

# Activity-based costing

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01 Aug 2000

The Level C, Module C2 unit “Information for Management” includes in its objectives: analyse financial data for management control purposes, and part of the content makes reference to activity-based costing.

Students of management accounting are faced with a whole new language which surrounds costing and managerial finance methods and techniques. Terms such as cost and value management; cost reduction, value analysis, quality assurance processes and activity based costing all add to the students’ financial vocabulary.

In this paper I wish to focus on activity-based costing or as it is more commonly referred to ‘ABC’. This technique re-examines the problem that has faced accountants and accounting technicians for decades — that of the allocation and absorption of overhead.

Traditional pricing method has been based upon absorption costing principles and the treatment of overhead usually followed a set procedure:

- cost centres are identified and established within the business;
- cost centres may be producing or service centres;
- wherever possible a direct charge is made to a cost centre i.e., allocated overhead;
- where overhead is jointly incurred, it is apportioned to the cost centres on some equitable base;
- the overhead cost for the service centre is then transferred to producing centres;
- the total overhead cost for each producing centre is then divided by, for example, machine or labour hours per cost centre;
- overhead recovery rates are then determined;
- these are then used to absorb the overhead to products;
- in the short-run, if planned activity levels are actually achieved, then overhead may be fully recovered.

Such techniques may be used successfully where there is a limited product range and predetermined rates are well planned on achievable production volumes.

## Case study

Cuecraft is an SME which manufactures high quality snooker and pool cues. For a number of years the accountant has dealt with the recovery of overhead in a traditional manner following the procedure outlined earlier.

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The business has three major producing cost centres; Machining, Finishing and Packing.

The process of allocation and apportionment for period end March 2000 had been complete and the predetermined figures were:

| Cost centre                                         | Machining | Finishing | Packing |
|-----------------------------------------------------|-----------|-----------|---------|
| Overhead                                            | £70,000   | £27,500   | £15,000 |
| Machine hours                                       | 13,000    | 6,250     |         |
| Direct labour hours                                 |           |           | 3,250   |
| Overhead recovery rates per m'c hour or labour hour | £5.38     | £4.40     | £4.62   |

A new product 'Davis' is estimated to take the following standard hours to produce per unit:

|           |                            |
|-----------|----------------------------|
| Machining | 3.00                       |
| Finishing | 1.50                       |
| Packing   | <u>0.25</u>                |
|           | <u>4.75</u> standard hours |

The accounting technician and the production manager agree the following predetermined standard costs per unit:

Direct Material £16.00.

Direct Labour:

|           |                                                                           |
|-----------|---------------------------------------------------------------------------|
| Machining | 3.00 hours                                                                |
| Finishing | 1.50 hours                                                                |
| Packing   | <u>0.25</u> hours                                                         |
|           | @ £7 per hour (all direct production operatives are paid £7/hr) = £33.25. |

4.75 Thus, the production cost of one unit based on traditional method would be:

|                                   |              |
|-----------------------------------|--------------|
|                                   | £            |
| Direct material                   | 16.00        |
| Direct labour                     | <u>33.25</u> |
| Prime cost                        | <u>49.25</u> |
| Production overhead:              |              |
| Machining 3.00 m'c hrs x £5.38    | 16.14        |
| Finishing 1.50 m'c hrs x £4.40    | 6.60         |
| Packing 0.25 labour hours x £4.62 | <u>1.16</u>  |

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|                 |               |
|-----------------|---------------|
|                 | <u>23.90</u>  |
| Production cost | <u>£73.15</u> |

However, in the more sophisticated business with flexible and rapidly changing product ranges, traditional techniques have proved in certain cases to be less than adequate.

Activity Based Costing or ABC offers a workable and more effective insight into overhead accounting.

A definition of ABC taken from *CIMA Terminology of Financial and Management Accounting*, reads: “Cost attribution to cost units on the basis of benefits received from indirect activities — for example: ordering, setting up and assuring quality”.

Writers such as Bromwich and Bhimani have for example, introduced the term “activity-based accounting” and define this as, “an examination of activities across the entire chain of value adding organisational processes underlying causes or drivers of cost and profit”. Such a mechanism forces managers to justify the purpose of all activities within an organisation.

Writers suggest that ABC was first used in the US in the early 1960s. The early US experience centred on the allocation of selling and distribution cost.

Most texts agree that Cooper and Kaplan brought the ABC technique to the fore; and have shaped the framework and influenced its use by practitioners.

Research suggests that particularly in the UK, ABC is not widely used. Some management have very little knowledge of the technique and others feel it is far too “expensive an exercise” to implement. As they perceive the cost to outweigh the ‘value added’ i.e., the benefit from the system.

