

THE APPLICATION OF
STANDARD COSTING
AS A TOOL OF MANAGEMENT
IN CERTAIN BRITISH MANUFACTURING
INDUSTRIES.

THE APPLICATION OF STANDARD
COSTING AS A TOOL
OF MANAGEMENT IN CERTAIN
BRITISH MANUFACTURING INDUSTRIES
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ABERDEEN

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PREFACE AND ACKNOWLEDGEMENTS

Management accountancy is at the stage where further research is necessary to show how best it can be applied to the problems of managing a business. There is now general acceptance of its importance, but further development is essential. This is especially the case in Great Britain where very little research by individuals has been attempted, mainly because of accountants' pre-occupation with the requirements of the Companies' Act and the income tax laws. However, the major professional accountancy bodies have recognized the deficiencies which exist and have, in recent years, changed their examination syllabuses. This is a step in the right direction, but further advances appear inevitable and, as indicated, are extremely desirable.

Whilst the research in this thesis is primarily concerned with standard costing, this has been orientated towards the idea of having a comprehensive system of management accountancy, which includes the efficient employment of standard costs. Therefore, the hope is that the findings will be of interest to all who are concerned with the improvement of industrial efficiency.

A good deal of work has already been undertaken by the department of cost and management accountancy of the Potchefstroom University for Christian Higher Education. I feel privileged, therefore, to have been able to work with Dr. A. J. E. Sorgdrager, Professor of Cost and Management Accountancy who is head of the department mentioned.

During the period when he acted as my promotor he gave me valued guidance and encouragement. His enthusiasm for the furtherance of the whole philosophy of the subject provided the inspiration which is so vital to any major research project which, inevitably, must be undertaken over a period of years.

The pioneering work of Dr. J.H. Els in the field of standard costing as applied to South Africa is also acknowledged. His findings in his doctorate thesis (The Application of standard costs in certain South African industries, Potchefstroom University, 1964), provided me with a number of concepts and enabled me to ascertain the development and application of standard costing in South Africa. My thanks are offered to all who have assisted me in this research, either directly or indirectly. The bibliography lists the authors and books cited, but is by no means a complete list of books consulted over a considerable period of time. To those authors who are not named I render my apologies. It will be appreciated that to give details of all books consulted at some time would have made the bibliography excessively long and unwieldy.

Special mention should be made of Mr. D. H. F. Gourlay, M.A., B.Phil., Dip.Ed., A.M.I.P.M., A.M.B.I.M., who kindly checked the draft thesis and made suggestions for improvement. I am also grateful for the assistance given by the Institute of Cost and Works Accountants in providing excellent library facilities and historical records which showed the development of standard costing. S.R. Latham, F.L.A.,

the librarian at the Robert Gordon's Institute of Technology also gave considerable help in supplying books which were required, often at short notice.

My family have endured the sacrifices which accompany research of this nature. To them I record my grateful appreciation, especially to my wife who has given me encouragement and assistance in the completion of the work.

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J. BATTY.

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1. The British Economy

Great Britain is largely dependent upon her industrial activities without which she could not produce enough to continue to survive as a prosperous nation. As a country Britain has less than 0.2 per cent of the world's land area and has slightly less than 2 per cent of the world's population. She is eleventh in population size and, among the larger countries, is seventh in population density. Britain is the world's third largest trader and Sterling finances about one third of the world's trade. (Fanfare for Britain, Confederation of British Industry, London, Jan., 1967).

Despite the achievements there are also serious problems. One of the major difficulties is to keep down the trade deficit on balance of payments. In 1964 this was £543m. which was reduced to less than £150m. in 1966, but still a considerable sum (data from Department of Economic Affairs progress report, March, 1967).

R. Harrod (When can the squeeze be ended? in Management accounting, London, Feb., 1967 p.45) has stated that to increase exports to an amount which would close the gap in the balance of payments would need a "once-over increase in exports of about 8 per cent." This would be over and above the normal growth rate of between 2 and 4 per cent which is expected to take place annually.

For these increases to take place Harrod is of the opinion that productivity (output per person) must go up, whereas costs have to be held constant when compared with other countries. This would

have the effect of allowing prices to be reduced and, therefore, the products would become more competitive. Credit squeezes are only a short term solution. What is needed is a permanent freeze on costs so that a "lower structure of price quotations becomes possible". This short explanation of the problem and solution is very much simplified. However, it should serve the purpose of showing how important to the British Economy is the need for effective cost control and for information on all aspects of business resources.

2. Scope of the Dissertation

The advantages which can accrue from the proper use of cost accounting are given adequate publicity in any basic textbook on the subject. There is now a general acceptance that cost accounting is an essential part of sound business management. It is true to say that without costs there can be no management. Finance is necessary to provide a business with the necessary resources: if this is not available then there is nothing to manage. Management is the conversion of resources.

A modern publication has distinguished three distinct, yet related, aspects which make up the business. These are:

- (a) a series of operational activities,
- (b) the finance and
- (c) the people who carry out the activities.

In connection with finance the same source has stated:

This "enables the operational activities to be initiated and maintained and which may be represented as a frame, more or less flexible, within which the operational activities are enclosed." (The enterprise and factors affecting its operation, I.L.O., Geneva, 1965, p.5).

The costs exercise pressure on the financial frame, influencing any desire to expand operations. (op.cit.,p.8).

Whether remaining at approximately the same level of operations or expanding there is a need to control the use of resources in the conversion to the saleable product or service. For most products there is a limit to the price which can be charged and, therefore, costs should receive the maximum attention. In this way (since revenue minus costs = profit) the profit should be increased. Cost is incurred to obtain results; if the latter are watched by the establishment of a ratio between efforts and their outcome then profit should be earned. (P.F. Drucker Managing for results, Heinemann, London, 1964, p.64).

Drucker also emphasizes that if there are no results then the money spent does not represent costs, but is sheer waste. (idem)

This matter has received detailed attention from A.J.E. Sorgdrager who states without reservation that not all sacrificed values can be regarded as costs and, furthermore, any costs must be economically justified (The particularization of indirect cost in modern costing administration, Ajax Potchefstroom, 1964, pp.27, 44 et.seq.)

In short, therefore, there should be resource transformation within a business as economically as possible and with the minimum amount of waste.

Drucker (op.cit.,p.65) has stated that effective control requires examination of all facets of the business. Otherwise, if areas are examined in isolation, cost control becomes a matter of pushing costs from one area to another.

Besides cost control, there are many other associated problems. Managers have to plan, operate, and co-ordinate the resources so that they are used as effectively as possible. Decisions made should be rational and based on sound concepts; otherwise they become "hunches" or "guesses".

In the large modern business, which is extremely complex, there can be no place for misconceived guesswork. Managers require to know what is likely to happen and, subsequently, what has happened. Moreover, the plans and the consequences of action taken have to be in terms of profit or loss. If a reasonable return on capital is not being earned then management should be supplied with the alternative courses of action. Management accountancy provides the foundation stone upon which a successful business can be built. It supplies the information which is so vital to the success of the venture. Unless the necessary facts are made available, and in the correct form, the managers concerned will be at a serious disadvantage compared with the business which has the necessary details.

Management accountancy is a relatively new concept which, in its present form, is little more than 10 years of age. Standard costing is a discipline of longer standing, having its first

origins in the period 1920 - 1930. (vide Chapter 3).

The theme of this dissertation is that standard costing, within the framework of management accountancy, can provide many of the answers necessary for cost control, cost reduction and for rational decision making. Since its inception there have been considerable developments and more understanding, yet the knowledge on standard costing from research done is far from complete.

In carrying out the research there have been two broad aims:

- (a) To establish a framework which would guide accountants and managers in the employment of standard costing.
- (b) To ascertain how far the standard costing principles advocated are used in practice in Great Britain.

The emphasis has been placed on the employment of the technique as a tool of management. Reference to accounting techniques of a technical nature have been kept to a minimum. As Sorgdrager has quite rightly observed (op.cit.,p.1) cost accounting requires a more dynamic approach; it should be treated "as a science and not merely as a professional technique". The scientific study advocated by Sorgdrager has been attempted in this dissertation. Historical and modern ideas have been brought together to provide the theoretical, yet workable, framework. Extensive use has been made of numerous publications. In particular the works of A.J.E. Sorgdrager and J.H. Els should be mentioned: the book by Sorgdrager (The particularization of indirect cost in modern costing administration) has been referred to throughout the research.

Considerable knowledge of South African views and practices was obtained from the Doctorate thesis by Els (The application of standard costs in certain South African industries, Potchefstroom University, 1964).

My research into cost accounting has extended over a number of years. This has resulted in publication of a number of papers and books, including the following:-

Standard costing, Macdonald and Evans, London, 1966 (1st edition 1960)
(2nd " 1966)

Management accountancy, Macdonald and Evans, London, 1966 (1st edition 1963)
(2nd " 1966)

Industrial administration and management, Macdonald and Evans, London (1966)

If any justification is needed for research into cost accounting methods then the views of R. Appleby one of the foremost leaders of British industry, Chairman of Black and Decker Ltd. should be stressed.

Appleby regards the "key to managerial success as the setting of standards for all business activity and the measurement of performance against the standard" (The financial times, 8th March, 1967, p.13).

These views were expressed at the British Institute of Management National Conference which opened on the 7th March, 1967. Appleby speaking of the importance of profitability stated:

"Financial measurement should penetrate into every cranny of the enterprise and indoctrinate all managements in their working habits".

I would certainly endorse Appleby's philosophy: it is in line with modern thinking.

3. Method of Approach

Reference to the principal books used was made in the previous section. In addition, a bibliography is included at the end of the dissertation. In building up the ^{theoretical} framework, reference was made to a very wide range of books published in South Africa, the United States of America, Australia and Britain. In addition, current developments, reported in professional journals and newspapers, ^{have} been taken into consideration.

At the commencement of the research little or no knowledge was discovered to exist on the practical application of standard costing. Moreover, there is a positive reluctance on the part of British managers to divulge information. Even so a good deal of success has been achieved: in a number of cases a personal visit to the business concerned elicited information that would not otherwise have been made available. A total of 500 companies were circulated with a comprehensive questionnaire to obtain details of the use made of standard costing.

In selecting the companies two facts were kept in mind:

- (a) They should represent all the major industries in the British economy
- (b) Companies should have interests in South Africa as well as Britain, thus allowing both countries to benefit.

The list of companies obtained from a commercial organization met with requirement b).

They were also quite representative and although this fact was quite fortuitous it enabled the first point to be satisfied (vide Chapter 5)

For business reasons the source of the information has to be kept confidential.

4. Content of the Thesis

The chapters have been arranged so that the concept of standard costing

can be seen to exist within the framework of management accountancy. Chapter 1, the philosophy of standard costing, shows how the subject has been developed as a natural consequence of management thought. The meaning of management and how the processes are carried out are examined. How the business is made up of cost centres and other areas of responsibility is explained.

In Chapter 2 the concept "management" is developed further and the British and American approaches are compared. ~~The~~ new ideas which have developed are outlined to show how they are all part of a co-ordinated framework. The meaning of "management accountancy" and its evolution is examined.

In Chapter 3, standard costing and its uses are considered, including the usefulness of variance analysis.

Chapter 4 outlines some of the problems facing managers and shows how standard costing can be applied in solving them.

Chapter 5 shows what is taking place within the companies included in the research. From visits made to a number of companies of various sizes the conclusions shown appear to be fully representative of British practice.

Chapter 6 compares theory and practice, and makes suggestions for improvement and reaches conclusions. A number of defects were found to exist in many systems being employed. Businesses which regarded standard costing as an unnecessary luxury were found to exist, but these were in the minority. At the same time there was evidence of a growing awareness of the importance of standard costing as a tool of management.

CHAPTER I.

PHILOSOPHY OF STANDARD COSTING

1. INTRODUCTION

Philosophy is defined by E. McIntosh (The concise oxford dictionary, Oxford, 1964, p.912) as follows:

"Love of wisdom or knowledge, especially that which deals with ultimate reality, or with the most general causes and principles of things".

In this chapter, the concern is with the knowledge and principles which form the foundation for a logical and useful discipline.

Unless a practical subject like standard costing can be justified in very real terms, it is unlikely to survive. Reasons for the growth and existence of standard costing as a tool of management, should form a framework which can be applied to the problems of business.

Management, as a distinct and separate discipline, has grown because of the need for expertise in dealing with complex situations. As part of this growth there has emerged a number of quantitative techniques, one of which is standard costing. As modern businesses have grown in size so management has become more and more dependent upon accounting data for planning, co-ordination and control.

2. MANAGEMENT AS AN ART AND A SCIENCE

Although the growth of the techniques employed may appear haphazard, it is possible to show that this is not the case. Rather, they have developed from a need; primarily the impetus has been from the necessity for managers to become more efficient. Management is

partly an art and partly a science. Because the emphasis is on dealing with people so as to obtain maximum co-operation and high morale, the subject may rightly be called an art. The science emerges because a manager is concerned with scientific method - observing, collecting and analysing data, making use of information and avoiding mistakes previously made. In addition, many techniques such as cybernetics, linear programming, net-work analysis, mathematical simulation, and work study make extensive use of mathematics and thereby give a preciseness which suggests a science more than an art. Standard costing is in the category of a science, yet it differs from some of its contemporaries (e.g. net-work analysis) in that the concern is very much with dealing with people, as well as the calculation of significant information. This applies when preparing budgets - management by participation is very much in evidence. The human element is also very relevant when controlling costs; applied psychology should be employed to ensure that action is stimulated from the reports and statements prepared as part of the standard costing system.

3. MANAGEMENT BY PARTICIPATION

Management theorists now stress the need for all employees to participate in the management processes. This is not to say that the latter should be performed by all workers; rather the doctrine asserts that all employees should be induced to co-operate from the very early stages (planning) through to the final carrying out of the plans (control and corrective action). Managers still make the

decisions, but wherever possible the views of all affected employees are taken into consideration.

There are four main types of management which may be recognized and these are as follows:

- (a) Autocratic management where orders are given by managers and these are expected to be obeyed without question.
- (b) Paternalistic management where employees are regarded as being the total responsibility of a business. Food, clothing, medical services, education and other facilities are supplied. Employees are never dismissed and they are, in effect, tied to the business concerned. This type of management exists in many countries. In the United Kingdom the BATA Shoe Company is probably the best example. Generally, business paternalism is much more common in countries like France, Japan, India and Italy. The social and cultural structure of these countries and the absence of strong trade unions has tended to encourage the growth of paternalistic management (cf. R. Stewart: The reality of management - Wm. Heinemann London, 1963 p. 139/140).
- (c) Constitutional management which means operating within a framework erected by law or by collective bargaining.

In Great Britain and the United States of America this type of management is "the most common form" (Stewart op.cit.p.142). There is no doubt that in the United Kingdom the trade union movement continues to grow and so do the laws which regulate the conditions

of employment. Accordingly, constitutional management appears to be very much a feature of modern society.

This is not to say that participative management should be ignored. Unless some attempt is made to bring managers and employees together in a spirit of co-operation then the two "sides" are likely to become more opposed, instead of striving towards achievement of the principle of harmony of objectives. The latter means the management of personnel in such a way that they achieve their own personal goals and, at the same time, strive towards the objectives of the business (vide: Wm. M. Fox - The management process - Irwin, Illinois 1963, p.74).

(d) Participative management. Stewart takes the view that participative management in its fullest form - co-partnership - is unlikely to be accepted. "There seems little to suggest that many companies will practise participative management" (op.cit., p.142) There seems justification in adopting this view if participative management is regarded as both ownership and management in the hands of employees. However, this definition is unlikely to be acceptable in any free enterprise community.

'Management by participation' is probably a more appropriate term to describe what D.S. Beach (Personnel: the management of people at work, Macmillan, New York, 1965 p. 510) has called "the process by which people contribute ideas toward the solution of problems affecting the organization and their jobs". Managers receive the suggestions and ideas and then, where appropriate, they

incorporate them into the decisions made. The final action is determined by managers and not employees; this fact distinguishes management by participation from democracy.

