

Activity-based costing

The traditional methods of cost allocation, cost apportionment and absorption into products are being challenged by some writers who claim that much information given to management is misleading when these methods of dealing with fixed overheads are used to determine product costs.

Question IM 10.1 Intermediate

You are required to explain what is meant by *cost allocation*, *cost apportionment* and *absorption* and to describe briefly the alternative approach of *activity-based costing* in order to ascertain total product costs. (15 marks)

CIMA Stage 2 Cost Accounting

‘Attributing direct costs and absorbing overhead costs to the product/service through an activity-based costing approach will result in a better understanding of the true cost of the final output.’

Question IM 10.2 Intermediate

(Source: a recent CIMA publication on costing in a service environment.)

You are required to explain and comment on the above statement. (15 marks)

CIMA Stage 2 Cost Accounting

The basic ideas justifying the use of Activity Based Costing (ABC) and Activity Based Budgeting (ABB) are well publicised, and the number of applications has increased. However, there are apparently still significant problems in changing from existing systems.

Question IM 10.3 Advanced

Requirements:

- (a) Explain which characteristics of an organisation, such as its structure, product range, or environment, may make the use of activity based techniques particularly useful. (5 marks)
- (b) Explain the problems that may cause an organisation to decide not to use, or to abandon use of, activity based techniques. (8 marks)
- (c) Some categorisations of cost drivers provide hierarchical models:
 - (i) unit-level activities,
 - (ii) batch activities,
 - (iii) product sustaining activities,
 - (iv) facility sustaining activities.

Other analyses focus on ‘value adding’ and ‘non-value adding’ activities.

Requirement:

Explain what is meant by ‘non-value adding activities’, and discuss the usefulness of this form of analysis. (7 marks)

(Total 20 marks)

CIMA Stage 4 Management Accounting Control Systems

Question IM 10.4
Intermediate:
Calculation of
ABC product
costs and a
discussion of the
usefulness of
ABC

Trimake Limited makes three main products, using broadly the same production methods and equipment for each. A conventional product costing system is used at present, although an activity-based costing (ABC) system is being considered. Details of the three products for a typical period are:

	Hours per unit		Materials per unit £	Volumes Units
	Labour hours	Machine unit		
Product X	½	1½	20	750
Product Y	1½	1	12	1250
Product Z	1	3	25	7000

Direct labour costs £6 per hour and production overheads are absorbed on a machine hour basis. The rate for the period is £28 per machine hour.

- (a) You are required to calculate the cost per unit for each product using conventional methods. (4 marks)

Further analysis shows that the total of production overheads can be divided as follows:

	(%)
Costs relating to set-ups	35
Costs relating to machinery	20
Costs relating to materials handling	15
Costs relating to inspection	30
Total production overhead	<u>100%</u>

The following activity volumes are associated with the product line for the period as a whole.

Total activities for the period:

	Number of set-ups	Number of movements of materials	Number of inspections
Product X	75	12	150
Product Y	115	21	180
Product Z	<u>480</u>	<u>87</u>	<u>670</u>
	<u>670</u>	<u>120</u>	<u>1000</u>

You are required

- (b) to calculate the cost per unit for each product using ABC principles; (15 marks)
(c) to comment on the reasons for any differences in the costs in your answers to (a) and (b). (3 marks)

(Total 22 marks)

CIMA Stage 3 Management Accounting Techniques

Duo plc produces two products A and B. Each has two components specified as sequentially numbered parts i.e. product A (parts 1 and 2) and product B (parts 3 and 4). Two production departments (machinery and fitting) are supported by five service activities (material procurement, material handling, maintenance, quality control and set up). Product A is a uniform product manufactured each year in 12 monthly high volume production runs. Product B is manufactured in low volume customised batches involving 25 separate production runs each month. Additional information is as follows:

Question IM 10.5
Advanced:
Comparison of
traditional
product costing
with ABC

	Product A	Product B
Production details:		
Components	Parts 1, 2	Parts 3, 4
Annual volume produced	300 000 units	300 000 units
Annual direct labour hours:		
Machinery department	500 000 DLH	600 000 DLH
Fitting department	150 000 DLH	200 000 DLH

Overhead Cost Analysis^a

	(£000s)
Material handling	1 500
Material procurement	2 000
Set-up	1 500
Maintenance	2 500
Quality control	3 000
Machinery (machinery power, depreciation etc.) ^b	2 500
Fitting (machine, depreciation, power etc.) ^b	2 000
	<u>15 000</u>

^a It may be assumed that these represent fairly homogeneous activity-based cost pools.

^b It is assumed these costs (depreciation, power etc.) are primarily production volume driven and that direct labour hours are an appropriate surrogate measure of this.

Cost Driver Analysis

	Annual Cost Driver Volume per Component			
Cost Driver	Part 1	Part 2	Part 3	Part 4
Material movements	180	160	1 000	1 200
Number of orders	200	300	2 000	4 000
Number of set-ups	12	12	300	300
Maintenance hours	7 000	5 000	10 000	8 000
Number of inspections	360	360	2400	1 000
Direct labour hours	150 000	350 000	200 000	400 000
Direct labour hours	50 000	100 000	60 000	140 000

You are required to compute the unit costs for products A and B using (i) a traditional volume-based product costing system and (ii) an activity-based costing system.

