

MANAGEMENT ACCOUNTING – PERFORMANCE EVALUATION

Ian Herbert considers the effects of increased investments in capital equipment and lower direct labour content on standard costing.

May 2006's P1 exam had the question:

"Briefly discuss three reasons why standard costing may not be appropriate in a modern business environment." But what is meant by "modern" and what should we be comparing it with? And what are the implications for management accounting? To answer these questions, first it helps to look back in history.

Manufacturing was a modest affair before the 18th century, with activity centred on cottage industries. (Of course, you'd be justified in saying: "Hang on: what about the great cathedrals?") Such projects employed vast numbers of labourers and artisans on one site for years, which shows that in real life things are complex and progress isn't always linear – often we can talk only of general trends.) Then the British industrial revolution heralded key technological advances – for example, the harnessing of water by Richard Arkwright to power machines in cotton mills. The nature of the technology necessitated the concentration of activity on single sites and a specialisation of skills. Arkwright's mills were a complete departure from the traditional, craft approach and would have been described as "modern" in his day. Now we might think of a factory full of robots as "modern" and a typical eighties car factory would be seen as traditional – even old-fashioned. So "modern" is a relative term.

In time, factory work processes became more formal and intensive. The

most striking example was Ford's production lines at Baton Rouge in the early 20th century. The emphasis was on producing standardised, affordable consumer goods. Product specialisation and the division of labour meant that factories became more dehumanised and there was antagonism between workers and managers, although Ford paid quite good wages. This discontent manifested itself in strikes and poor-quality goods. The School of Scientific Management reinforced the scrutiny of activity at a micro level, resulting in further standardisation and measurement. This facilitated the widespread use of standard costing, which also required a stable environment with long batch runs and relatively few model changes. Setting standards for the future, typically up to a year ahead, was now possible and, even in large factories, costs could be controlled on a "management by exception" basis.

While these developments were radical, management accounting evolved slowly. Initially it was restricted to product costing for the purposes of controlling costs and valuing stock for profit-reporting purposes rather than setting selling prices. When CIMA was formed in 1919 it was called the Institute of Cost and Works Accountants; supporting management decision-making is a more recent role.

From 1945 to about 1980, consumer demand often outstripped capacity, so manufacturers prospered with a level of inefficiency that would

be unthinkable today. Then Japanese factories started making high-quality goods at incredibly low cost. At first, western firms assumed Japan's labour costs were far lower. When it became clear that Japan's edge came from new approaches to production, it was too late for many to adapt. Academics Thomas Johnson and Robert Kaplan argued that "remote control" management and the supporting accounting techniques had contributed to western firms' inefficiency – eg, an overreliance on simplistic plant-wide overhead absorption rates, especially when these were based on direct labour. Their 1987 book *Relevance Lost* (Harvard Business School Press) outlines the evolution of management accounting within the wider context of industrial development. It provides a valuable background against which to appreciate later advances in accounting.

Before we fast-forward to the present, let's review what we now refer to as traditional manufacturing. In the eighties most industries were mechanised, although the equipment required constant maintenance. Machines broke down, forcing firms to hold large stocks of work in progress at each stage of manufacture to keep production flowing.

It was also widely assumed that all factory workers were lazy – typical of Douglas McGregor's theory-X orientation – responding only to "carrot and stick" control. Those who did repetitive tasks tended to be on low basic wages, with the bulk of their pay in piecework payments or other production-based bonuses. Faster workers earned higher wages even if they turned out more rejects than their colleagues. But everyone earned more when the order book was full and less when times were harder. So labour could be seen as a variable cost, at least within the organisation's relevant range. It was relatively easy to relate most labour cost directly to units of production and direct labour was an adequate basis for attributing general overheads – people create cost because they need supervision, light, etc.

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More recently, manufacturing has been through a second revolution based on new computer-controlled machinery, information technology and working practices. Globalisation has intensified competition and consumers have become more discerning, which means that less-efficient manufacturers must adapt or face extinction.

Let's consider the key features of a modern manufacturing environment in terms of technology and the physical organisation of production processes.