The reasons why the concept is gaining ground is because of the likely benefits which may result from its adoption. The overall effect should be a higher level of morale, but specifically the advantages which may accrue are as follows:

- (1) Makes employees feel worthwhile.

If employees are asked to participate in the setting of standards and the compiling of budgets, they are likely to feel important and regard their jobs as worthwhile.

- (2) Encourages a responsible attitude.

If employees are stimulated to take an active part in setting standards, then they are likely to feel responsible for the work on which they are employed.

- (3) Facilitates the making of sound decisions.

Decisions should be made with a full knowledge of all relevant facts. The opinions of salesmen and sales managers can be extremely valuable when forecasting sales: other examples can also be found in production and administration.

- (4) Provides opportunity for employees to show their capabilities and willingness to co-operate.
- (5) Helps to develop potential managers.
Junior managers are able to participate in planning, controlling and co-ordinating on a scale that would be impossible without participation.

4. STANDARD COSTING AND PARTICIPATION.

The setting of standard costs requires participation at all stages and for each element of cost. Furthermore, the backing of top management is a vital prerequisite of all standard costing systems.

a. Direct Labour Standards

Labour standards are of two principal types: labour times and wage rates.

In setting times there should be active participation of the employees in the sense that they work willingly and with a co-operative spirit. If work study experts do not have the necessary support from managers and workers then the standard times are unlikely to be reliable. When setting these times it is essential to arrive at targets which are attainable quite readily by an average worker. If standards are unattainable then they are likely to lead to frustration of the worker (M.E. Mundell-Motion and time study, Prentice-Hall, London, 1960, p.328).

Fear of the unknown is one of the principal dangers in industry. If there is likely to be redundancy or loss of pay or status then a

worker will not co-operate. There should be confidence in the management or the employees "will regard it as another trick to try and get more work out of them without any benefits for themselves"

(Introduction to work study, published by International Labour Office, Geneva, 1964, ps. 45 and 46).

This attitude was confirmed by a visit to a brush factory to study the systems employed. A new method of putting tar on to the bristles had been devised. This resulted in much cleaner work and the operatives should have been able to produce a larger output: However, the management had (1) installed the new system without adequate pre-consultation with the workers; and (2) suspended a bonus payment until the new method had been properly established. The result was that the workers 'went slow' and, in the end, the old system had to be brought back. There was a positive fear from the employees that the new method was a means of exploiting them and so they resorted to the 'go slow' as a defence. (own research).

When dealing with wage rates there is not a great deal that can be done as regards employee-participation. Labour rates may be fixed by agreement between trade unions and management. This is not to say that employees should not be consulted. All schemes of payment should have the goodwill and co-operation of workers. When dealing with incentive schemes and job evaluation the agreement of employees to any changes is of the utmost importance.

A rule put forward by Beach (op.cit.,p.615) states the matter as follows:

"The employees, and the union if there is one, should be adequately informed about the procedures used to establish wage rates".

This procedure should be followed when establishing the appropriate wage rates for compiling standard costs. Grading or classification of labour is an essential part of the setting of wage rates (Batty - Standard costing - Macdonald and Evans, London, 1966,p.40)

b. Direct Material Standards

Standard costing is a complete control system which must make full use of all modern techniques. Participation is possible for both material quantities and material prices, although this is not always evident. Accordingly, it embraces the methods available for ensuring that all aspects of material conversion receive attention.

Close attention should be paid to all matters which affect material utilization. In particular, there should be full use made of method study so that the best methods are selected for manufacturing the saleable products. In turn, workers have to be trained and induced to use the best methods. They should be encouraged to make suggestions through an official suggestion scheme, committee or other channel of communication.

Standard costing encourages **systematic and analytical approaches**, which are both necessary for the most efficient utilization of raw materials. Method study is very much a part of Work Study; the other half being time study.

"Method Study" is the term recommended by the British Standards Institution (B.S.I. 3138: 1959). In the United States of America a preference is shown for "Motion Study". For the purpose of this study the two may be regarded as synonymous. Because the research covers American and British procedures both terms have had to be used.

F.W. Taylor created time study as a technical device to improve efficiency. Motion study was developed by F. and L. Gilbreth as part of a new philosophy of management which included a psychological study of job satisfaction derived by the individual. Motion economy as seen by the Gilbreths was the selection of the optimal method rather than the fastest and cheapest method, irrespective of the feelings and motives of employees. (see J.D. Staley: The cost minded manager in American management association, N.Y., 1961, p. 151).

Standard costing employs standard costs which represent what costs should be for a stated level of efficiency. The material content of each product should reflect the fact that the conversion is being carried out as effectively as possible with the facilities available. There should be recognition that costs represent sacrifices in terms of economic values (cf. Sorgdrager, The particularization of indirect cost in modern costing administration, Ajax Books, Potchefstroom, 1964, p.44).

On the matter of price there is no doubt that standard costing follows the same true principle in recognizing that prices should represent economic value in exchange. The use of historical costs can be misleading to management and can result in a calculation of profit which is quite wrong. Although not all standard costs include replacement prices, there is no doubt that, of all costs, they alone tend to come nearest to the ideal. There is now recognition that dealing with current replacement costs is not far removed from running a standard costing system (Batty - Management accountancy - Macdonald and Evans, London, 1966, p. 633).

c. Overhead Cost Standards

When dealing with standards for overhead costs, standard costing looks at two significant areas:

- (1) Amount to be produced by the producing cost centres and services to be rendered by the service cost centres.
- (2) The indirect costs involved by the producing and service cost centres.

These processes are of vital importance to the management of any business. The capacity at which a business is to operate is a fundamental question which affects costs and profitability. It enters into the definition of objectives which is discussed later in this chapter. (Also cf. Chapter 4).

On the matter of setting the overhead costs, the aim should be to fix standards which reflect a high level of efficiency. This ensures that plans made are a reflection of what is expected of managers and other employees.

5. AIMS OF MANAGEMENT.

"Management" is the term used to describe the processes involved in bringing together labour, material and fixed assets to produce and sell. A fuller definition is given in Chapter 2. The purpose of this section is to examine how standard costing aids management and how it may be an integral part of business administration.

a. Objectives and Planning

The first essential of sound management is the establishment of objectives. These form the basis of the framework of goals towards which managers must strive. (E.F.L. Brech (Editor), The principles and practice of management, Longmans, London, 1963, p.32).

The objectives are the formal goals. According to Fox (op.cit., p.68-72) there are two main types of objectives. These are as follows:

(1) Primary service objectives

Which products to produce and sell have to be determined by policy. These should be the type that are demanded at a price that is

acceptable. In short, there must be satisfaction of the consumer.

(2) Collateral objectives

The aims and attitudes of employees should be understood. Besides adequate remuneration there must be job satisfaction.

Shareholders and consumers should also be treated fairly. There should be satisfaction of what are termed the "social obligations of management".

Through profit planning and the achievement of the type of organization which allows profit targets to be reached top management can formulate policy. The latter can be accomplished without standard costing, but, at the same time, there is strong evidence to show that the technique can assist quite materially.

In this connection it has been stated that budgets provide a means of "securing reliable and prompt information regarding the operation and control of the enterprise". (vide: A. Matz, O.J. Curry, G.W. Frank Cost accounting, Arnold, London, 1962, 3rd Ed, p 557). The same authors then proceed to state that the best results are obtained when budgets are based on properly conceived standards. They assert that without the use of standard cost figures there can be no "real budgetary control". The accuracy of budgets is of vital importance and building from standard costs ensures that the necessary details are considered before figures are computed.

The necessity to plan through budgetary control is emphasized in an article by R.W. Powell (Budgetary control as an instrument of management in the smaller company: The accountant, 13th August, 1966, p.191). In this article the role of budgetary control as a method for delegating responsibility is discussed. The author makes the system bring about the need to plan, the latter being necessary to "ensure that all departments are working to the same overall plan". This is a general statement which, nevertheless, gives recognition to the fact that there should be plans expressed in physical and financial terms.

An article entitled "Company aims and budgeting are indivisible" (G.S. Sanders, The manager, September, 1965, London, p.41) shows a positive link between standards and company objectives. In summary form the author's ideas are as follows:-

- (1) There should be forward thinking to determine company objectives.
- (2) The process of developing objectives may come from the routine business problems which have to be considered as part of the process of continuing to earn profit.
- (3) Because of (2) there should be an integrated system which covers all aspects of forecasting, long-range planning, action programmes and execution of the plans. (Fig. 1)

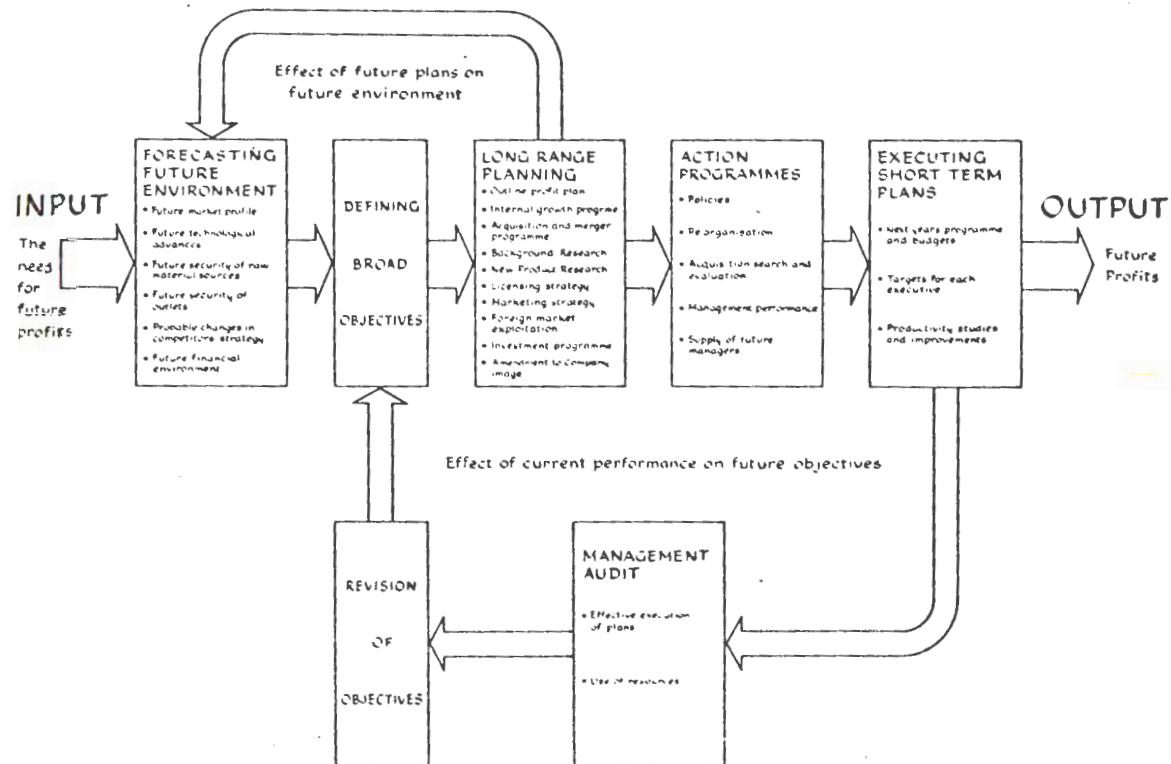


FIG 1. Integrated system of accounting.

(Source: The Manager, September, 1965)

Sanders does not mention standard costing specifically, but he speaks of obtaining accurate forecasts, product contributions, new sources of profit, diversification and adequate return on capital employed. His theme is that there should be integration so as to provide quantitative information for future plans. The effect of current performances on future objectives is stressed, thereby implying the establishment of standards.

There is common acknowledgement that policy making is the prerogative of top management: in the economist's language, it is the concern of the entrepreneur. P. Drucker, speaking of the fundamentals of entrepreneurship, has stated that within a business there are only costs: the results of producing and selling are determined by external forces. From this it follows that entrepreneurship should be concerned with the creation of goods and services at a realistic cost in the hope that they can earn a profit (Entrepreneurship in business enterprise, The manager, October, 1965, London, p.55). This idea of cost being fundamental to the management processes is absolutely essential to clear thinking on business management. It follows from this concept that the predetermination of costs is of the greatest importance.

Planning and the setting of objectives necessarily go together. Once the objectives are defined, problems must be solved by the

comparison of alternative methods. In addition, managers have to make decisions thereby selecting the most appropriate courses of action from the many alternatives. These two functions - problem solving and decision making - are fundamental to all management. Because standard costs represent as near as possible the sacrifices involved in converting the raw materials to finished products when operating efficiently it follows that, of all the costs which may be used, these are likely to be the most useful. They reflect what performances should be, not what they will be or are likely to be. Managers are therefore guided as regards the true economic consequences of their actions.

Standard costing is forward looking. Costs are predetermined in advance of production and, therefore, there must be detailed analysis of all facets and operations. This in itself is an aid to management. There must be, inter alia, the following operations:

- (1) "A preliminary survey, before setting Standard Costs, to ensure that all functions are being carried out as efficiently as possible.
- (2) The location and size of cost centres and the assignment of responsibilities.
- (3) The type of Standard Cost and, as a corollary, the type of standard costing system to adopt.

(4) Material, labour, and overhead requirements must be ascertained for each product and as a whole (the setting of Standard Costs).

(5) Choice of an accounts classification which will clearly throw to light any variances, clearly distinguishing controllable and uncontrollable variances."

(Batty, Standard costing, p.29)

All these functions are an essential pre-requisite of efficient management.

Before management can make plans or see that they are carried out there must be yardsticks against which performances, sacrifices and costs can be measured. Historical costs which have already been incurred are of little or no value for this purpose. Actual costs, present or future, are only of value if there is some yardstick against which they can be compared. Standards are a vital necessity in performing this function. In standard costing they represent costs which are technically necessary and quite unavoidable in an economic sense. They must be efficacious costs which are quite distinct from losses. (Sorgdrager, op.cit.,p. 30.) Only by examination of all functions and by taking corrective action will standard costs and true economic sacrifices equate.

The establishment of cost centres also furthers the processes of management. As a basis of all organization structures there must be clearly defined responsibilities. Standard costing follows a functional analysis with a further breakdown within the main functional division. There are differences of opinion on precisely how this division should take place. The orthodox approach is as follows:

(1) "Manufacturing, divided into:

- (a) producing departments, which are responsible for the actual manufacture of the products and, accordingly, where direct costs are incurred;
- (b) service departments, which generally "serve" the producing departments and in which no direct costs are incurred.

(2) Administration

(3) Selling and Distribution

(4) Research and Development."

(Batty: Standard costing, p.29).

Another view is put forward by H.P. Court (Budgetary control, Sweet and Maxwell, London, 1951 p.72) who asserts that, although for costing purposes overheads may be divided into factory, administration, selling and distribution, a different method may be used for budgetary control. He prefers the grouping for control purposes to be as follows:

- (1) Factory (or variable)
- (2) Fixed
- (3) Selling and Distribution

Court is thereby following the direct costing or marginal costing approach. As shown later, for control of costs, there is a need to understand their behaviour, known as cost behaviourism.

Another division, which is used by a large company, is illustrated **overleaf** (Fig.2). There are further cost centres within each of the main sections.

Provided the organization followed serves the business efficiently there can be no hard and fast rules regarding the precise form. What is important to notice is that standard costing imposes an obligation on management to establish cost centres and define responsibilities. In this way it contributes substantially to the management of a business.

