

# *Variance Accounting* *Ernest Laidler*

Published in association with the  
Institute of Cost and Management Accountants

# Variance Accounting

**Ernest Laidler, F.C.M.A.**

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## **PART ONE**

# **Measurement of Costs and Profit**





## INTRODUCTION

# The Profit Motive in Industry

### *The nature of our society*

Industry is an important feature of society in the highly developed parts of the world including the United Kingdom. Aided by technological advances it aims at progressive improvements in living standards through mass production. Basically, human effort is applied to —

- (a) the procurement and cultivation of natural resources through mining, agriculture, etc.,
- (b) the conversion of natural resources into commodities which directly or indirectly give greater consumer satisfaction,
- (c) the effective distribution of natural resources and commodities, and
- (d) the provision of services such as security, communications, entertainments, etc.

### *Capital*

A progressive society produces more wealth than it consumes and there accumulates an ever-increasing mass of equipment and facilities (i.e. capital) which augment human effort in the production of further wealth. The owners of such capital make it available to projects carrying varying potentialities of success or failure. Many projects prosper but, unfortunately, some do not, in which case the applied savings are lost.

### *Prices*

The exchange values of commodities and services are expressed in terms of money and, ideally, added values resulting from applications of

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human effort, capital and enterprise should provide fair rewards to all concerned. Tragically, however, the distribution of wealth has long been and continues to be a field of conflict which, in itself, seriously restricts the further creation of wealth.

### ***Ownership and profit***

Industry in the United Kingdom is owned partly privately and partly by the State. Private enterprises must earn profit in order to survive. Whilst the same does not necessarily apply to nationalised industries, their performances are measured in terms of profit or loss and the national interest is much better served by profit than by losses. Industrial managers must therefore strive to maximise profit in relation to employed capital.

### ***Information for management***

Modern industries are complex and managers require a considerable amount of information concerning the activities for which they are responsible. As to the nature of individual organisations there is considerable diversity within each industrial category, in fact it is reasonable to regard each enterprise as unique. Each accounting system must be tailored closely to accord with both the domestic environment and the personal preferences of management concerning the form and use of information to facilitate control. The possibility of adopting a complete system from a textbook is most remote.

### ***Management accounting***

The needs of management, as outlined above, are served by management accounting which may be defined as

the application of professional knowledge and skill in the preparation and presentation of accounting information in such a way as to assist management in the formulation of policies and in the planning and control of the operations of the undertaking.

In this book different management accounting methods, principles and techniques are considered, particular attention being given to the technique of variance accounting.

## CHAPTER 1

# Methods, Principles and Techniques

### 1. COST AND PROFIT STRUCTURE

#### *Costs*

Figure 1 illustrates (i) the elements of cost, (ii) the functional classification of costs, and (iii) the analysis of total cost. These costs are the monetary representations of resources used and are all relative to the main objectives of the business, e.g. the manufacture and sale of products.

#### *Direct and indirect production costs*

Direct production costs are those items of production cost which can be identified with and charged to a specific product. In the manufacture of furniture, the wood, upholstery and other materials embodied in the product are direct materials, whilst the remuneration of the craftsmen working on the product are direct wages. Costs which are too general to be identified with specific products are regarded as indirect. The term 'overhead' is applied to the sum of indirect materials, indirect wages and indirect expenses.