(Adapted from Innes, J. and Mitchell, F., *Activity Based Costing: A Review with Case Studies*, Chartered Institute of Management Accountants, 1990)

Question IM 10.6
Advanced:
Profitability
analysis using
ABC as traditional
cost allocation
bases

ABC plc, a group operating retail stores, is compiling its budget statements for the next year. In this exercise revenues and costs at each store A, B and C are predicted. Additionally, all central costs of warehousing and a head office are allocated across the three stores in order to arrive at a total cost and net profit of each store operation.

In earlier years the central costs were allocated in total based on the total sales value of each store. But as a result of dissatisfaction expressed by some store managers alternative methods are to be evaluated.

The predicted results before any re-allocation of central costs are as follows:

	A (£000)	B (£000)	C (000)
Sales	5000	4000	3000
Costs of sales	<u>2800</u>	<u>2300</u>	<u>1900</u>
Gross margin	2200	1700	1100
Local operating expenses			
Variable	660	730	310
Fixed	<u>700</u>	<u>600</u>	<u>500</u>
Operating profit	<u>840</u>	<u>370</u>	<u>290</u>

The central costs which are to be allocated are:

	(£000)
Warehouse costs:	
Depreciation	100
Storage	80
Operating and despatch	120
Delivery	300
Head office:	
Salaries	200
Advertising	80
Establishment	<u>120</u>
Total	<u>1000</u>

The management accountant has carried out discussions with staff at all locations in order to identify more suitable 'cost drivers' of some of the central costs. So far the following has been revealed.

	A	B	C
Number of despatches	550	450	520
Total delivery distances (thousand miles)	70	50	90
Storage space occupied (%)	40	30	30

1. An analysis of senior management time revealed that 10% of their time was devoted to warehouse issues with the remainder shared equally between the three stores.
2. It was agreed that the only basis on which to allocate the advertising costs was sales revenue.
3. Establishment costs were mainly occupancy costs of senior management.

This analysis has been carried out against a background of developments in the company, for example, automated warehousing and greater integration with suppliers.

Required:

- (a) As the management accountant prepare a report for the management of the group which:
 - (i) Computes the budgeted net profit of each store based on the *sales value* allocation base originally adopted and explains 'cost driver', 'volume' and

- 'complexity' issues in relation to cost allocation commenting on the possible implications of the dissatisfaction expressed. (6 marks)
- (ii) Computes the budgeted net profit of each store using the additional information provided, discusses the extent to which an improvement has been achieved in the information on the costs and profitability of running the stores and comments on the results. (11 marks)
- (b) Explain briefly how regression analysis and coefficient of determination (r^2) could be used in confirming the delivery mileage allocation method used in (a) above. (3 marks)
- (Total 20 marks)
- ACCA Paper 8 Managerial Finance

Excel Ltd make and sell two products, VG4U and VG2. Both products are manufactured through two consecutive processes – making and packing. Raw material is input at the commencement of the making process. The following estimated information is available for the period ending 31 March:

Question IM 10.7
Advanced: Unit cost computation based on traditional and ABC systems

(i)	Making (£000)	Packing (£000)
Conversion costs:		
Variable	350	280
Fixed	210	140

40% of fixed costs are product specific, the remainder are company fixed costs. Fixed costs will remain unchanged throughout a wide activity range.

(ii) Product information:	VG4	UVG2
Production time per unit:		
Making (minutes)	5.25	5.25
Packing (minutes)	6	4
Production sales (units)	5000	3000
Selling price per unit (£)	150	180
Direct material cost per unit (£)	30	30

- (iii) Conversion costs are absorbed by products using estimated time based rates.

Required:

- (a) Using the above information,
- (i) calculate unit costs for each product, analysed as relevant. (10 marks)
- (ii) comment on a management suggestion that the production and sale of one of the products should not proceed in the period ending 31 March. (4 marks)
- (b) Additional information is gathered for the period ending 31 March as follows:
- (i) The making process consists of two consecutive activities, moulding and trimming. The moulding variable conversion costs are incurred in proportion to the temperature required in the moulds. The variable trimming conversion costs are incurred in proportion to the consistency of the material when it emerges from the moulds. The variable packing process conversion costs are incurred in proportion to the time required for each product. Packing materials (which are part of the variable packing cost) requirement depends on the complexity of packing specified for each product.
- (ii) The proportions of product specific conversion costs (variable and fixed) are analysed as follows:
- Making process: moulding (60%); trimming (40%)
- Packing process: conversion (70%); packing material (30%)

- (iii) An investigation into the effect of the cost drivers on costs has indicated that the proportions in which the total product specific conversion costs are attributable to VG4U and VG2 are as follows:

	VG4U	VG2
Temperature (moulding)	2	1
Material consistency (trimming)	2	5
Time (packing)	3	2
Packing (complexity)	1	3

- (iv) Company fixed costs are apportioned to products at an overall average rate per product unit based on the estimated figures.

Required:

Calculate amended unit costs for each product where activity based costing is used and company fixed costs are apportioned as detailed above. (12 marks)

- (c) Comment on the relevance of the amended unit costs in evaluating the management suggestion that one of the products be discontinued in the period ending 31 March. (4 marks)

- (d) Management wish to achieve an overall net profit margin of 15% on sales in the period ending 31 March in order to meet return on capital targets.

Required:

Explain how target costing may be used in achieving the required return and suggest specific areas of investigation. (5 marks)

(Total 35 marks)

ACCA Paper 9 Information for Control and Decision Making