When dealing with the overall planning and control of a business there should be reference to capital employed. Generally, also, there should be an attempt made to pre-plan what profit can be expected. Profit planning necessarily involves costs and revenues. If standard costs are employed there should be no difficulty in arriving at the profit which may be expected. The matching of costs and revenues is of vital importance and it follows that the

EXAMPLE

OF

COST CENTRES

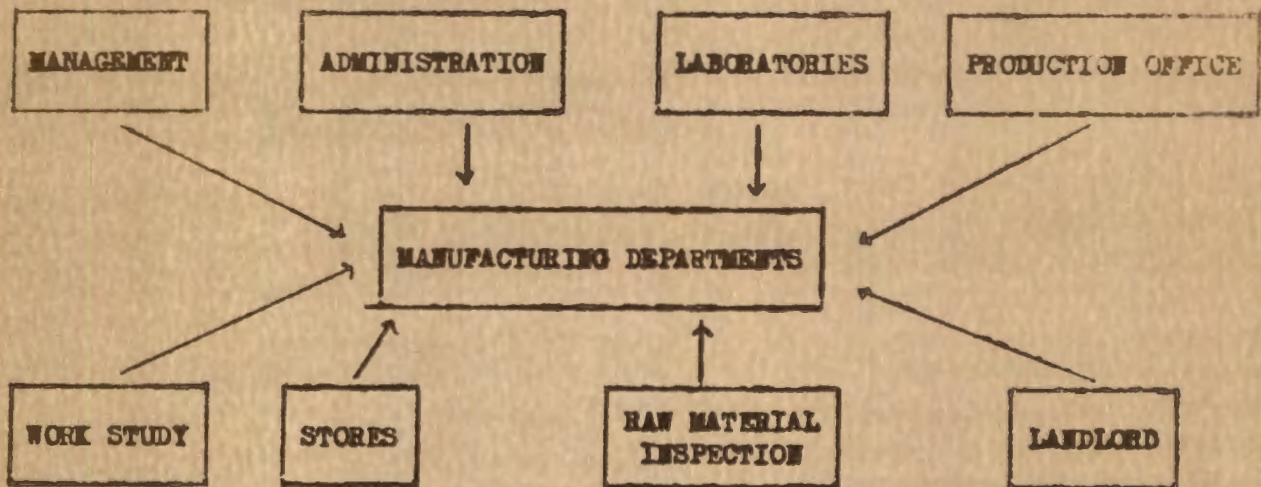


FIG 2. Cost Centre Organization

constitution of these elements should receive careful top management attention. (vide D.H. Li., Accounting for management analysis, Merrill, Columbus, Ohio, 1964, p.337). Without standard costing the estimating of costs and revenues becomes an extremely difficult task. Li states that: "Cost estimating of specific functions is easier when an enterprise uses standard costs and budget components". (op.cit.,p.340).

Fox (op.cit.,p.177) is very positive in his attitude in his approach to the use of standards as an aid to management. The view taken is that "standards are the criteria with which we evaluate past or present performance and condition. Objectives and the policies, plans, procedures, etc., for carrying them out are all standards". The reference is to all types of standards, but Fox includes standard costs in his definition.

b. Organization

"Organization" has been defined as the framework of management.

It is the structure or foundation around which a business operates. The responsibilities of all levels of management are defined and the lines of demarcation are shown. Once policy has been defined the organization becomes the means whereby the necessary tasks are divided up and carried out (E.F.L. Brech(Ed) The principles and practice of management, Longmans, London, 1963, p.43). Reference to this function is made later: here it is proposed to show how

standard costing assists the process of organizing.

When discussing management by participation, earlier in this chapter, it was seen that managers should assist in drafting forecasts and budgets. Not only should there be participation as described, but there should also be a fostering of co-operation. As noticed by W. Wright (Direct standard costs, McGraw-Hill, New York, 1962, p.52), the standard costing system developed by G.C. Harrison was developed on the basis of responsibility accounting. The co-operation should result from the correct attitude towards employees. Training and education on the behaviour of costs can do much to inculcate a high state of morale. Cost control without understanding is likely to be an empty process. Further co-operation can emerge from the development of standard costs which are acceptable to trade unions and management. If standards are not understood or are not based upon facts which can be substantiated then there is likely to be conflict. One of the major problems facing managers when work study was first introduced was the difficulty of establishing acceptable time standards.

When dealing with the state of efficiency, it was noticed earlier in this chapter that standard costing requires that all functions should be made efficient before the standards are set. This

overcomes the problem of what F.W. Taylor (Scientific management, Harper, New York, 1947, p.18) calls the "unevenness of management". Before modern methods of management were employed the results always depended upon the managers of the individual departments. Accordingly, there were different levels of efficiency depending upon the personalities involved.

Another factor linked with standard costing, which is also related to organization, is the need to put procedures into writing. This ranges from the organization chart and accounting manual to the detailed instruction card used by an operator. A business cannot survive without effective communication. The material specification, time records and other documents, including the standard cost cards which record the detailed costs relating to a product, cannot but assist in communicating the essential facts to the employees. Standard methods and appliances can result in great economies, but written procedures are essential for full advantage to be obtained. Standard costing compels that the procedures are recognized and are stated in written form. (see for example Taylor, op.cit., p.181, on the benefits of instruction cards).

The art of organizing requires that attention should be paid to the relationships which shall exist between one person and another, or with a group, or with physical factors. There is also the task

of carrying out the work which has been planned. Standard costing with its insistence on detail and definition of efficiency provides an excellent foundation upon which business organization can be built.

c. Controlling

There are three organic functions of management - planning, organizing and controlling. (Fox op.cit.,p.3). The other functions which are discussed elsewhere (p.53) are sub-divisions of these principal functions. It remains, therefore, to show how controlling is related to standard costing. Further details are also given in the chapters which deal with the controlling function.

Controlling, in simple terms, means that steps are taken to make sure that the plans materialize: in other words, that planned results and actual results conform. In more sophisticated systems there are automatic feedback and automatic corrective action.

More advanced still are the systems which replan as well as take corrective action. The latter are in the area of automated production and as yet are not applied to accounting control (Fox op.cit.,p.174) Standard costing is based upon the natural order of control. There is planning, followed by measurement of actual results, subsequently the standards and actuals being compared so that deviations can be corrected. Managers are accustomed to thinking in terms of

"what should we have done and how have we done". In this sense, therefore, there is also adherence to normal behaviour.

Without the cost control provided by cost accounting, there would be great difficulty in employing resources effectively. How else could progress be measured? Moreover, the cost control system should be such that management can rely upon the information given and can act with confidence (see Chapter 4). Dealing with the matter of cost control in general terms Staley (op.cit.,p.18), has stated:

"Nearly all companies pay about the same price for the tools and services they buy: metals, shipping, machine tools, labour, benefits. Thus, with a ceiling on prices and with everyone paying roughly the same price for goods and services, the manufacturer is forced to compete on the basis of sound management of his resources. In fact, we expect that a good portion of the yearly increase in the cost of goods and services will be borne by improved management of resources - in short, cost control".

From this will be seen that management and cost control are regarded as being synonymous. There is no doubt that the control function is a vital, inseparable part of management.

Another factor which is inherent in any system of standard costing is what Taylor has called the "exception principle" (op.cit.,p.126).

This means that only significant deviations from plans should be reported upon. There is now general recognition that managers should be supplied with as little information as possible, consistent

with effective control. Moreover, comparative reports are regarded as being essential: without them there can be no basis for comparison.

"Accountability" is a vital factor in control. Responsibility must be assigned to a particular person or there can be no control. Again, standard costing meets this requirement. There is the establishment of cost centres and there is the detailed assignment of tasks through the setting up of cost standards.

6. CRITICISMS OF STANDARD COSTING

Not all accountants or managers are supporters of standard costing. It is correct, therefore, in order to give a balanced view, to explain some of the criticisms which may be put forward against a standard costing system and to consider whether these invalidate the views expressed earlier.

(a) Variations in Prices

One of the chief problems is to assess the likely prices or rates to be paid. R.J. Chambers has stated, criticizing standard costs:

"But the variability of prices is notorious and, as we have agreed, even actual prices are not necessarily, thereafter, adequate representations of cost".
(Accounting, evaluation and economic behaviour, Prentice-Hall London, 1966 p.314/5).

(b) Combination of products.

The appropriate combination of products in variety and quantity have to enter into the standard costs. These are "subject to short-run variations as variations in prices of products relative to one

another occur."

(c) Level of output varies.

The standard output is rarely achieved so the standard costs are never realized.

(d) The standard of technology changes.

"If a state of technology is assumed, represented by so many man-hours of labour per unit of equipment (however measured), the mere process of learning, a continuous process, may enable the product to be produced more expeditiously and, therefore, more economically through time." (Chambers; op.cit.,p.315)

(e) A standard cost quickly becomes out of date and, therefore, is of no value.

(f) Technical people are accustomed to think of standards as "physical standards" and, therefore, they will be misled by standard costs.

For these reasons Chambers comes to the conclusion that standard costs are quite unsuitable. He goes on to state that the appropriate basis is the cost "in terms of current cash equivalents at that time, of the standard specifications of labour-time and materials expressed in physical units." (op.cit.,p.316).

Presumably Chambers is referring to current replacement costs, although in the same breath he requires "standard quantities" which are, in any case, the basis of standard costs! The individual

criticisms are dealt with in turn. (cf. Chambers: Financial management 3 ed, Law Book Company, Sydney, 1966, p.359-368).

The price variations which are "inevitable" can be anticipated to some extent and this fact alone does not invalidate a system of standard costing. Any forecasting of prices will endeavour to cover fluctuations and with many types of materials this should not present great difficulty. Another factor is the recognition given in standard costing that variations can be 'controllable' or 'uncontrollable' when considered from the point-of-view of the individual business. (cf. Chambers op.cit., pp 367/368).

Price variations are usually placed in the category of being 'uncontrollable' and the price variance is isolated and analysed with this fact in mind. There is no question of ignoring price variations; indeed standard costing is the only practical system which acknowledges the effect of the variations in real terms.

On the matter of the 'combination of products', the reference is presumably to the mixture of materials used to manufacture a product. In the long run the combination or mixture will vary, but this does not invalidate standard costs which are normally set for a relatively short period such as a year, or even twice yearly. This objection is, therefore, based on a misunderstanding of the nature of standard costs.

The assertion that the capacity selected as a basis for calculating the standard costs is rarely achieved is to some extent true. However, this would not apply in all industries or businesses: in many firms the output can be forecast with reasonable accuracy so the variation is unlikely to be very large. In any case, the under or over capacity is unlikely to affect the prime costs. If there is a variation from the budgeted capacity then the recovery of the fixed overhead costs will be affected. Again, standard costing gives full recognition to the problem. The effect of idle capacity can be measured with accuracy through the variance analysis (see Chapter 3).

The effect of learning on the time taken on an operation is quite well known. With experience a worker finds short cuts and, thereby, reduces the time cycle. How does this invalidate standard costing? Any time standards would be established by the employment of work Study engineers after the most appropriate methods had been determined. There would be no question of telling a worker to carry out an operation in any way he thought fit. Moreover, the allowances included in the standards would take into consideration any likely improvements in speed which would take place with increased skill. Once standards are established they do not remain stable for all times: cost reduction as well as cost control is a cardinal feature of standard costing. For this reason personnel

should constantly strive to effect improvements (Batty, Standard costing, p.11). Technical people are like any other people, they can be educated to understand the nature of standard costs. In any case, it is not true to say standard costs are always quite different from physical standards. For a specific period they may be quite equal to physical standards for all practical purposes. When dealing with material quantities, labour hours and other positive measures which vary in direct proportion to output, there should certainly be no difficulty in understanding the nature of standards. This criticism, if it can be treated seriously, could be applied to all techniques whether work study, operational research, ergonomics, cybernetics or electronic data processing. Managers, whether they have a technical background or not, have to be educated to adapt themselves to meet all possible contingencies. The operation of a standard costing system should not prove an insurmountable barrier.

There is clearly a misunderstanding of the nature of standard costs on the part of those who make criticisms along the lines indicated above. The main misconceptions appear to be as follows:

(1) That standard costs are set once and for all times

This is not the case. Only when kept up-to-date are standards useful and this fact is recognized both by theory and practice (see Chapter 3).

(2) That standard costs cannot possibly reflect the true value in exchange.

There is little doubt that some standard costs are nothing more than estimates which are roughly amended versions of previous actual costs. When this is the case standard costing cannot be said to exist and, therefore, the criticism given above can be justified. If the true version of a standard cost is considered then the criticism loses its power. It may be said that the standard cost and current replacement cost are for all practical purposes one and the same. The economic and technical factors, internal and external, are brought together and analysed so as to arrive at quantities and prices which reflect optimum operations. The resulting costs become realistic measures of the sacrifices involved and not simply static yardsticks which are meaningless except at the time they are established.

There are practical difficulties in arriving at the true standard cost, just as there are problems connected with ascertaining current replacement prices. Such difficulties are inherent in all business problems by virtue of uncertainty and its attendant risks. They do not of themselves invalidate standard costing: rather they pose problems which have to be solved.

7. CONCLUSION

Standard costing can be an integral part of management thought and practice. When conditions favour its employment a system of standard costing can assist in the functions of management. Modern management must be 'forward looking' and must be capable of converting the resources as effectively as possible. Standard costing conforms with most of the requirements. How it is applied is the subject of subsequent chapters.

CHAPTER 2

MODERN MANAGEMENT

1. INTRODUCTION

The term "management" refers to the process of managing; that is, when a person has responsibility for the work of others.

A number of typical definitions of management are given below. The purpose of discussing these is to show the nature of management and, how management accountancy and standard costing can make the functions more effective.

2. DEFINITION OF MANAGEMENT

There are many possible definitions of management. Some emphasize the human relations aspect, whereas others stress the quantitative functions, including the earning of an adequate profit. In Great Britain there is a tendency to stress the sociological side, especially ensuring that adequate rewards are given to employees and to shareholders and that consumers are treated fairly.

Writers in the United States of America have tended to stress the efficiency aspects of management. Drucker, in particular, has stated that profit is a result which shows the performance achieved. (P.F. Drucker, The practice of management, Heinemann, London, 1955, pp 44-45). The British and American definitions are considered below. They will show the emphasis given to the functions of management. It is the doing of a job, involving the control of people and

facilities, which makes managers: they cannot exist unless there is something to manage.

a. The British Approach

One of the standard works in Britain (The principles and practice of management, edited by Brech, Longmans Green, London, 1963, p.9) defines management in the following terms:

"Putting it into broad general terms 'management' is concerned with seeing that the job gets done, and done efficiently. Its tasks all centre on decisions for planning and guiding the operations that are going on in the enterprise".

An example is then given of what would be involved in building half a dozen houses. Four broad classifications are distinguished as follows:

- (1) Planning: i.e. determining the broad lines for carrying out the operations.
- (2) Control; i.e. checking current performance against pre-determined standards contained in the plans
- (3) Co-ordination; i.e. balancing and keeping the team together by ensuring a suitable allocation of working activities to the various members
- (4) Motivation (or ensuring morale); i.e. getting the members of the team to pull their weight effectively, to give their loyalty to the group"

In discussing top management and policy making Brech states that the board of directors should formulate and implement policy by means of

objectives. There are, he states, three legitimate objectives and these involve responsibility to the parties shown below:

- (1) to the community;
- (2) to employees;
- and (3) to shareholders.

These have a right to be dealt with fairly so that management fulfills its social obligations (op.cit.,pp.34-37).

Another British writer J.S. Dugdale (Fundamentals of modern management, Brodie, Bath, 1964, p.136), lists a number of brief definitions which are as follows:

- (1) 'getting things done through others'
- (2) 'making co-operative efforts function properly'
- (3) 'converting disorganized resources of men, machines and money into a useful enterprise.'

There is also reference to management being a social process because it is concerned with dealing with people and with the achievement of objectives. The total task of management is divided into planning, organizing, leading, co-ordinating and controlling. Oddly enough, the author does not go into the question of efficiency in his definition. That he realizes its significance is shown by a footnote taken from his book:

"Profit is sometimes regarded as a 'dirty' word, but in any firm a surplus of income over actual expenditure is still needed to fund future developments. Profit measures the net effectiveness and soundness of an enterprise and, without it, talk about the loftier 'social responsibilities' of management is meaningless". (op.cit.,p.115)

In this approach Dugdale is following Drucker and in fact, refers readers to the latter's book. More details of this are given under section b. below.

Stewart (op.cit.,p.65) states:

"The manager's job can, therefore, be broadly defined as deciding what should be done and then getting other people to do it."

