.2 (a), (b), (d) and (e) would be contained in a budget manual. The master budget (c) is the end result of the budgetary planning process.

2.3 *False*. The forecast sales volume will often be the principal budget factor or limiting factor, but this is not always the case.

2.4
1. Sales budget
2. Finished goods inventory budget
3. Production budget

4. Materials usage budget
5. Materials inventory budget
6. Materials purchases budget

2.5 (a) and (d) would be appropriate actions in this situation. Actions (b) and (c) would not be appropriate because they would involve investing the surplus funds for too long.

2.6

	Litres
Liquid L required for finished output (3,000 units × 3 litres)	9,000
Evaporation loss $\left(\times\frac{10}{90}\right)^{*}$	1,000
Total required input of liquid L	10,000
Less: reduction in inventory	300
Required purchases of liquid L	9,700

* evaporation loss is 10 per cent of *input*

2.7 A system of budgeting whereby the budget is continuously updated by adding a further accounting period when the earliest accounting period has expired is known as a system of *rolling budgets*. It is also known as a *continuous budgeting* system.

2.8

	£	
Sales price variance[1] £(134,580 − 135,490)	910	Adverse
Sales volume contribution variance[2] £(37,040 − 30,830)	6,210	Favourable
Expenditure variance[3] £(98,450 − 97,920)	530	Favourable
Total budget variance[4] £(36,660 − 30,830)	5,830	Favourable

Notes:

1. The sales price variance is the difference between the sales revenue that was achieved and the sales revenue that would be expected for the actual activity level that occurred (that is, the sales revenue in the flexible budget).
2. The sales volume contribution variance is the additional standard contribution that arose as a result of the change in the sales volume from the original budget.
3. The expenditure variance is the difference between the actual expenditure and the expenditure that would be expected for the actual activity achieved.
4. The total budget variance is the difference between the original budget contribution and the actual contribution achieved.

2.9 Exception reporting involves providing detailed reports only on those areas of the business that are not performing according to budget and providing only subsidiary information about aspects that are in line with budget. This ensures that management do not receive too much information and that their attention is focused where control action is most needed.

2.10 Flexible budget cost allowance for consumable materials = budgeted fixed cost ⊞ (budgeted variable cost per employee ⊠ average no. of employees)

2.11 In a flexible budget for 185 delegates the budget cost allowance for catering costs will be **£2,185**

Delegates	£
170	2,020
120	1,470
50	550

Variable catering cost per delegate = £550/50 = £11
Fixed catering cost = £2,020 − £(170 × 11) = £150
Budget cost allowance for 185 delegates = £150 + £(185 × 11) = £2,185.

2.12 The bonus payable to the distribution manager for the period is £75.

Tonnes distributed	*Budget cost allowance*
	£
11,200	118,400
16,100	152,700
4,900	34,300

Variable distribution cost per tonne delivered = £34,300/4,900 = £7
Fixed distribution cost = £118,400 − (11,200 × £7) = £40,000
Budget cost allowance for 13,200 tonnes delivered = £40,000 + (13,200 × £7)
= £132,400
Savings against budget cost allowance = £132,400 − £130,900
= 1,500
Bonus payable = 5% × £1,500 = £75

Solution 3

- Use a clear columnar layout for your budget workings. Although your workings will not earn marks, clear workings help you to avoid arithmetical errors because 100 per cent accuracy is vital.
- Do not forget to adjust for the budgeted movement in inventory in parts (a) and (b). A common error is to get the opening and closing inventory calculations the wrong way round.

(a) June: 6,000
July: 7,600
(b) August: 19,125

Workings:

Production budget (in cases)

	June	*July*	*August*	*September*
Cases to be sold	6,000	7,500	8,500	7,000
Closing inventory	(7,500 × 10%) 750	(8,500 × 10%) 850	(7,000 × 10%) 700	(6,500 × 10%) 650
Opening inventory	(750)	(750)	(850)	(700)
Production budget	6,000	7,600	8,350	6,950

Ingredients purchases budget (in kg)

		August
Quantity to be used in production	(8,350 × 2.5)	20,875
Quantity in closing inventory	(6,950 × 2.5 × 50%)	8,687.5
Quantity in opening inventory	(8,350 × 2.5 × 50%)	(10,437.5)
Ingredients purchases budget		19,125.0

Solution 4

- Remember to exclude depreciation from the fixed overhead figures. Depreciation is not a cash flow.
- Read the wording of the question carefully to determine the timing of each cash flow.

(a)

July	£900
August	£11,340
September	£34,560

Workings:

	£	£
July: 10% × (10 × £900)		900
August: 90% × July sales (10 × £900)	8,100	
10% × August sales (36 × £900)	3,240	
		11,340
September: 90% × August sales (36 × £900)	29,160	
10% × September sales (60 × £900)	5,400	
		34,560

(b)

July	£0
August	£21,200
September	£14,000

Workings:

Cash payments each month are for the previous month's purchases. Therefore, no payments are made in July.

	£	£
August: payment for July closing inventory	10,000	
payment for July usage (40 × £280)	11,200	
		21,200
September: payment for August usage (50 × £280)		14,000

(c) £13,600

Workings:

	£
August labour cost paid in month incurred (50 × £160)	8,000
July variable overhead cost paid in August (40 × £40)	1,600
Fixed overhead cash cost (£5,000 − £1,000 depreciation)	4,000
	13,600

(d) This is known as *feedforward* control.

(e) This type of budget is known as a *rolling* budget.

Solution 5

- A common error in this type of question is to calculate the expenditure variance (part (b)) by comparing the actual results with the budget supplied in the question. This is the budget for quite different activity levels, so the flexed budget should be used instead.

(a)

	£
Cleaning	12,875
Laundry	15,506
Reception	13,025
Maintenance	10,980
Housekeeping	20,150
General overheads	11,250

Workings:

	Activity (ORN/V)	*Variable cost per unit*	*Variable cost allowance*	*Fixed cost allowance*	*Total budget cost allowance*
		£	£	£	£
Cleaning	1,850	2.50	4,625	8,250[1]	12,875
Laundry	4,575	1.75	8,006	7,500[2]	15,506
Reception	1,850	0.50[3]	925	12,100	13,025
Maintenance	1,850	0.80	1,480	9,500[4]	10,980
Housekeeping	4,575	2.00[5]	9,150	11,000	20,150
General o/heads	–	–	–	11,250	11,250

1.

	£
Total budget cost allowance for 2,000 ORN	13,250
Less variable allowance (2,000 × £2.50)	5,000
Fixed cost allowance	8,250

2. £15,025 − (4,300 × £1.75) = £7,500

3.

	£
Total budget cost allowance for 2,000 ORN	13,100
Less fixed allowance	12,100
Variable cost allowance for 2,000 ORN	1,000
Variable cost allowance per ORN: £1,000 / 2,000	£0.50

4. £11,100 − (2,000 × £0.80) = £9,500
5. $\frac{(£19{,}600 - £11{,}000)}{4{,}300}$ = £2 per visitor

(b) £550 adverse

Workings:

	£	
Flexible budget expenditure	113,251	
Actual expenditure	114,071	
Expenditure variance	550	adverse