#### *Fixed and variable costs distinguished*

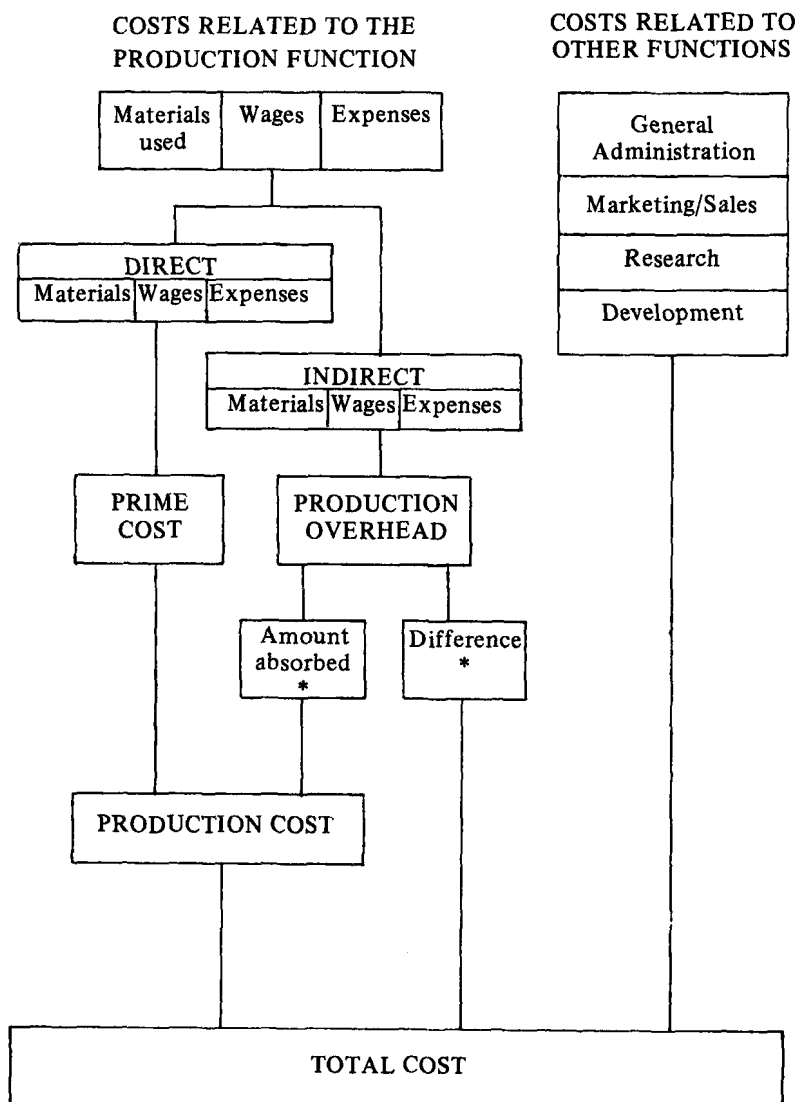
The distinction between fixed and variable costs relates to the way in which a particular item of cost reacts to change in the volume of production or sales. Consider the question — if it costs £30,000 to make 6000 uniform articles per week what would it cost to make 7000 per week under identical conditions? A person having no experience of

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**FIGURE 1 – The Elements of Cost** (in relation to a typical manufacturing organisation)

This illustrates (i) the elements of cost, (ii) the functional classification of costs and (iii) the analysis of total cost.

\*In the case of marginal costing the amount of production overhead absorbed relates to the variable category only.



factory costs would probably give an incorrect answer of £35,000. The correct figure must obviously be less than £35,000 because the stated cost of £30,000 must include, not only direct materials and wages, but appropriate portions of such costs as rent, rates, insurance and executive salaries which would not cost more in consequence of production being stepped up to a limited extent. The correct answer cannot of course be calculated unless the cost of £30,000 is broken down into its fixed and variable elements.

### ***Fixed costs***

These accrue in relation to the passage of time and, within certain output or turnover limits, tend to be unaffected by fluctuations in volume of output or turnover. Drastic changes in output or turnover levels can bring about changes in such costs, and so long as this is recognised it is safe to classify costs as fixed or variable in relation to the anticipated range of output or turnover.

### ***Variable costs.***

These, in the aggregate, tend to vary in direct proportion to changes in the volume of output or turnover (*output* in the case of production costs and *turnover* in the case of marketing costs). Direct wages are usually classified as variable — but see ‘Direct wages — fixed or variable?’, page 42. In factory conditions few items of indirect cost, or overhead, are purely variable, consumable tools and supplies may be so classified. Salesmen’s commission is usually regarded as variable marketing (or selling) cost.

### ***Semi-variable costs***

These contain both fixed and variable elements and are therefore *partly* affected by fluctuations in the volume of output or turnover. Examples are general labourers’ wages and repairs and maintenance.