The author then proceeds to explain that there are two principal tasks. There is the defining of objectives, and the planning and organizing. In addition, there must be the development and control of employees - motivation, communication, and control including measurement.

Conclusion. What is surprising is that no new ideas have come forward to state more precisely or at least to offer something new on what is meant by "management".

Reference to the first edition of the book by Brech (op.cit., p8.), published in 1953, indicated only a very minor change of definition.

At first sight it seems that management as a subject is now fully developed or that no new principles have been developed. In Britain the study of management as an academic discipline is still in its infancy. Accordingly, the lack of development of new thought would appear to be the reason for the same definition being employed. Undue emphasis to one aspect or another when defining management has tended to distort the true nature of the role of a manager in a

business. Some pertinent comments have been made on this matter:

Batty (Industrial administration and management - Macdonald and Evans, London, 1966, pp 123/124).

"There is no generally accepted definition of "Management". Much depends upon the point-of-view of the person who is attempting to define the term. Some writers stress the directing of human activities; others the earning of maximum profits or the taking of the correct decisions for maximizing profits. These and other variations in emphasis exist not only because of differences of opinion, but also because of the complex nature of business enterprise. There is no doubt that the control of personnel is very important, but can it be said that a manager is not a manager because he is responsible for an automated factory with very few staff under him? Similarly, if a business is not earning a profit does this mean that there are no managers or, if they do exist, that they are inefficient? The answer to the latter depends upon the circumstances: not all organizations aim to earn a profit and at certain stages in the life of an enterprise (e.g. early development or trade depression), the efficient manager is one who is able to carry out his functions in such a way that he minimizes losses and retains the goodwill of customers and employees.

These differences of opinion have tended to give the impression that there are at least two distinct theories of Management. On the one hand, there is what might be described as the sociological approach and, on the other, the quantitative approach. The former is distinguished by the special attention paid to motivation, the establishment of the correct social relationships; the development of social groups and the creation of an organisation within which there will be a high level of morale. As implied, the quantitative approach is concerned with results as shown by statistics on productivity and efficiency. There is an extension of the scientific management principles of F.W. Taylor; use is made of a systematic method for planning and carrying out the work to be done. In addition, the modern approach recognizes that management must concern itself with human problems and conflicts. Accordingly, full employment of work study, operational research, management accountancy and other techniques is possible without the rigid adherence to the inflexible rules propounded by Taylor. Any rules that are necessary are observed within the framework of a sound policy which includes full recognition of a satisfactory manager-employee relationship.

When either approach gives a biased impression of what Management is about, then there is nothing but disservice to all who are concerned with learning or teaching the subject. Any explanation or definition of Management should not give undue emphasis to any function. Rather there should be an adequate coverage, and balanced account, of all the functions which combine together to make a complex subject intelligible and useful.

Definition of Management

A manager is a person who attempts to achieve stated objectives by directing human activities in the production of goods or services. He utilizes the land, factory, offices, machinery and other facilities at his disposal in the most effective manner. The act of carrying out the functions which go to make up his job is described as 'management'. This term is also used to denote a group of managers, but here the concern is with the actual process of management."

It will be seen that a systematic approach to management problems is advocated. The human aspects and the effective use of other resources should receive attention. At the foundation of standard costing lies the concept that there should be a true measure of the sacrifices involved in bringing together the business resources to produce and sell (see Chapter 3).

b. The American approach

According to Fox (op.cit.,p.3) a manager is a person who "attempts to achieve a goal through the directed effort of others." He goes on to explain as follows:-

"First, a particular manager must decide on a goal or the means for achieving it, or both (depending on whether or not a specific goal were handed to him from above); he must see to it that the persons and physical factors necessary for the work to be done are present and related to each other as planned; and he must see to it that the goal is actually achieved as planned. In effect, he engages in the functions of planning, organizing and controlling the

work of others in addition to his own work. These are the three organic functions of management. By 'organic' we mean that all three are invariably basic to, and inherent in, managerial activity, whenever and wherever it is performed."

From the definition it will be seen that Fox regards management as consisting of three basic functions:

- (1) Planning;
- (2) Organizing;
- and (3) Control.

These functions have to be managed and, therefore, it is possible to speak of 'management of planning', 'management or organizing', and 'management of control'. In practice, there is a continuous interaction of one function with another. The separation of the functions serves to show what is done, or should be done, by managers. Ensuring that there is the correct interaction is very much the art of management, whereas the science aspect is concerned with the employment of techniques and analytical methods which enable managers to improve their performances. (Fox op.cit., pp. 5 and 6). Another authoritative book, now regarded as a standard work in Britain and the United States of America, gives the definition of management in the following terms:-

"... a multi purpose organ that manages a business and manages managers and manages workers and work. If one of these were omitted, we would not have management any more - and we also would not have a business enterprise or an industrial society." (Drucker, Practice of management, op.cit., p.16).

Drucker distinguishes a number of functions or jobs, but he does not initially follow the conventional approach (cf. Fox and Brech op.cit.) The functions or jobs he gives and explanations are shown below:- (The practice of management, op.cit., pp7 - 16).

(1) Economic performance.

Management should produce economic results. The latter are measured in terms of goods and services demanded by consumers at prices they are willing to pay. There should also be maintenance and, possibly, expansion of the productive resources .

(2) Managing a business.

There is recognition that management is a very specialized skill requiring competence and experience. Achievement is the key word and, therefore, management is essentially practice. Management is concerned with creating and mastering the economic consequences within the objectives defined by the board of directors.

(3) Managing managers.

Drucker sums up by stating that: "Management's second function is therefore to make a productive enterprise out of human and material resources. Concretely this is the function of managing managers." The transmutation of resources involves the bringing together of labour, materials and fixed assets. Of these only the human resources can be enlarged through the growth and development of mental and physical abilities. The non-human resources can be utilized less or more

effectively, but they cannot be expanded.

Obtaining maximum co-operation and a high level of morale can ensure that managers work together towards a common goal. When speaking of "organizing", this means the organization of managers. Good leadership is vital to maximum performance. All these and other aspects amount to the managing of the managers.

(4) Managing worker and work.

Managers should consider what and how work has to be done. The objectives of the business and the employees should be considered, and, as far as possible, should be harmonized. So far as workers are concerned this involves a study of the factors which motivate employees to work. Management should satisfy these motives whilst obtaining the transformation of resources. Drucker develops his theme more fully when he goes on to state that management involves five basic operations. These are setting objectives, organizing, motivating, communicating and measurement. By the latter term he obviously means 'control' with a different shade of meaning to that given by other writers. There is recognition given to the fact that a manager must establish yardsticks or standards. These are given to each man in the organization so that it is possible for an individual to see what is expected of him. The employees and managers then analyse performances and interpret them. (op.cit.pp 337-339).

Drucker regards measurement as the weakest area in the work of a manager. There is need for measurements which impose a system of self-control on employees without domination. Because of the need for self-control which is not easily obtained, this is the weak link in the chain represented by all the functions of management.

This observation is of the utmost importance and emphasizes the need for an adequate system of cost accounting. The stress on "adequate" is quite deliberate because only those systems which employ properly conceived standard costs are ever likely to meet the requirements of managers who wish to convert resources with the minimum of sacrifice. This doctrine is a major principle of the work in this dissertation.

Without standards there is likely to be difficulty as regards accuracy of costs, interpretation of results and any action which should be taken to correct adverse tendencies. All these matters enter into efficient management, especially the control and measurement aspects. Yet historical costing, the ascertaining and recording of actual costs when, or after, they have been incurred, is unlikely to satisfy the most elementary needs. Indeed, any system which is backward looking and which employs historical costing is likely to confuse managers. The latter require information on the present and future, and standard costing, which is forward-looking, is the most likely technique for meeting these requirements.

A more recent definition of the management process is given by D.S. Beach who has stated:

"Management is the process of utilizing material and human resources to accomplish designated objectives. It involves the organization, direction, co-ordination, and evaluation of people to achieve these goals."
(Personnel: the management of people at work - Macmillan, New York, 1965, p.6).

The theme of Beach's work is that management is primarily concerned with working with people to achieve the desired results. That there are other areas of competence, such as technical ability and knowledge of management techniques, is admitted, but the interaction of human beings is regarded as the most essential part of management.

Conclusions

Probably the most quoted of all writers on management is Drucker. This applies in the United States of America, in Britain and in many other countries. His influence has resulted in the theme that economic performance should be the first requirement of management; this is measured in terms of profit.

The social process concept, so prominent in the writing of the earlier works of British writers such as Urwick and Brech (see under section 3 below), is given a minor role. There is recognition that each social group - employees, shareholders and consumers - should be given a fair deal, ~~but~~ this obligation is not regarded

as management; rather it is a result of successful managing.

Drucker actually gives more emphasis to one social group than he does to the others. According to him, there should be recognition that the consumer is supreme. To quote. "There is only one valid definition of business purpose; to create a customer." (op.cit.,p.35).

The customer expects to be supplied with goods and services at acceptable prices. The latter, in a competitive economy, should be based on costs which represent efficient performances in the conversion of the economic resources. This implies a close watchfulness on all activities and the elimination of waste and unnecessary effort. As is shown in a later section, standard costing is the ideal tool of management for achieving these purposes.

Fox, and Beach, belong to a new school of thought in the United States of America. They are breaking away from the efficiency doctrine and capturing consumers to stress the importance of motivation and dealing with personnel. There is room for both approaches:

a much more realistic approach would be to regard management as a process which provides consumers with what they want, but which finds out the best way of achieving the desired results through the employment of research and up-to-date personnel management techniques. As shown in Chapter I standard costing is very much a part of modern management. It has emerged as a corollary of managers' needs for detailed information on the operation of diverse and complex organizations.

3. THE FUNCTIONS OF MANAGEMENT

In all the definitions given, certain basic functions are stated or implied. In Chapter I the organic functions of management are discussed in so far as they are affected by standard costing. In this section each function is considered in the light of what managers are seeking to achieve. Once this is established it is then possible to show how standard costing can act as a tool of management. The basic functions of management are as follows:-

- (a) Planning including forecasting:
- (b) Organizing:
- (c) Co-ordinating:
- (d) Controlling:
- (e) Motivation:
- (f) Communication.

There are differences of opinion on which are the organic functions. As shown earlier, Fox (op.cit.,p.5) takes the view that these are planning, organizing and controlling and are the most important functions. L. Urwick (The elements of administration, Pitman, London, 1947, p.16) puts the matter as follows:-

"Forecasting leads to a Plan. Organization has as its object Co-ordination while Command issues in Control".

Brech (op.cit.,p.13) and Urwick (op.cit.,p.19) include co-ordinating as a basic function. On the other hand, Stewart (op.cit.,p.62) regards the function as being too general to be "satisfactorily

isolated as an element in the manager's job."

Profit planning and co-ordination must go together. For this reason when considering management accountancy, and especially budgetary control, co-ordination is a vital factor. The three key functions are planning, co-ordinating and controlling (Court op.cit.,p.3). Communication also enters into the functions of planning, organizing and controlling. It means informing employees and managers of all relevant facts relating to a particular part of a business (vide. Batty Management accountancy p.334). Motivation also comes into the same category. Indeed, Drucker (op.cit.,p.338) links motivation and communication together when he states:

"A manager motivates and communicates. He makes a team out of the people that are responsible for various jobs."

Acknowledging the fact that these functions are subordinate to the organic functions described earlier, there is still a need to stress their importance in the management accountancy field. This is especially true of communication which is a vital part of the management accountant's work. Moreover, effective communication can lead to more effective motivation and a high level of morale. The scope of management accountancy is considered in the next chapter. A more detailed consideration of the functions of management is given below.

a. The Planning Function

Planning means the determination of the objectives of a business

and the manner in which these are to be carried out. It is an all-embracing function which involves all the other functions of management.

At all stages there is the problem of selection from a number of alternatives. Decision making is present when policy is formulated, when plans are made, when action is taken to carry out the plans, and when they are co-ordinated and controlled.

Fox sums up the meaning of the function in the following words:-

"Planning involves both problem solving (identification of alternatives) and decision making (selection from alternatives). To plan is to search for alternatives, then to select from these alternatives to determine general and specific objectives and the detailed means for achieving them."

This is followed by the words:

"Important new developments have contributed significantly to the quality and speed of planning." (op.cit.,p.27)

Management accounting has without a doubt a leading role to play and standard costing can materially assist in supplying managers with much of the necessary data for planning. This concept is developed further in this and the next chapter.

Forecasting, the act of looking ahead and determining probabilities, is also a vital part of the planning function. In the fully integrated system of financial control employing budgets, it is usual to prepare both long and short-term forecasts.

The meaning of "integrated" is considered more fully in Section 5,(d).

Briefly, what is meant, is a comprehensive system which views and controls the business as a whole and is not made up of fragmentary systems.

b. The Organizing Function

This function is concerned with the achievement of the most appropriate framework in which to operate within a business enterprise.

R.W. Dobson (Management information and accounting, Gee & Co., London, 1964 p.22) defines the term as follows:-

"To organize is to divide up the total task to be done to achieve objectives into tasks which can be assigned to individuals, and to group the tasks to form an organization."

In connection with management accountancy, there is the need to define responsibilities by the use of cost centres, budget centres and cost standards. E.F.L. Brech emphasizes this fact in the definition given in his work - Organization, the framework of management (Longmans, Green, London, 1957 p.13). He states:-

"Organization may now be given its formal definition:

An aspect of planning concerned with the definition of -

- (a) the responsibilities of the executive, supervisory and specialist positions into which the management process has been subdivided; and
- (b) the formal inter-relations established by virtue of such sub-divided responsibilities."

How the accountant assists in organizing is illustrated in Chapter 3.

c. The Co-ordinating Function

The need for co-ordination is ably put by N. Branton (Introduction to the theory and practice of management, Chatto and Windus, London 1960, p. 14) as follows:-

"When a number of people are seeking to carry out a task as a group there is need for synchronization of effort."

Undoubtedly, for co-ordination, the most effective tool of management is the employment of budgets. Court states that the three key words in budgetary control are, Planning, Co-ordinating and Controlling. There is a direct connection between standard costing, and budgetary control. In Court's words:-

"Budgets are also the basis of Standard Costing." (op.cit.pp3/4)
An earlier reference was made in Chapter 1 to the fact that standard costs should be the basis of budgets or the latter lose their effectiveness as a tool of planning and control (Matz, Curry and Frank (op.cit.,p.557). That this is not a generally accepted view can be seen from the opinions expressed below:-

(1) Speaking of standard costs W.D. Knight and E.H. Weinwurm (Managerial budgeting, Macmillan, London, 1964, p.31) state the position as follows:

"Cost standards, under either a standard-cost system or a budgeting system, may be average past results, engineering ideals, or planned goals expected to be attained."

(2) "Budgeted cost' is the same as either 'estimated cost' or 'normal cost' in meaning; i.e. budgeted cost is the planned cost, which frequently is based upon an average of past costs adjusted for anticipated future changes."
(M. Backer, L.E. Jacobsen, Cost Accounting, a managerial approach, McGraw-Hill, New York, 1964, p.275).

The authors then go on to explain that a budget may be based on standard costs when it is called a 'standard budget'.

From these quotations, which originated in the United States of America, it will be seen that there is no hard and fast rule regarding the type of standard cost to employ for budgetary control.

- (3) "Closely allied to standard costing is the principle of budgetary control." (C.I. Buyers and G.A. Holmes, Principles of cost accountancy, Cassell, London, 1961, p.23).

In the same publication the authors state that, "In many instances the same standards are employed for both standard costing and budgetary control." They go on to add that budgets are often based on the anticipated actual level of costs. This differs from the one taken for standard costing which would consider what the optimum level should be.

(4) A similar point of view is adopted by R.H.S. Beacham (Approach to management accounting, Society of commercial accountants, Bristol, 1956, p.66), when he asserts that budgetary control involves the :

"preparation of estimates for each department of a business, based on past records adjusted in the light of present circumstances and future trends, and covering a definite period."

The same author regards budgetary control as an essential pre-requisite to standard costing, the latter being regarded as a system which employs pre-determined, estimated figures during the process of manufacture (op.cit.,p.69).