- Machinery can operate at speeds unimaginable only a few years ago while maintaining high quality. Leading manufacturers talk about reject rates in parts per million rather than in percentages. Many computer-based machines undertake self-diagnosis and adjust their own settings, making breakdowns much rarer and thereby reducing the need for human intervention.
 - Modern machinery can also be very flexible. One machine can be programmed to choose from a range of tools and do the tasks of several previous machines. Sometimes a group of such machines are linked in a self-contained manufacturing cell, with an operating system moving parts among them. As an everyday example, think of the office photocopier. A few years ago it would simply make a black-and-white image on separate sheets of paper, jamming frequently. A modern copier can print in colour and collate, hole-punch and staple many sheets into booklets – reliably. Their makers now describe them as “document solutions”.
 - Modern factories employ far fewer workers than was usual even 20 years ago. Many can now operate on a “lights out” basis with few, or even no, people around.
 - Manufacturers are moving to purpose-built factories where work can be organised on flow-line principles under one roof, rather than in a collection of smaller buildings that have grown up over time. This reduces the cost of transporting work in progress from one location to another.
- We can now see why the use of standard costing is being challenged. Product ranges are expanding and life-cycles are shortening from years to months or even weeks. This means that setting standards is hard without adequate running history and that the identification of variances uses historical data

that often has little relevance to current and future problems. Costs such as labour, which managers might be expected to have control over, are falling as a proportion of total cost, while fixed overheads (largely uncontrollable once an investment has been made) are rising. As a result, cost control is often less important for managers than achievements such as faster model changeovers, quality improvements and stock reductions.

A firm's cost structure is the relationship between its variable and fixed costs (also referred to as operational gearing/leverage). When direct labour is reduced through improved equipment and facilities, variable costs fall but fixed costs rise. This has two effects. First, the break-even point increases, reducing the margin of safety. Second, with both higher total overhead and a smaller direct labour content, the task of absorbing overhead on to cost units becomes problematic. Furthermore, if a firm is competing to retain skilled workers by paying fixed salaries rather than piece rates, and by offering permanent contracts rather than employing contingent workers, then the cost structure will become even more fixed and less responsive to variations in activity. Small differences in the direct labour of individual product lines will distort the total cost of those lines, potentially leading to unsuitable selling prices or, worse still, the discontinuance of profitable lines. Also, if product costs are inaccurate, this can affect the valuation of stock and have consequences for profit reporting when the product mix changes between individual accounting periods.

One solution is to use another measure such as machine time, but this can also be misleading. Perhaps the machine is complicated to adjust between models and the production cost is more a function of the length of the batch run. Activity-based costing can help us to understand such cost behaviour and produce more accurate figures, but it's time-consuming and expensive. If short batch runs are a feature of your market and you have little control over the selling price, then such extra information is unlikely to tell you much.

Marginal costing might seem an attractive solution to problems attributing overheads to cost units, but a firm still has to recover sufficient contribution to cover its fixed costs and generate a satisfactory profit. If a greater proportion of costs are fixed, the danger of

focusing only on the variable cost when setting prices in highly competitive situations is exacerbated. While seemingly lower product costs (comprising only variable costs) provide alternative insights, marginal costing does not reduce the overall cost. Another approach is throughput, or super-variable, costing. This seeks to optimise capacity utilisation by treating all costs apart from materials as fixed, such that the cost of bottleneck processes can be identified and, where possible, resolved cost-effectively.

As I mentioned earlier, there's a danger in assuming that organisational developments proceed in a strictly linear way. Let's return to that point about labour becoming a fixed cost. For core employees this is now largely true, but in order to balance out their cost structure many firms now augment their core staff with casual workers, whose wages can be more easily attuned to activity levels. Of course, they will charge higher rates to compensate for their lack of permanent employment status, but it still suits many firms to keep a more flexible cost structure.

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Exam practice

Try the following question to test your understanding. The answer is in the next issue of CIMA's new student e-magazine, *Velocity* (www.cimaglobal.com/velocity).

Sherwin Ltd is about to make a big investment in capital equipment to automate its factory, which makes a range of pet accessory products. The new computer-controlled machinery will allow the direct labour force to be reduced substantially. The UK market has recently become more competitive owing to an influx of cheap imported goods, although the company still has good relationships with several large supermarkets and numerous wholesalers supplying independent retailers.

You are required to explain to the management the likely implications for:

- (a) The company's cost structure and product pricing.
- (b) Management control and performance measurement.