### ***Apportionment of semi-variable costs***

*Approximation.* Budgeted semi-variable overhead is apportioned into fixed and variable categories so that the semi-variable category disappears and only the fixed and variable categories remain. This split is one concerning which few accountants in industry are complacent because *it cannot be effected with precision*, despite the availability of certain theoretical devices. Superficially, such devices hold promise of scientific means of effecting precise measurement but this impression is illusory.

Unfortunately for students, what might have been a simple part of

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the overall subject of management accounting has become clouded with unnecessary contradiction and confusion by the propagation of theories based on the mistaken notion that such costs as welfare expenditure, supervision, heating and lighting should be controlled to rise or fall in harmony with fluctuations in the number of direct labour hours worked. *One of the most effective ways in which an accountant in industry could destroy mutual confidence between himself and a production executive would be to suggest such a concept to the latter.* How was such theory born? A possible answer is that where products are not homogeneous and thus lack a common measure such as kilogram, metre or litre, it is often expedient to resort to a common denominator such as *direct labour hours* in order to load variable overhead on to products. *This is, however, merely a means to an end.* There are no grounds for trusting that the influence of labour hours on variable overhead is more precisely measurable than that of production volume. Once the cost is related to the unit of product it remains so related. To assume otherwise is to court confusion because a firmly established convention is that total contribution is *unit contribution multiplied by numbers of units sold* and variable overhead *per unit* is a component of unit contribution. The convention stated in the *ICMA Terminology* (1974), which relates variable overhead to product quantity, like all conventions is not entirely true, but it is as near to the truth as possible and it has the merit that it harmonises with other conventions which are generally accepted. Accounting systems measure costs *approximately* and some elements can be measured more accurately than others. The accountant must be able to make distinctions otherwise he will delude himself and mislead those whom he is employed to serve. Polonius could well have had management accountancy in mind when he advised — ‘This above all — to thine own self be true, And it must follow, as the night the day, Thou canst not then be false to any man.’

That variable overhead cannot be determined accurately is not serious because the variable portion of total overhead is usually comparatively small. Moreover, reasonable approximation is an acceptable and necessary convention in cost and management accounting.

*The scattergraph.* The vertical axis of the graph represents cost whilst the horizontal axis represents production or sales volume. Each point plotted represents the cost incurred, and the production or sales volume achieved in a particular cost centre in one of the selected past months. It is usual to plot the historical results of the last twelve months. When all points have been plotted the next task, *which is more*

*easily described than accomplished*, is to draw a sloping 'line of best fit' through the cluster in such a way that the aggregate of the distances between the upper points and the line is equal to the distances below the line. The line is projected until it meets the vertical axis and this is supposed to indicate the average monthly fixed cost. Examples are sometimes presented in which the hypothetical plottings are so conveniently positioned that there is little difficulty in drawing the line of best fit, but such convenience is seldom found in practice. Usually, volume fluctuations are not severe and there is a tendency for the figures to be such that, if plotted on a scattergraph, they would be clustered within a narrow vertical band comparatively distant from the vertical axis, so that the slope of the line would be purely a matter of guesswork. When this 'hit or miss' feature of the scattergraph is linked with the dubious nature of the historical data (*dubious* because costs are influenced by numerous factors other than volume fluctuations) and taking into account the time consuming task of plotting the points, it is difficult to support its use for this particular purpose.

*'Least squares' method.* This method is often associated with the scattergraph although the approach is completely different and the graphical presentation of the results is optional. Whilst it avoids the 'hit or miss' drawing of the line of best fit, it relies on the same suspect basic data and is also time consuming. In view of these considerations it is difficult to justify its application in practical situations. The method is fully described in most books on business mathematics.

*Personal judgement.* The most satisfactory course of action is to rely on the experience and personal judgement of the executive responsible for the expenditure. For example, the manager of the assembly shop may agree that his present squad of five labourers would remain constant within a specified span of production levels. He may further indicate the levels at which he could operate with one less or one more. If necessary, his decision would be confirmed or amended by the production manager.