The approach indicated by this author is more in the nature of estimated costs rather than standard costing or budgetary control. This point-of-view appears to come from a lack of understanding on

the part of managers and even accountants as to the true nature of standard costing (vide Chapter 5 which deals with the practice followed in British Industry).

(5) The Institute of Cost and Works Accountants have faced up to the problem of deciding at which point the standard costs should be established. This will be seen from the following statement:

"The first problem is in the 'egg or chicken' category: should standard costs be derived from the forecasts or vice versa"? (An introduction to business forecasting, Gee, London, 1960, p.30).

It will be seen that standard costs are used in connection with forecasts and budgets. In fact, the Institute is quite emphatic that standard costs should be the basis of the forecasts and, therefore, the budgets. They go on to recommend that the sales forecast should come first and then the standard costs would be prepared. This is not to suggest that costs should be based on the sales forecast alone. The Institute suggests that the "normal" budgeted output should be taken as a basis for the flexible budgets, thus highlighting any abnormal costs due to under or over capacity working. (op.cit., pp.30/31).

In the space of a relatively short time there appears to have been a change in emphasis on the relationship between standard costing and budgetary control. J.H. Els in his doctorate thesis (The

application of standard costs in certain South African Industries, Potchefstroom University, 1964, pp 49 - 56) came to the conclusion that the practice followed was to treat standard costs as a development of budgetary control and the "costs" were not true standard costs at all. On the data available this was the correct conclusion.

There is now growing evidence, (as shown by the recent works of the I.C.W.A. and Batty,) that standard costing and true standard costs are being thought of and developed within the framework of budgetary control and not simply as an offspring of budgetary control. Detailed costs are not always possible (when non-standard products are made), but the standard costing approach is still very necessary to ascertain what costs should be when operating at an efficient level. This is in opposition to the idea that budgeted costs should be based on past actual costs for expected actual conditions.

There is now a tendency for budgeted costs and standard costs to be regarded as being synonymous so that they represent efficient operations (Standard costing, Batty, p.17; Industrial administration and management, Batty, p.412)

Turning away from the relationship of budgetary control to standard costing it should be noted that co-ordination is given full recognition by most authorities writing in recent times.

For example, Knight and Weinwurm take the view that, since the

master budget is the overall plan, co-ordination is absolutely vital and is a natural part of budgetary control. Return on investment is taken as the summary evaluating criterion and variances and ratios are employed as guide posts. Co-ordination then comes through the division of the management functions and the defining of responsibilities (op.cit.,p.11).

This constant attention to all divisions of a business separately, and within the context of an integral organization, is vital to the operation of standard costing and budgetary control. The harmonizing of all efforts towards the common objective is a vital part of management. How standard costing is applied is shown in subsequent chapters.

d. The Controlling Function

Plans are only of value when they can be achieved. The control function attempts to ensure that actual results and plans conform or, if they do not, an effort is made to correct adverse tendencies. There are two aspects of control, the physical and the financial. Both are important, but the financial control tends to emphasize some aspect of cost, revenue, profit or loss.

The most important facet of physical control is production control which includes programming, scheduling, despatching, comparison, and corrective action. There is no intention of describing these terms in detail. They are mentioned because standard costing is dependent

upon the information which is prepared for the production control system.

On the financial side there are budgetary control, standard costing, financial ratio analysis, and various costing systems and methods.

Control is absolutely essential to ensure that plans made are achieved or, if there are deviations, that managerial action is followed to obtain maximum benefit. The financial aspects of control are considered in detail in Chapter 4. In this section the managerial concept of control is examined.

There is some difficulty in defining "control" with preciseness.

Indeed, when dealing with business management there is often great difficulty in defining the precise areas which are to be controlled.

This applies especially when considering operational research (O.R.) and its application to specific problems, many of which may be solved by tackling in one or more ways selected from a variety of

alternatives. One O.R. man may say that a problem may be solved by a particular method, whereas another may call for an entirely different approach. The decision taken will tend to influence the selection of the area to be controlled. (vide R.T. Eddison,

K. Pennycuik, B.H.P. Rivett, Operational research and management, E.U.P., London, 1962, pp 128-131). In management terminology

the term given to control is "cybernetics". This implies a system which is complete in all aspects so that control becomes automatic.

There is the establishment of a plan, operation of the plan,

automatic feedback from the system, and automatic regulatory action so that any deviations are corrected.

The American mathematician N. Weiner is said to be the inventor of the term as used in its modern context. Actually, the term is not new at all, but was used by Plato as "kybernetike". Nevertheless, it is now generally acknowledged that, although the term is not new, the modern meaning and developments that have taken place since Weiner's discovery in the 1940s, have made the subject quite different from the original version which was the "art of government", (vide G.T. Guilbaud, What is cybernetics? Heinemann, London, 1959, ppl-3). M.J. Sargeaunt regards cybernetics as the construction of dynamic system models. The marketing, production and financial elements are developed gradually until a complete model is available for testing. (Operational research for management, Heinemann, London, 1965, p.28).

Computers have enabled data processing methods to be developed and the "sensing capacity" can be incorporated into the systems. This introduces the idea of "servomechanism" when the corrective action is an integral part of the dynamic system model. In really sophisticated systems the servomechanism may take the corrective action and also suggest the action for replanning, thus going the full cycle. How standard costing fits into the cybernetic concept is covered in Chapter 4. The features of control are as follows:

- (1) Collection of data for forecasting events and costs.
- (2) Using data and knowledge to determine policy and make plans.
- (3) Comparing actual results with plans
- (4) Taking corrective action.

e. Motivation and Communication.

As noted earlier, Drucker treats motivation and communication together as related topics. This is a logical procedure because effective motivation is very rarely present unless there is an efficient channel of communication.

A brief but clear description of motivation is given by Stewart in the following words:

"... A manager motivates: that is, he inspires his staff to contribute to the purposes of the organization, to be loyal to its aims and to pull their weight in achieving them". (op.cit.,p.62).

The introduction and maintenance of a high level of morale is important to the efficient functioning of the management processes. All too often, systems are made to operate without regard to human problems or feelings. A good manager (including the accountant) remembers that he is dealing with people and that the correct frame of mind is just as important, possibly more important, than the achievement of 100 per cent accuracy in figures.

Communication is the art of letting people know what is going to happen, what is happening, and what is expected of them.

E. Moonman (The manager and the organization, Tavistock Publications, London, 1961 p. 27), defines the term as follows:-

"Communication is the capacity of an individual or group to convey ideas and feelings to another individual or group, and, where necessary, to evoke a discriminating response."

The management accountant should pay special attention to the communication aspect of his work. In setting standard costs he must have all relevant facts; in getting personnel to carry out the corrective or preventive measures he must stimulate thought and action. All this means adequate and effective motivation and communication.

There is now recognition that profit maximization is not necessarily the prime object of management. Nevertheless, having regard to the capital employed a reasonable profit is expected. This concept has to be linked with the idea of the continued existence of the business. A quotation taken from Contemporary corporate accounting and the public by R. Ladd (R.D. Irwin, Homewood, Illinois, 1963 p.21) sums up the position as follows:-

"Few businessmen would argue with the simple statement that the primary aim of a business in a free enterprise economy is to make a profit. But this implies not only a profit today, but also continued profits tomorrow. For a company is only 'successful' if it is laying the framework for a continuously profitable future, as well as producing a satisfactory profit today".(Source: Environmental change and corporate strategy - Menlo Park, California, Stanford research Institute, 1960 p.21).

The old-fashioned idea that profits have to be maximized is now replaced by the concept of continuity implied in the above quotation. A "satisfactory" profit rather than a "maximum" profit, is certainly a more realistic view. A better approach still is to view the criterion from the point-of-view of a satisfactory sustainable return on capital employed (vide: Knight and Weinwurm, op.cit.,p.15)

There has been a decline in the importance of the shareholder and company directors are now expected to fulfill their social obligations to employees, to consumers, and to the public at large as well as paying dividends to shareholders. These obligations have to be met in a fiercely competitive world where excessive prices could lead to loss of trade.

The only course open to managers of a company that wishes to survive in a free enterprise community is to operate at maximum efficiency. In this way, it should be possible for all social obligations to be met. What is required is a measure to show whether maximum efficiency is being achieved. As will be shown later, standard costs represent what costs should be for a stated volume of output for a period of time. They indicate, therefore, what is expected and, subsequently, when costs incurred are known, the extent to which the expectations have been realized.

4. CONCLUSION ON MANAGEMENT

The processes of management have developed from a need for firms to be more efficient. There has been a rapid growth in technology and organizations have tended to become larger and more complex. The need for specialists has become more and more apparent from the growth in management tools and techniques.

There has been a revolution in management thought. Of special importance is the growth in the extent of the participation by workers and management in the development of management objectives and tools. Emphasis on one aspect or other of management is now outmoded and a balanced approach is necessary. Both the sociological and quantitative aspects should be included in any definition of Management.

The movement away from the idea of profit maximization has meant that new thinking has had to be applied.

If continuity of the business is a major objective then there is need for the application of all management functions. How is a profit target to be set? How is this figure to be incorporated into plans which can lead to achievement of management objectives? This changing emphasis makes the employment of management tools quite indispensable. When dealing with profit planning and control the obvious tool is management accountancy. This is the topic covered in the subsequent section of this chapter.

5. MANAGEMENT ACCOUNTANCY - A TOOL OF MANAGEMENT

a. Introduction

This section is concerned with showing how management accountancy is concerned with the functions of management. Modern business concerns are large and complex and, therefore, the knowledge of what might take place (forecasting), the possible consequences of action taken or to be taken, and the actual results obtained are all vital to obtaining efficiency.

Standard costing is a vital segment in the broad field of management accountancy. Accordingly, it is desirable to survey the "general" (management accountancy) before going on to the "particular" (standard costing). This helps to place standard costing in its true perspective within the framework employed for carrying out the management functions.

b. Definitions

Management Accountancy has been defined in a variety of ways by different authors. Developments have taken place throughout the world, at times practically unnoticed. Often there was recognition of the existence of management accountancy, but no positive effort made to emphasize or explain the integrated system.

What is important to notice is the subject existed for many years in a somewhat fragmentary form before being given formal recognition as a fully integrated system; it embraces all accounting techniques and methods employed for assisting managers in their work.

In Australia, W. Scott (The principles and practice of cost

accounting, Law Book Co., Sydney, 2nd Edition, 1947) stated in his Preface written in 1946:-

"Some of the subjects included in this book on Cost Accounting bear some relationship to Managerial Accounting but no attempt has been made to draw a dividing line between Cost and Managerial Accounting. It is felt that to do so would necessitate inclusion of an exhaustive survey of the whole managerial accounting field". (p.VI).

Scott is apparently implying that there should be a separation of cost accounting and management accountancy, at the same time admitting that it is a difficult task.

A very interesting quotation appears in Top management accounting by T.G. Rose, (Pitman, London, 1957, p.65) the source being "Management through accounts" by J.H. Bliss, published in the United States of America in 1924. The appropriate section is as follows:-

"The real function of all accountancy work is to render a service to business management. The service lies in placing before business executives the most complete information on their affairs, analysed and interpreted so as to be readily understood and used effectively in guiding and controlling their operations and transactions more profitably, economically, and conservatively".

It is important to notice that developments took place very slowly until interest was aroused in 1950 by the visit of a team of British specialists to the United States of America under the auspices of the Anglo-American Council on Productivity (to be known as A.A.C.P) The AACP Report was published in 1950 by The British Productivity Council and the definition of the subject was as follows:-

"Management Accountancy is the presentation of accounting information in such a way as to assist management in the creating of policy and in the day-to-day operation of an undertaking". (p1 flyleaf).

Even this Report did not give any great detail on the methods or techniques to be employed. No doubt this apparent lack of knowledge or use of techniques led Rose to express the following view in 1957:-

"Management accounting stands at the present time much where the science of time and motion study stood twenty years ago". (op.cit.,p10).

The same author viewed management accountancy in a very limited way.

Rose regarded the analysis and interpretation of the profit and loss accounts and balance sheet as being the basis of management accounting as can be seen from the quotation:-

"The principal value of management accounting lies in the fact that it provides the data from which the movement of money in the business can be controlled. The whole of the commercial activities of a concern are based upon the effective use of the total capital employed, and it is only by the analysis of the balance sheet and profit and loss figures in their entirety that this use can be observed, and therefore planned and controlled". (op.cit.,p11).

Much of the development of the subject in the 1950's appears to have come from the various professional accountancy bodies. A typical statement of the position is contained in Management accounting - A concise appraisal, published by the Association of Certified and Corporate Accountants, London, in 1954. The definition given in the pamphlet is reproduced below:-

"The application of accounting and statistical techniques to the specific purpose of producing and interpreting information designed to assist management in its function of promoting maximum efficiency and in envisaging, formulating and co-ordinating future plans and subsequently in measuring their execution". (p. 3).

The scope of management accountancy is shown in this publication to be comprehensive, including financial accounting, cost accounting, budgetary control, standard costing and marginal costing.

Unfortunately, it does not explain any of the techniques, nor says how they can be employed.

Other publications adopt a similar approach to management accounting.

Typical of these are the following:-

- (1) "By management accounts I personally mean all accounts and accounting information, including statistical information, prepared for all levels of management to enable them to control the costs and the operations of the business in time for their action to be effective. (A.G. Burney, Illustrations of management accounts in practice, Gee & Co., London, 1962, p.14).
- (2) ".....the application of advanced accounting techniques to assist management in the efficient planning and control of operations". (F. C.de Paula, Management accounting in practice, Pitman, London, 1964, p.3).
- (3) ".....management accountancy provides information needed by management to carry out its controlling process". (R.W. Dobson, Management information and accounting, Gee & Co., London, 1964, p.38).
- (4) "The focus of attention of managerial accounting is on cost control and the uses of cost information". (H. Bierman, Jr., Managerial accounting, Macmillan, New York, 1960, p 251).

c. Limitations of the Definitions

These definitions, and those given earlier, are typical of the attitude of mind which exists on the subject. They emphasize, in the main, the preparation of information for assisting management. Unfortunately, they tend to be too restrictive in their scope and, therefore, limit the usefulness of management accountancy. A serious criticism of the approaches is that they are too limited, stressing only certain parts of a very wide, all-embracing subject. Sometimes there is emphasis given to financial accounting, at other times on budgetary control or some other aspect, such as standard or marginal costing. Another weakness is the failure to recognize that a business, and the environment in which it operates, is dynamic in nature and that values change. The recording of transactions in historical costs, and the calculation of profit or loss and the presentation of information to management based on the same costs, is tantamount to ignoring realities. The need to give recognition to the complete system is contained in the phrase given below:-

"What is essential is the total integration of systems, procedures, form designing, and related matters into a complete, co-ordinated system".
(Batty, Management accountancy, 1966, p.5)

In connection with revaluation accounting and productivity some very pertinent observations have been made by H.S. Davis in Productivity accounting, (University of Pennsylvania Press, Philadelphia, 1955,). These are reproduced below:-

"Since productivity gains are distributed via the price system, it is appropriate to use the yardstick of this system, or money, to analyse the distribution". (p.4)

"The adjustment of financial statements to a common-price basis is not confined to productivity accounting. Nor is it a new and untried practice. Examples can be found of businessmen adjusting their accounts for price change as far apart in time as the America of the 1770's and Germany of the 1920's". (p.103).

In South Africa Professor Sorgdrager and Professor Els have given due recognition to the importance of the concept of the true cost as represented by economic realities. Following in the footsteps of Sorgdrager the statement shown below is made by Els:

"The relation between cost and value is now ascertained but it is still to be determined that cost is not all value sacrificed; it must be economically sacrificed values. The theory of replacement value brought to an end the technical cost concept of the Anglo-Saxon literature which does not take into consideration the efficacy of the sacrifices and the ever-changing price levels in a dynamic economy" (op.cit.,p 28).