In a recent analysis of NHS Trusts it was found that the technique is being used in a number of functions.

ABC, as with other techniques, has its own terminology.

Terms such as ‘Activity’, ‘Cost Driver’, ‘Cost Pool’, and ‘Cost Driver Rate’ all have particular meaning.

An activity is defined as “a value adding process which consumes resources”.

A cost driver is “an activity or factor which generates cost”, for example, in the NHS a cost driver could be number of patients through the activity — out patients reception”.

A cost pool is the “pooling of overhead cost which relates to a specific activity”.

For example, the overheads associated with the inspection process in quality assurance would together form a “cost pool”.

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Finally a cost driver rate is the product of dividing the cost pool for the activity by the cost driver volume — this, for example, could be the total of the cost pool for inspection divided by the number of inspections planned.

The application of ABC involves a set procedure:

- Accounting for and collection of overhead via control accounts.
- Allocation of overhead to form cost pools associated with ‘value adding’ activities.
- Identification of cost drivers and cost driver volume.
- Determination of cost driver rates i.e., pool/driver volume.
- Recovery and charging of overhead to product/ service based upon the demand for the activity.

The following case example illustrates the procedure and use of the terminology and method described earlier.

Continuing with the Cuecraft Case Study, the accounting technician and the production manager have recently analysed its value added processes and identified various activities, cost drivers within those activities and current volumes across the producing unit as whole;and decide to apply ABC method.

#### **Budget plan quarter end March 2000**

| <b>Activity</b>        | <b>Cost Pool</b> | <b>Cost Driver Volume</b>     |
|------------------------|------------------|-------------------------------|
|                        | £                |                               |
| 1 Process set up       | 37,500           | 100 set ups                   |
| 2 Material procurement | 9,000            | 50 purchase orders            |
| 3 Maintenance          | 10,000           | 10 standard maintenance plans |
| 4 Material handling    | 22,500           | 2,000 material movements      |
| 5 Quality control      | 20,500           | 250 inspections               |
| 6 Order processing     | <u>13,000</u>    | 300 customers                 |
|                        | <u>£112,500</u>  |                               |

The cost pool driver rates are determined as follows:

- 1  $\text{£}37,500/100 = \text{£}375$  per set up
- 2  $\text{£}9,000/50 = \text{£}180$  per purchase order
- 3  $\text{£}10,000/10 = \text{£}1,000$  per planned maintenance cycle
- 4  $\text{£}22,500/2,000 = \text{£}11.25$  per movement
- 5  $\text{£}20,500/250 = \text{£}82$  per inspection
- 6  $\text{£}13,000/300 = \text{£}43.33$  per customer

The business has a number of products, one of which is the new product ‘Davis’. In the budget

period ended March 2000 it plans to produce 800 'Davis' cues. To achieve this level of output it will require the following activity demand:

- 4 set ups
- 4 purchase orders
- 2 standard maintenance plans
- 100 material movements
- 70 inspections
- 8 sales customers

Using ABC technique we find:

|                      |              | £              |
|----------------------|--------------|----------------|
| Set up               | £375 x 4     | = 1,500        |
| Material procurement | £180 x 4     | = 720          |
| Maintenance          | £1,000 x 2   | = 2,000        |
| Material handling    | £11.25 x 100 | = 1,125        |
| Quality control      | £82 x 70     | = 5,740        |
| Order processing     | £43.33 x 8   | = 347          |
|                      |              | <u>£11,432</u> |

Thus, overhead cost per unit = £11,432/800 = £14.29.

Here we can see that when associated with cost pools and identified to the activities which drive cost, shows an overhead unit cost of £14.29.

Production cost of one unit of output using ABC as the basis of recovering the overhead shows:

|                     | £                              |
|---------------------|--------------------------------|
| Prime cost as above | 49.25 (see earlier case study) |
| Production overhead | <u>14.29</u>                   |
| Production cost     | <u>£63.54</u>                  |

To compare and contrast the effect of both methods of overhead recovery on the total product range, Cuecraft would need to examine fully the cost driver volume across its "value adding activities" and their influence on budgeted product mix.

Some writers would argue that compared with traditional approach to overhead allocation, apportionment and absorption, ABC generates improved or more accurate product costs – however, recent research suggests that by improving the quality of cost and management accounting information, it also provides managers with a wider understanding of the economies of production and those resource consuming activities which when linked to labour and capital provide the wealth we know as "value added".

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It is hoped that the reader now has a better understanding of the ABC technique and may see the relevance and opportunity of its application to their own business environment.

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