### ***Profit and loss***

In the operation of the costing system some of the cost is related to unsold stocks and work in progress on hand at the end of the accounting period. The difference between that part of the cost which is related to goods sold and the net proceeds of sales is the *operating profit (or loss)*. Operating profit may therefore be defined as the profit arising from the

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normal activities of the business, such as the provision and sale of manufactured goods and services, before taking account of extraneous transactions such as those of a purely financial nature.

To the operating profit is added any revenues of a purely financial nature such as interest and dividends from investments in other companies and there would be deducted any outgoings extraneous to the main purposes of the enterprise such as interest on debentures and other loans and donations to charities. The remaining figure would be *net profit* (before tax).

### Contribution

- (a) *per unit*. This is the difference between the selling price of a unit of product or service and its variable cost.
- (b) *in total*. This is the difference between the sales value and the variable cost of such sales.

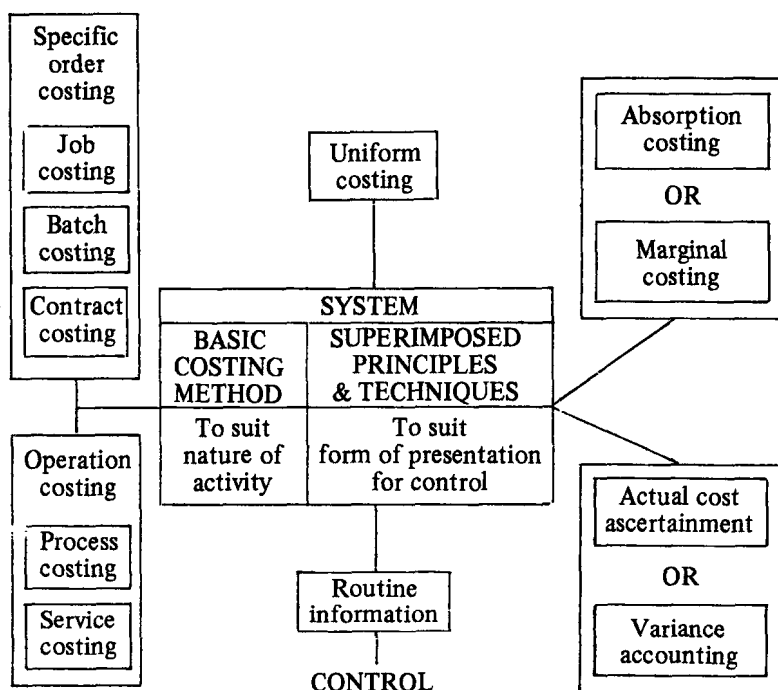


FIGURE 2 — *Methods, Principles and Techniques of Management Accounting Systems*. This figure illustrates how one of the alternative basic costing methods combines with one or more superimposed principles and/or techniques to form a complete routine system.



## 2. BASIC COSTING METHODS

### *Definition*

Figure 2 (page 10) illustrates the components of management accounting systems and shows how a basic costing method combines with certain superimposed principles and techniques to form a complete routine system. The principles and techniques are considered later (see page 12). The basic costing methods are devised to suit the methods by which goods are manufactured or services are provided. They may be broadly classified under —

- (i) Specific order costing, or
- (ii) Operation costing.

### *Specific order costing*

This is the category of basic costing methods applicable where the work consists of separate contracts, jobs or batches, each of which is authorised by a specific order or contract, specifications being laid down by the customers.

(a) *Job costing* applies where work is undertaken to customers' special requirements. As distinct from contract costing, each job is of comparatively short duration. The work is usually carried out within a factory or workshop where each job moves through the processes or operations as a continuously identifiable unit, although the term may also be applied to such work as property repairs carried out on the customers' premises. The method may also be used in the costing of internal capital expenditure jobs.

(b) *Batch costing* applies where similar articles are manufactured in batches either for sale or for use within the undertaking. In most cases the costing is similar to job costing.

(c) *Contract costing* applies where work is undertaken to customers' special requirements and each order is of long duration (compared with those to which job costing applies). The work is usually of a constructional nature. In general the method is similar to job costing although it has certain distinctive features.

### *Operation costing*

This is the category of basic costing methods applicable where *standardised* goods or services result from a sequence of repetitive and more or less continuous operations or processes to which costs are charged