Writing in England the author of this dissertation had the following points to make (Management accountancy, 1966):-

- (i) "Revaluation or replacement value accounting is concerned with ensuring that capital is maintained intact in real terms and profit is calculated with this fact in mind". (p.8).
- (ii) "A profit cannot be said to be earned unless capital is maintained intact in real terms.

This convention recognizes that the monetary unit is not stable. Attempts to overcome the effects of changes in the value of money have been made via revaluation accounting, but as yet there is no general acceptance of the theory. However, there is strong evidence that more and more accountants are modifying their views to meet the dynamic state of business and the economy".

- (iii) "Return on capital employed is used as the criterion for measuring the efficiency of the business. For this purpose the capital employed should be calculated by reference to current replacement values". (p.11)
- (iv) "The most important fact to remember is that Standard Costs reflect what the costs should be for stated conditions and volume of output". (p.44)

(The reference to "conditions" was primarily to the state of efficiency taken as a basis for setting the standard costs.)

Therefore very similar and parallel approaches were being developed in the two countries, South Africa and Britain. There is, in fact, a connecting link between the two; the influence of the Netherlands. Both Sorgdrager and Els were influenced by the practice carried on in that country, and quite independently, in Batty's Management Accountancy the example taken to illustrate revaluation accounting is also taken from the Netherlands in the form of the accounts of the Philips Electrical Company (N.V. Philips' Gloeilampenfabrieken) (p.647).

Standard costing, properly construed, defined and operated requires that economic realities must be recognized. Standard costs are projections of what costs should be at a predetermined level of efficiency and for a stated volume of output. Through variance separation and analysis any inefficiencies are highlighted so that managers know the level of achievement that is being obtained. This aspect is considered further in subsequent chapters.

d. Integrated Approach to Management Accountancy

Reference to total integration of all systems within the management accountancy framework was stressed earlier (see pages 55/56)

As was shown, all the definitions quoted were too limited in scope.

The true value of management accountancy lies in the fact that there is co-ordination of all the vital functions.

There is a growing recognition of the need to make management accountancy a comprehensive, yet flexible, tool of management.

Writing in the United States of America Li has the following to say in his Preface of his book (op.cit.,):-

"The book evolves around the concept that management accounting is the result of interaction between accounting and management. Management, in the author's opinion, is more than just a user of accounting information. It plays an important role in making accounting more meaningful and more useful. Its contribution has been emphasized in the following areas: in financial statement presentation; in organizational structure; in setting standards, in sales forecasting and inventory policy; in managed cost planning; in cash budgeting; and in setting the rate of return on investment. Accounting, in the author's opinion, is more than just a provider of information. By being made aware of the management process, accounting becomes more meaningful and useful as it adapts itself to meet the varied, but specific, needs of management". (p.VII)

Li is making two important points: that the subject should be comprehensive, and that there should be a two-way interaction between management and accounting. These are very important principles and should be remembered throughout any study of management accountancy. As a corollary of the principle that management and accountancy should go hand-in-hand, is the fact that any system or procedure

within the management accountancy framework should also be fully integrated so that there is interaction between the various parts.

e. Conclusion on Management Accountancy

If standard costing can be employed, then this should be fully integrated into the management accountancy structure in a way that permits the information from standard costing to be used by the other systems or procedures, and vice versa. By the same token, the information from standard costing should be used in assisting in all the management functions outlined earlier. There should be no need to collect data separately and independently for each system or for each problem to be solved.

From what has been stated above a number of interesting deductions can be made:

(1) Management accountancy is a relatively new subject which, in the past, has suffered from a too restrictive outlook on the part of managers and accountants. Rose (op.cit.,p 13) who was regarded as one of the outstanding authorities on management accountancy placed far too much emphasis on the analysis of the "historical documents" which contained the profit and loss account and balance sheet. Yet this author (Rose) was way ahead of the majority in his approach to higher business control.

(2) There was too much stress placed upon the recovery of the actual (historical) costs and not enough upon the planning and proper ascertainment of costs. Sorgdrager and Els in South Africa and Batty in Great Britain have advanced new ideas and concepts which are rapidly gaining ground. Many companies are now following the lead by Philips Electrical Ltd (N.V. Philips, Gloeilampenfabrieken) and are adopting revaluation principles in some measure. Examples are:

- (a) Fisons Limited
- (b) Tube Investments Limited
- (c) Imperial Chemical Industries Limited
- (d) Laporte Industries Limited
- (e) Marks and Spencers Limited.

(vide Batty, Management accountancy, p.389).

(3) The limited approach made by many authorities is now being recognized. For maximum usefulness there should be the kind of integration of all accounting systems as explained earlier. Li and others in the United States of America are now recognizing that management accountancy should be fully comprehensive. This approach is in accord with the one advocated by the author of this dissertation (Management accountancy 1963, 1966 editions).

CHAPTER 3

THE MEANING OF STANDARD COSTING AND STANDARD COSTS

1. HISTORICAL BACKGROUND

a. Introduction

The problems associated with manufacturing and earning a profit were recognized for very many years before standard costing was even invented. In England, one of the earliest attempts at costing was by James Dodson, who in 1750, showed how the books were kept by a shoemaker (D. Solomons, Studies in costing, Sweet and Maxwell, London, 1952 p 4).

From this date onwards there was a steady development of costing principles, especially in the period from 1880 to 1910. Typical of the work published around 1900 was L.C. Headly's book (Boot and shoe costings, Gee, London, 1908) in which the following appeared:-

"It is submitted that in designing a system for checking prime costs there are, besides others, six cardinal principles to be observed:-

- (1) That the expense of it does not exceed a sum which can justifiably be incurred.
 - (2) That it does not impede or interfere with the working of the factory or workshop.
 - (3) That it is simple.
 - (4) That it is automatic and its results are available, daily, weekly, monthly, as the work proceeds, when they are of service and can be utilised.
 - (5) That it is reliable, and its results are corroborated by the audited accounts at stated periods.
 - (6) That it should be a uniform system applicable throughout."
- (ppl/2)

The first principle clearly refers to the control aspect. The author went on to state that checks should be made on the costings of raw materials, productive wages, and the labour operations.

b. Early Developments

In the 1920's (see below) the Institute of Cost and Works Accountants was giving recognition to standard costing. D.F. Evans-Henning (Flexible budgetary control and standard costs, Macdonald and Evans, London, 1952, p V) notes that he passed his final examination in costing which included a question: "What do you know about Standard Costs?". The same author also states that only a superficial knowledge existed at that time. It was not until G.C. Harrison's book on standard costing* was published in 1930 that industry really began to take standard costing seriously. (vide Standard Costing in Great Britain J.L. Hilton, The cost accountant, December, 1962 p 472).

Although Harrison's work may be regarded as a turning point, there is evidence to show that this was not the true beginning. The same author had published between October, 1918 and 1920 (Industrial management, Engineering magazine company, New York) a number of articles dealing with costing, especially the predetermination of standard costs. These articles were reproduced in a work entitled: Cost accounting to aid production, which was published in 1921, and he examines the need for standards and shows how they should be developed. Full acknowledgement of the part played by F.W. Taylor

*Quoted later in this Chapter

in the development of scientific management, and the pioneering work of H. Emerson, is indicated in the same publication (Engineering magazine company, New York pp 33 and VII respectively).

c. The Institute of Cost and Works Accountants - Phase I

Emerson's contribution to standard costing is given prominence by H. Wilmot in an early article (The cost accountant, Institute of Cost and Works Accountants, London, August 1923 p.103).

Emerson wrote a number of articles in Industrial management in the latter half of 1908 and the Spring of 1909.

Speaking of methods of ascertaining costs Wilmot stated that the second method is "to ascertain them before the work is undertaken".

Wilmot then goes on to state that:

"To prevent any operation from costing too much a knowledge of what that operation should cost is required and this is where the supreme value of standards becomes evident".
(ibid p. 103).

Wilmot analyses the information and variances (which he calls "variations") along the lines of a modern system, except he does not give the current terminology for the variances for overhead costs. Instead, he makes comparisons by nature of expense such as, for example, indirect materials, salaries, power, and other services.

on 16th November, 1923 R. Stelling addressed a public meeting of the Institute of Cost and Works Accountants' Branch in Sheffield

on "Standard Costs with particular reference to the Sheffield industries". This lecture was reported on in The cost accountant (November 1923 p.277). Stelling states that the application of standard costs would be appropriate for dealing with the managerial problems connected with steel smelting and rolling as well as the manufacture of cutlery. The definition given for a standard cost was "a predetermined cost based upon the presence of a given set of conditions" (p 278).

Stelling's principles for the setting of standards deserve special mention and are quoted below:-

"The setting up of standards requires the greatest possible care. At every stage consultations must be held and full agreement reached, or else acrimony is bound to arise at a later date if results do not tally with the predetermined figures. The foreman must be consulted as to the effect of varying factory conditions, the technical engineer as to the effect of variations in the specification or analysis of the raw material, the purchasing agent as to the effect of variation in re-order quantities, the salesman as to a sales target, the accountant as to the administration figures, the plant engineer as to the condition of the machinery, etc. These are only some of the varying conditions which the cost accountant has to incorporate into a series of formulae which may be compared with a complex series of simultaneous equations." (op.cit., p.279).

And these remarks were made in 1923.

A further important step forward was made by H.E. Kearsey. In December, 1924, he had an article published which showed how standard costing could apply in a foundry and engineering business. (The cost accountant, Institute of Cost and Works Accountants, London, p.244). In this article Kearsey explained how standard cost sheets had to be compiled and how costs could be controlled.

Unfortunately, although the intention is to use "predetermined" costs the author does not give the impression that he is trying to establish an efficient level of operations. In today's terminology the system in question would be regarded more as "estimated costing" rather than standard costing. Nevertheless, the idea of predetermined costs is certainly there, but is in a diluted form to meet the practical difficulties which were being encountered at that time.

A further reference to standard costing is found in The cost accountant for September, 1926 by an anonymous contributor. This article brings out the difference between estimated costs and standard costs in the following manner:-

"Stated briefly, standard costs might be explained as production cost results obtainable under standard normal and/or ideal conditions" (p 110).

The author then goes on to state the difficulties associated with defining "normal" or "ideal" conditions. In the paragraph the "disconcerting differences in actual costs of work carried out within near periods" is deprecated.

On the 2nd November, 1927, H.D. Jack lectured at a Liverpool Branch Institute of Costs and Works Accountants' meeting on "Predetermination in Industrial Accountancy" (The cost accountant, Institute of Cost and Works Accountants, London, 1927 p 229). The main theme was "financial foresight" as being essential for management of a large, complex organization. The concern of the article was

on forecasting for the functions:

- (1) Selling.
- (2) Production.
- (3) Purchasing.
- (4) Finance.

The main concern is, therefore, with forecasting and budgeting, but there is also reference to predetermined costs so quite clearly Jack regarded these as being within the framework of a budgetary control system.

Reference to standard costing was made at the Seventh National Cost Conference of the Institute of Cost and Works Accountants held in Birmingham on the 28th September (The cost accountant, October, 1928 p133 et seq). C.T. Hobson a speaker, reading a paper by J. Wardropper, emphasized that a factory manager was interested "not so much what articles or operations have cost, but what they should have cost" (p 138). R. Dunkerley commenting on this statement added:

"That is the setting up of standards, and I think this is where cost accountancy has got to develop. We have to compare our figures with standards and not against what we did last week or the month before or the year before" (p 146).

Kearsey (cited earlier), made a valuable contribution to cost accounting thought in an article published in February, 1929 (The cost accountant p 288). The definition of standard cost now shows a move away from his previous contribution with its emphasis on estimated costs. This is as follows:

"A standard cost may be defined as a carefully prepared estimate dissected under fixed headings of manufacturing costs under certain conditions".

The same author also speaks of costs indicating "measures of efficiency" and making a "comparison of actual costs against standard or predetermined costs". There is, therefore, a clear indication that he is speaking of standard costing in the modern sense.

In the same journal, in the same year (December, 1929 p 188), D.L. Moran put forward views which were somewhat retrograde in character. His view was that "Standard costs are estimates built on the experience provided by actual cost records" (my underlining). Moran regarded standard costs as cost estimates and little more they "are not strictly costs at all - they are in reality only estimates".

This kind of conflict or uncertainty is to be expected in the early days of development of a subject. As Hilton (op.cit.,p 473) states:

"Even by January, 1931, there was still much confusion regarding the meaning of a standard cost"...

One of the main problems was the shortage of authoritative books on the subject. There was a reluctance on the part of accountants (or publishers!) to put their ideas into book form. Articles based on speeches are soon forgotten, but books have a much longer life and tend to be acted upon, especially when these have been studied as part of qualifying examinations.

d. Early publications and articles on Standard Costing

One of the first books to appear on the standard costing theme was written by F.A. Parkhurst. He stated that:

"We want to know in advance what it should cost, at least within a few per cent, and we must know from day to day how much has been spent upon any job up to that point" (The predetermination of true costs, Wiley and Sons, New York, 1916, p 1).

Unfortunately, this work does not go far enough in its analysis to justify the term "standard costing". There is, though, a clear indication that he considers that predetermined costs are essential. His costs were more in the way of estimated costs than standard costs.

Harrison's book (Cost accounting to aid production, 1921) cited earlier, is next in line and his ideas are developed into a fully comprehensive system in a further publication which emerged in 1930 (Standard costs, Ronald Press, New York). As observed earlier, the latter is now regarded as the first blueprint of our modern systems. X

In between 1921 and 1930 there are one or two books worthy of mention:

- (1) W.B. Lawrence (Cost accounting, Prentice Hall, New York, 1926) considered the establishment and employment of standard costs. Moreover, he made a clear distinction between "estimating costs" and the establishment of true standard costs. A complete variance analysis is also suggested along with a procedure for reporting on variances.

- (2) C.L. Maze and J.G. Glover commented in 1929 that "Standard costs are a comparatively new development in the field of cost accounting" (How to analyse costs, Ronald Press, New York, p 299). The definition of standard costs was regarded as "preplanned estimates" which took into account "abnormal or subnormal conditions in materials, labour, economic conditions, etc." The system was fully described and could be regarded as a major development in the history of standard costing.

In Britain the emphasis being given in books was on budgetary control and not standard costing. A.W. Willsmore produced a monumental work which is still being used today. (Business budgets and budgetary control, Pitman, London, 1932). The indication given by his book is that the approach to control is via budgetary control. Whether this is the case is shown later by an analysis of contributions which appeared in The cost accountant in the post-1930 era. The first major work to follow Willsmore's book was by J.A. Scott and he too approaches the subject through the use of budgets for "estimated costs", although he does admit that standard costing may exist without budgetary control. (Budgetary control and standard costs, Pitman, London, 1939 p 9).

e. The Institute of Cost and Works Accountants - Phase II

The move towards budgetary control was given prominence at the Ninth National Cost Conference held in October, 1930. A paper was given

entitled "The development of cost accounting towards budgetary control". The lecturer, W.B. Walker emphasized that cost accounting had moved towards budgetary control. This was due to the need for financial planning and the maintenance of organization balance. Budgetary control was regarded as an extension of cost accounting and, therefore, should come within the realm of the work of the cost accountant. (The cost accountant, Institute of Cost and Works Accountants, London, November, 1930, p 151/2).

Public or business opinion may have had considerable influence on the development of "budgetary control" rather than "standard costing". C.W. Summers another speaker at the Ninth National Cost Conference urged the need to develop "standards", but H.G. Jenkins, in his paper, asserted that:

"Unfortunately the term 'budgetary control' seems to have caught the fancy of the business community to a very considerable degree during the last few years". (p 154).

At this conference there was a great deal of discussion on the appropriate term to employ. Delegates argued on the correct title of the discipline -should this be "financial control", "budgetary control" or "standard costing"? As stated by E.W. Hall:

"Some are calling it budgetary control, some standard costing. What is it? Where do we start and where do we finish with it"? (p 160).

There was a clear indication that cost accountants were endeavouring to justify themselves in industry and they were being forced into the use of the term "budgetary control" because of its employment in the popular terminology of the day.

That standard costs were being employed is implied in an article which appeared at the same time as the report cited earlier: this states: "Before any attempt it made to prepare a budget, standard costs should be developed for every product manufactured." This article then went on to describe how standard costs should be compiled and how budgetary control was being used in the steel industry. A. Eastwood, (The compilation and application of budgets in industry,) (p.174).

The distinction between standard costs and budgetary control was certainly recognized by many costs accountants but, according to W.A. Rodger, this was not being given due prominence by writers, especially those from America. Extracts from a letter are given below:-

"Standard Costs in this country, as I understand the term, are not actual costs, nor are they past results, but are more in the nature of an estimate found having regard to both and to future policy, and are more than anything else the cost of a standard product put through a factory under normal conditions of purchasing of labour and of indirect expense for a batch or quantity which is most economical to adopt having regard to manufacturing conditions, for a reasonable periodical output after allowance has been made for holidays, weekends, and so on.

Normal conditions for the three elements of factory cost are not likely to exist at one and the same time, and therefore, standard costs will probably need some adjustment if they are to be used as a guide to fixing selling prices, supposing that the selling price is not already fixed by market conditions. They serve a more useful function as a measure of factory efficiency, and as a means of allocating responsibility for deficiencies, whether controllable or otherwise, and as a guide to the production managers, and should always be shown on any comparative reports together with actual costs and past performances.

Budgeting on the other hand, fulfils a different function and covers a wider field than Standard Costs. Budgeting means the careful and considered evolution of a programme of production and selling for a future period e.g. 12 months or preferably longer where practicable. On the solution of this problem is brought to bear all the knowledge gleaned from existing records, adjusted to meet future conditions from outside sources as they affect the country generally and the trade in particular and bearing these conditions in mind, a forecast is made of the position of the business, both from a financial and production point of view: so that a proforma profit and loss account can be prepared for each cost period for the purpose of comparison with the actual. The Cost Accountant, by introducing budgeting as a logical development of Cost Accounting, is putting an instrument of control into the business manager's hands which is not likely to be superseded, for after the necessary practice and experience has been gained, firms in Britain have found that they can by the aid of a budget, substitute for haphazard production a considered and reasoned policy".

(The cost accountant, Institute of Cost and Works Accountants, January, 1931, p 227).

The rather full description has been taken to show quite clearly that an attempt was being made to distinguish between the two techniques. In 1933, R. Dunkerley showed how standard costing was being used in the cutlery industry. This system formed the basis of fixing prices as well as controlling costs. All the ingredients of a complete standard costing system were included, including stock valuation, cost analysis and the ascertainment of profit or loss for the period. (The cost accountant, Institute of Cost and Works Accountants, June, 1933 pp 4 and 5). C.H. Durman found no difficulty in defining and explaining how standard costing could be applied in industry. He also asserted that "For the successful operation of a standard costing system it is necessary to prepare a complete budget of the whole of the business". It will be noted

that here the view taken was that properly conceived standard costs should be developed within a budgeting system and the latter was to be regarded as standard costing and not budgetary control. This was certainly in opposition to the attitude being adopted at the National Cost Conference in 1930. (The cost accountant, Institute of Cost and Works Accountants, October, 1934, p 134). The ideas of Durman were developed further by D.L. Moran and were reported on in July 1935. In particular he considered how standard costing could be employed for fixing prices and for making comparisons of the relative costs of employing alternative methods of producing and distributing (p 33). S. Owen, writing in April, 1936, examined the reasons for the growth of standard costing. These are now familiar matters and are fundamentally the disadvantages of using actual costs. One of the principal reasons for the introduction of standard costing was apparently to find ways of "overcoming the problem of half-filled factories and workshops". It is very significant that Owen states that standard costing is also known as "budgetary control". (The cost accountant, Institute of Cost and Works Accountants, London p 343 et seq).

A year later S.J. Wheeler was recorded as stating that there are many who have "enjoyed the undoubted benefits obtained from standard costs". He then went on to describe a standard costing system which employed ratios (basic standard costs) which were

calculated by reference to standard costs and actual costs.

However, he came out against using these ratios for control purposes and this appears to be the attitude adopted today (see Chapter 5)(March 1937 p 308 et seq.)

A full knowledge of standard costing was exhibited by L.A. Wight who lectured at the Scottish Branch of the Institute of Cost and Works Accountants in April 1937. A standard cost was regarded as "an acknowledgement of the fact that there is, in reality, a basic economic cost of producing a given article or commodity which can be effectively used as a 'yardstick' or 'rule' for increasing the degree of efficiency represented by actual costs". In the same lecture there was great stress placed upon what a cost should be for the normal capacity of the plant.

Wight also makes the important observation that many firms in Glasgow and the west of Scotland had recently introduced standard costing (May 1937 p 364 et seq).

Early in 1939 J.W. Malcolm described the application of standard costing to the problems of the linen industry. He asserted that "It is not too much to say that standard costing is the only method by which the operation of any linen manufactory can be intelligently controlled". (February, 1939 p 268 et seq.)

f. The Period 1939 onwards

Interest in standard costing was somewhat diminished by the 1939-45 World War II. In fact, no major contribution was recorded in The cost accountant between 1939 and the late 1940's. The only

significant report was on the lectures given at the Nineteenth Cost Conference held in May 1948.

This did not mean that standard costing was not being employed. More likely, from research made, it seems that the method was still being employed, but was not accepted as a normal tool of management by cost accountants and managers alike. At lectures given to the Association of Bronze and Brass Founders on the 29th June, 1943, G.T. Hyslop the then joint managing director stated: (Report on lectures; A.B.B.F., p.2 private publication).

"Standard costing was introduced into my Company by J.P. Flaherty of the Johnson Bronze Company, New Castle, Pennsylvania, United States of America way back in 1936".

It will be seen that the system was imported in 1936 and was still being employed in 1943.

Other than the books by Willsmore and Scott no significant British books appeared on the scene except H.E. Kearsey's work. (Standard costs, Pitman, London, 1st edition 1933). This was followed by a number of other books published at various dates from 1950 to the present day. A number of these are cited later in this chapter.

In Australia and the United States of America there were various publications. L.A. Schumer, an Australian, gave a comprehensive explanation of how standard costing could be applied. It is interesting to note that the approach is via budgetary control,

the standard costs being used to build up budgets for the various activities (Cost accounting, Pitman, London, 1935, p 201 et seq). Another Australian G.H. Gregory produced a complete treatise on standard costing, covering all aspects of the subject. Furthermore, a clear distinction was made between budgetary control and standard costing. Unfortunately, the book is concerned primarily with the mechanics of recording standard and actual costs and the reader is left in a state of uncertainty regarding the true nature of standard costs (Accounting control by use of standard costs, Law Book Co; Synney, 1948, 2nd edition.)

Turning back to 1939 the work of C.F. Schlatter of the United States of America is worthy of special note. A good deal of criticism was levelled against many cost accounting systems during the "period of deflation beginning in 1921 and during the period of depression beginning in 1929". (Advanced cost accounting, John Wiley, New York, 1939 p 102).

Schlatter defined standard costs along modern lines and showed how a system could be applied. The methods described had all the ingredients for success, but writing at the time he did, Schlatter was not able to pronounce that standard costs based on past experience alone were not true standard costs. The standards advocated are those which represent "high attainment" defined as "some high peak of productive efficiency at low cost actually reached at some time in the past" (ibid p 108). It will be noted that

there is reference to what has happened in the past rather than on standards set by the most acceptable methods and which represent the desired economic and technical level of efficiency.

g. Conclusion

From the articles and books cited and the research made in other relevant fields (e.g. lectures to Association of Bronze and Brass Founders) there is ample evidence to show that standard costing was being employed in Australia, the United States of America and Britain from quite an early date, possibly from 1923. Certainly Stelling, quoted earlier, gives the impression that the techniques were actually being used. Later writers showed that there had been a considerable adoption of standard costing principles. There was much confusion on what was meant by "standard costing" and many accountants and managers regarded the technique as a form of budgetary control. This attitude was aided by the approach being made in the two authoritative works written by Willsmore and Scott. Nevertheless, although the budgetary control aspects were being stressed, the research findings show quite clearly that standard costing was being developed and employed.

2. MODERN STANDARD COSTING

a. Introduction

In earlier chapters, it was noted that standard costing should be part of an integrated accountancy system.

Besides this, there was recognition that there should be interaction between management on the one hand and accountancy on the other. In no field of accountancy does this principle apply with such strength as it does to standard costing. The attention which must be paid to all aspects of the business to establish a high level of efficiency and the participation of members of the management team in setting standards and controlling costs require this interaction. Unless there is recognition of the importance of the underlying principles of standard costing, and the system employs the information obtained from modern management methods, then the standard costing is unlikely ever to achieve maximum efficiency. Full use should be made of modern methods such as production control, organization planning, work study, net-work analysis, operational research, and cybernetics. These should not be employed for their own sake, but adopted in the appropriate circumstances and in such a way that maximum efficiency is achieved. Unless some attempt is made to make all functions operate smoothly there can be no criterion of efficiency and therefore no standards.

b. Survey of Standard Costing Definitions

There is no generally accepted definition of standard costing. A number of typical definitions are given below, and these are followed by explanations and criticisms. H.E. Kearsey (Standard costs, Pitman, London, 1947 p 2) defines standard costing in the following terms:

"Simply expressed, standard costing is a method of ascertaining how much costs should be, and analysing the causes of variations between how much they are and how much they should be.

Alternatively, standard costing is a scientific method of developing a comprehensive series of cost standards to cover the activities of a business, of comparing actual costs against cost standards in such a way that the causes of variation are revealed in full detail, and of combining the variations to form a complete statement of profit and loss."

Kearsey certainly expresses the fundamentals of standard costing.

The main weakness is the absence of any reference to a properly planned system. As will be shown later, unless the standard costs are employed within a co-ordinated system they are likely to be of limited value.

The reasons for employing standard costing, rather than defining what it means is the approach made by C.T. Devine (Cost accounting and analysis, Macmillan, New York, 1950 p392) He goes on to state:-

"The purposes of standard costs, in condensed form, are to find where inefficiencies exist, to find measures for these inefficiencies, and to bring them to the attention of those who have authority to correct them".

Again, there is no mention of the existence of a complete system.

Moreover, although later in his book Devine demonstrates that standard costs are employed, there is no reference to this fact in his definition. He refers to "inefficiencies", but with any standard costing system there should be acknowledgement that "efficiencies" also exist which can result in favourable variances.

An alternative definition of standard costing is given by B. Henrici (Standard costs for manufacturing, McGraw Hill, 3rd edition, New York, 1960 p 7). He states:-

".... cost performance should be evaluated, not by viewing actual costs alone, but by comparing them with a fixed measure - the standard cost - and discovering the reasons for the deviation from that measure. Control comes in when steps are taken to eliminate this deviation".

Quite rightly, Henrici, stresses the costs control aspect. However, there are many other purposes for a standard costing system which is complete and comprehensive.

C. Gillespie takes a fairly narrow view of standard costing:-

"Standard costs, as usually employed, are predetermined operation costs, computed to reflect specified quantities, prices and level of operations. One type of standard cost is the predetermined cost of operations reflecting (1) quantities of labour and material expected to be used under good performance (2) expected prices to be paid for labour and materials during the coming years and, (3) factory expense application to product based on (a) good spending performance and (b) practical capacity operation of the factory".
(Standard and direct costing, Prentice-Hall, Englewood Cliffs, United States of America, 1962 p 12)

This definition is further qualified by Gillespie in other parts of the book. Nevertheless, there is a lack of preciseness which is unfortunate. What is meant by "good performance" or "practical capacity operation"? These are terms which are too general to have a positive meaning. The fundamental word "operation" is misleading because it gives a certain narrowness to the definition. In management terminology this term could simply mean the production side of business.

Gillespie appears to have the production operations in mind in his definition. The standard cost card (op.cit.,p 9) takes into account only the manufacturing costs. Yet in later chapters he

shows budgets for administration and sales: there is, therefore, some contradiction within the book.

Moving away from the United States of America and Great Britain to Australia there are the views of W. Scott (Principles and practice of cost accounting, The Law Book Co; Sydney, 2nd Ed. 1947, pp 236/7).

Standard costs are regarded as predetermined costs for each element of cost - material, labour and overhead. They are calculated after considering all the factors which affect manufacturing. A standard costing system is the employment of standard costs for measuring and controlling the efficiency of the manufacturing operations.

Many other definitions could be given, but those quoted are some of the best available. Many other writers appear to think that the existence of standard costs automatically means that there is a standard costing system. Typical quotations which come into this category are shown below:-

- (1) "Where predetermined costs are based on careful engineering analysis of the direct materials and the direct labour needed for a product, they may be described as standard costs. In a cost system based on standard costs, the variance balances are viewed as important tools of cost control". (Basic accounting and cost accounting by E.L. Grant and L.F. Bell, McGraw Hill, New York, 1964, p 200).

(2) "The fixed prices and quantity norms used to improve the usefulness of the cost data to factory management are termed cost standards" (S.W. Specthrie, Basic cost accounting, Prentice-Hall New York, 1950 p 213).

With this definition there was no reference to a costing system.

(3) "Standard costs are predetermined costs used to measure performance. They express not what a product or activity actually cost, but what it should have cost". (W.H. Childs, Accounting for management control, Simmons-Boardman, New York, 1960 p 431).

Again, the reference is to standard costs as if they are some phenomena which are employed in an aimless fashion, without plan and without purpose. In a true standard costing system all facets of a business are considered and the standard costs are developed with the full needs of the management functions in mind.

(4) "The preparation of standard costs and their use to clarify the financial results of a business, particularly by the measurement of variations of actual costs from standard costs and the analysis of the causes of the variations for the purpose of maintaining maximum efficiency by executive action". (An introduction to budgetary control, standard costing, material control and production control, Institute of Cost and Works Accountants, London, 1950, p 21).

The Institute cannot claim to have given a generally accepted definition or, for that matter, one which is fully comprehensive. There is reference to "financial results" which could be interpreted in a variety of ways. Limiting the control aspect to "executive action" is also misleading because supervisors and chargehands should be very much involved in preparing and employing the standard costs.

c. Standard Costing Defined

A very good idea of what is meant by standard costing can be obtained from a study of the definitions quoted in the previous section. However, not one of these definitions gives all the ideal features of the modern standard costing system. For this reason an attempt will be made to give a better definition. As a preliminary, in the interest of clarity, it is desirable to enumerate the main features of standard costing and this is done below:-

- (1) The concern is with cost accounting as a system which has been planned to meet the needs of the specific business.
- (2) Standard costs are predetermined and employed.
- (3) Standard costs represent what costs should be and NOT what they are expected to be.
- (4) Responsibilities are defined and are reflected in the organizational and cost centre structures.
- (5) Variances - differences between actual costs and standard

costs - are taken to be variations from the expected levels of efficiency.

- (6) Action is taken promptly to correct adverse tendencies.
- (7) The system should be flexible and should allow the standard costs to be amended at regular intervals.
- (8) The overall result should be greater efficiency in management planning, co-ordination and control.

These matters are developed in this and later chapters. At this stage a comprehensive definition is put forward which has not appeared elsewhere:

Standard costing is a system of cost accounting which is designed to show in detail how much each product should cost to produce and sell when a business is operating at a stated level of efficiency and for a given volume of output.

Through carefully planned and organized accounting procedures the differences between actual and standard costs (the cost variances) are analysed and then promptly reported upon to managers. The latter, in turn, take corrective and preventive action, as well as employing the data for planning, co-ordination and control.

An important feature of the system should be the measurement and attainment of a high level of efficiency and a constant review of methods employed in production. When necessary the standard costs should be amended so that they reflect, current realistic conditions and practices. A further, essential characteristic of a standard costing system is that it should be forward looking and, since it is intended to be a tool of management, the system should be part of a fully co-ordinated management accountancy system.(own research).

This definition is now considered in more detail along with explanations of the main features to be found in a standard costing system.

d. Cost Accounting as a system

Cost accounting has been described in a variety of ways, but basically it means the systematic recording of costs before and, possibly, after the event, and the employment of the information obtained for the efficient operation and control of a business.

In the words of Li (op.cit.,p.171):

"We shall designate this new type of business events as resource transformation or cost transformation; it accounts for change in the form of resources due to events within the manufacturing process".

There is the converting of raw materials into a saleable product or service. This conversion involves sacrifices in the form of labour and manufacturing facilities as well as those on raw materials. Cost accounting is concerned with recording the sacrifices at all stages, from the setting up of business to the purchase of raw materials, right through to the sale and delivery of the finished product. What is more, the recording is done in detail so that all the facts relating to the internal transactions are available in a form which allows them to be employed for planning and control. One of the greatest difficulties with cost accounting is the determination of an appropriate "cost", one which will measure as near as possible the sacrifices involved. The original cost, as represented by the money paid, is the one most often taken. At times, this method may indicate the approximate sacrifice, but, at others, it is far removed from reality. When the latter occurs the true nature of a transaction is distorted, and the wrong

decision may be made. More is said on this matter in the later section which deals with standard costs.

There should be a planned and co-ordinated arrangement of all matters relating to costing. This planning and co-ordination should consider the needs of the business and not be built along haphazard lines. Henrici cites a survey made by the National Industrial Conference Board and, although this was conducted in 1931, there is no doubt that the findings would apply today. Factors which caused or contributed to the failure of standard costing are shown as being as follows:-

- (1) Expected too much.
 - (2) Installed too rapidly.
 - (3) Inadequate supervision and administration.
 - (4) Bad organization.
 - (5) Inadequate accounting system.
 - (6) Inadequate cost system.
 - (7) Inadequate statistics of past operation.
 - (8) Expected results too soon.
 - (9) Failure to obtain co-operation.
 - (10) Failure of president to give adequate support.
 - (11) Failure to analyse results and ascertain causes of variances.
 - (12) Too many forms - too much detail.
 - (13) Routine procedure not sufficiently definite.
- (op.cit., p.11).

Many of these failures are, without doubt, the result of the system not being properly planned for the business concerned, or due to the fact that the system has broken down because the fundamental principles of management have not been observed.

These matters are examined in Chapter 5.

Kearsey makes the comment that the system must be appropriate to the business concerned. There can be no control unless the information is utilized. (op.cit.,p. 11). This has also been stressed in this dissertation and is a fundamental principle.

What should also be emphasized is the importance of the backing of all levels of management. This implies more than paying lip service to the employment of a technique. It involves the explanation of why a system is being introduced and the likely consequences before the introduction actually takes place (Fox op.cit.,p 219).

Subsequently, there should be motivation by managers of all levels so that the standards will be achieved. Lack of interest on the part of managers is contrary to the achievement of standard costs (vide, Brech, Principles and practice of management, op.cit.p.648). These words serve to emphasize the importance of making the costing system serve management and not vice versa.

The precise form the standard costing system should take depends upon the circumstances. As emphasized earlier, each system should be tailored to meet the requirements of the business concerned.

It is possible to describe the general features of a typical system and these are given below:-

(1) Scientific Assessment of Standard quantities and prices

How this is done is covered in the sections which cover materials, labour and overheads. The importance of the scientific method is emphasized by Kearsey who stresses that this is very much an evolutionary process. A good deal of research is necessary before accurate standards can be established (op.cit., p 5)

(2) Standard cost cards and budgets are compiled

Standard cost cards are the documents which provide the detailed information on products. Generally there is one card for each product or for each assembly. They show the tabulations of standard costs in a form suitable for cost control and other purposes.

In their publication Grant and Bell state that standard cost cards should be compiled to show quantities and "prices" for labour, material and factory expense.

The authors then go on to explain how the material prices and direct labour costs are compiled and entered on the standard cost cards. They include the indirect costs of manufacturing (overheads) on the standard cost cards, but this is a practice which is not always followed. (op.cit., pp 341/42).

- (3) Special forms are employed to bring "automatically" to light any variations from the standard costs.

This aspect of the standard costing system recognizes one of the most important principles of management, the "principle of exceptions". Harrison (Standard costs, Ronald Press, New York, 1930 p 20) sees this concept as being fundamental to any system of standard costing.

The basis of the principle of exceptions is that only matters which are not proceeding according to plan are reported upon. This enables managers to concentrate upon essential matters and leave the non-essentials to take care of themselves.

If special forms are employed, any excessive time taken, extra materials used, or additional services consumed, can be brought to light as part of the ordinary routine. After various research work the following has been my observation:

"If possible, performances which are 'exceptions to the rule' are automatically singled out by the use of forms which are distinctive in shape, colour or other aspect. Thus, for example, the issue of direct materials from Stores will be authorised by a Standard Material Requisition. The appropriate department, say Production Control, will issue this form. On it will be shown the standard quantities of material required to manufacture a specified number of components or products. If additional material is found necessary an Excess Material Requisition, printed on a distinctive coloured paper, is used. Material returned to Stores for any reason is covered by another form, a Material Return Note, once more in a distinctive though this time different colour" (Batty, Standard costing, p 8).

Variance analysis, explained later, also makes full use of the principle of exceptions. Any deviations from standard are brought to light as part of the system. They are then presented to managers so that adverse tendencies can be corrected.

(4) Standard Costs are Predetermined and Employed

Standard costs have been defined in a variety of ways. Some of these are given below, along with appropriate comments.

Harrison was writing ahead of his time when he stated:-

"..... the terms 'predetermined', 'estimated', 'predicted', 'budgeted', and 'scheduled' have been used by authors and speakers. 'Standard Costs', however, has had the most extensive adoption and is used here in its broad meaning as applying to costs that are scientifically determined in advance, in contrast to historical costs which are accumulated after the event". (Standard costs p3 & 4).

Standard costing should be regarded as the application of scientific management in the factory within the broad field of accounting. A fully comprehensive approach to the control of waste is essential in all divisions of a business. There should, therefore, be an attempt made to extend standard costing to all parts of the business besides the factory itself (vide Harrison, op.cit., pp 26-27).

Harrison then goes on to comment on the work of F.W. Taylor and the increases in productivity which followed the introduction of scientific management. Whether considering an unskilled worker or a manager there should be well defined objectives, comparison of plans with achievements and an understanding where necessary of why objectives are not being realized.

Harrison's work was undoubtedly a major step forward in the development of the standard costing concept. Nevertheless, it did not go far enough in defining the meaning of a standard cost. Elimination of waste is clearly a very important aspect of industrial efficiency,

but the fact that waste, which may be economic or technical or both, is being dealt with, does not of itself mean that standard costs are in existence. For example, when a job costing system, based on historical costs, is being employed, there could be positive attempts made to reduce waste. (cf. Sorgdrager, op.cit., pp 29/30).

Put another way "elimination of waste" does not mean the same thing as measuring or defining efficiency. The setting of standard costs means a careful assessment of all factors affecting efficiency. Unless this is done how is waste to be defined? If 80 per cent efficiency is regarded as the "norm" then waste is calculated with this figure in mind. On the other hand, when 100 per cent is the criterion, there is a 20 per cent tightening up with a quite different interpretation of what is meant by waste. Kearsey defines standard costs in a similar fashion to Harrison. There is a difference in that he recognizes that conditions have to be specified. Cost standards are regarded as being measures based on normal or average efficiency. They are taken as being "model costs" which have to be calculated by reference to methods used and conditions in existence. A further point made by Kearsey is that standards will not often be attained. (op.cit., p3). Although Kearsey has the correct basic approach he appears to be confusing the true nature of a standard cost. Quite rightly he distinguishes between an estimated cost and a standard cost,

but the references to "model costs" and the inevitable discrepancy between actual and standard costs, gives the impression that he has in mind an unattainable target. As will be shown in a later section, for measuring efficiency and controlling costs, there is a need for realistic standard costs.

Some writers describe standard costs as a refinement of estimated costs. A typical example of this approach is illustrated by C. B. Nickerson (Managerial cost accounting and analysis, McGraw Hill, New York, 1962) when he states that historical costs can serve as a basis for estimating the costs of new products.

In some jobbing industries this is quite true. However, Nickerson suggests that standard costs can be based on past experience for prices and specifications. The estimated cost is then used for setting a target and for setting prices. Subsequently, there is a tightening up and standard costs become based on the concept of efficiency, by standardization, use of modern methods and a more scientific assessment of the reasons for the costs (op.cit., p248). Nickerson quite rightly stresses that there are systems at different stages of development. Where he falls down is to suggest or imply that this is the way that a standard costing system should be developed.

The historical growth of systems is too long a process and there is a real danger that mistakes made in the past will be repeated.

Only by developing standard costing which is based on properly conceived

and valid concepts can any measure of success be achieved.

At this stage it is appropriate to distinguish between an "estimated cost" and a true "standard cost". As early as 1922 C.W. Bennett made this distinction by calling estimated costs simply "guesses", whereas standard costs showed what costs should be and were subjected to strict control. (yide Studies in costing D. Solomans (ed) Sweet and Maxwell, London, 1952, p 438).

Matz, Curry and Frank take the view that estimated costs are often used because the businesses concerned cannot afford to operate a proper system of costing. These are small or medium in size and are not convinced that a refined method can be justified in terms of expenses or benefits.

The extent of the usefulness of these systems depends upon the accuracy of the estimates and the extent to which any variations are analysed. (op.cit., p 435).

There is no doubt that the practice of estimating led to the development of the standard cost idea, but standard costing is not estimating. W. Scott states that: "estimated costs are a halfway measure designed to give some of the advantages of standards...." (op.cit., p 262). However, it seems clear that Scott is referring to a crude form of standard costing. "Estimating", as used in many industries, is the pre-determination of the actual costs expected to be incurred on orders or jobs produced to customers' specifications; i.e. on non-standard jobbing work. In a British textbook (Wheldon's Cost accounting and costing methods by L.W.J. Owler and J.L. Brown,

Macdonald and evans, London, 1965) estimates are regarded as being "based on present or prospective market prices of materials and labour used as a guide in fixing prices" (p3).

If estimating is regarded as applying to jobbing industries then it seems clear that the evolution from estimate costs to standard costs is very unlikely. Admittedly, estimating may be employed in companies which produce standard products, but non-standard industries such as general engineering, foundries, shipbuilding, and civil engineering are the chief users of estimating techniques. The experience of the author and enquiries made have revealed this to be the case. In Chapter 5 evidence is provided to substantiate this statement. Generally the setting of standard costs is not worthwhile because of the multitude of variables which exist. Since job costing is used in these industries, there may be difficulty in developing standard costs. The non-repetitive nature of the jobs often make the setting of standards impracticable. Sorgdrager is also against using the term "estimated costing" to mean standard costing. The former looks to the past whereas the latter is concerned with the future (op.cit., p 34) Standard costing thrives best when methods, and products or components, can be standardized. Bierman (op.cit.,p296) acknowledges this fact when he states:

"Standard cost systems are usually process cost systems in which accountants use set standards instead of attempting to compute a so-called actual cost per unit for each period".

To sum up it may be stated:

"Though **S**tandard Costs can be of value in all types of commercial and industrial undertakings the highest degree of efficiency in their use is to be obtained where a product or its components can be standardized. This implies that they are of maximum value used in conjunction with a process costing system. In the special-order type of business, using job costing, there is such a wide variety of products of a non-standard nature that the setting of Standards becomes prohibitive and out of proportion to the value received from their use. The full use of Standard Costs may not, therefore, be practicable. However, the adoption of Standard Costs for many of the components which go into non-standard products may be possible" (Batty, Standard costing p 12)

The main characteristics of standard costing are:

(a.) Costs are predetermined

This means that they are calculated or assessed before production takes place. To use Harrison's words they are "scientifically determined in advance". (Standard costs, op.cit., p 4).

How this is done is shown in subsequent sections.

(b.) Efficiency is measured in the standard costs

Various authors have tried to express this fact. Terms such as "model costs" (Kearsey) "measure" (Kearsey), "bench mark" (Henrici) "budgeted estimate" (Wheldon), "yardstick" (Li and Batty), have been employed.

(c.) Costs are expressed to portray what they should be under stated conditions (linked with b)

An attempt should be made to equate economic realities and costs.

Els expresses the view that there can be only one true cost; the standard or norm cost. He goes on to state:

"This norm cost will include only the economic efficacious and necessary sacrifices of the technical-economic capacity at the existing position of the organization of the industry"
(op.cit., p 142).

Briefly, there are the following factors to be considered:-

(i) Methods of production

The most efficient methods of production should be selected. This factor is related to the quantitative aspect.

As Li has stated:

"A standard cost is really a two-dimensional yardstick. One dimension relates to its quantitative aspect and is stated in physical terms. This is the quantity standard: if two hours are allowed to produce one unit of goods, the quantity standard per unit of production would be two hours. The other dimension relates to its pricing aspect and is stated in dollars per physical unit. This is the price standard: if the hourly rate allowed is \$3, the price standard would be \$3 per labour hour".
(op.cit.,p 257).

The same author then goes on to explain that the correct approach to setting quantity standards is through engineering studies of normal performance. He recognizes that the approach is scientific and, therefore synthetic. There should be a study of the desirable work environment and work arrangement as well as methods.

(ii) Selection of prices and rates

Standard cost is obtained by multiplying quantity by price. This may be expressed as follows:

$$\begin{array}{rcccl} \text{Standard Cost} & = & \text{Quantity} & & \text{Price} \\ & & & \times & \\ & & \text{Standard} & & \text{Standard} \end{array}$$

(Batty, Standard costing, p 17)

As shown in the previous section, both quantity and price are vitally important (of Sorgdrager, op.cit., p 55)

Li takes the view that the price standards should be established through an appraisal of conditions expected to prevail in the period for which standards are to be set. He then goes on to explain that wage rates can be assessed by reference to current wage contracts, present or future (op.cit., p 261). Unfortunately, he does not, in common with many other writers, express the basic concept for arriving at the rate or price. For example, is the standard wage rate to be fixed by reference to what is being paid by the business at the present or a future time irrespective of the state of efficiency? Similarly, what is to be the criterion for fixing the standard prices for materials and services?

Simply to accept the terms already agreed in contracts, or prices already being paid, is to ignore the efficiency aspect altogether.

The true criterion should be the price or rate which should be paid, provided proper and effective use is being made of the commodity and labour market. Ideally the replacement value should be the one taken. That there are practical difficulties in adopting this concept is admitted. How one determines the replacement value is a major problem in itself. Nevertheless, there should be full recognition given to the fact that the replacement value concept is vital to a proper understanding of standard costs. Only then will accountants strive towards setting standard costs which reflect true economic realities

Sorgdrager has emphasized the importance of distinguishing between replacement value and replacement price for understanding the replacement value theory. In explaining the purchase of materials or other requirements the view taken is that any acquisition should be effected at the point in time which is the most advantageous for the business concerned.

"Management will wait for such a time when an economic quantity can be purchased again Replacement price may be defined as the price on the buyers' market at the moment of effective replacement. Replacement value is the valuation on the basis of the price on the buyers' market at the moment of economic exchange". (op.cit., p 33).

Els sums up the position when he states:

"Cost should not be seen as the expenditure incurred, but as the expenditure necessarily incurred in the manufacture of the product and only that expenditure efficiently incurred". (op.cit., p 34.)

Revaluation accounting is a concept developed in this century.

In Europe it was advocated during the period 1914-18 and, later, in the 1920's period (vide Sorgdrager, op.cit., p 29).

Sorgdrager cites the works of Th. Limperg, H.J. Van der Shroeff, F. Schmidt and E. Schmalenbach showing quite clearly the important contributions made by the Netherlands and Germany. In the United States of America the idea was taken up by H.W. Sweeney who proposed that all the asset accounts should be revalued in terms of general purchasing power of a selected period. (Stabilized accounting, Harper & Row, Holt, Rinehart & Winston, Inc., New York, 1936 and 1964).

Dissatisfaction with the idea of a stable unit of value has received the attention of British economists for a considerable period. However, accountants in Britain did not give serious attention to revaluation accounting until the 1940's. D. Solomons writing in The accountants journal for October, 1948 stated that "Second only in importance to the new Companies Act as a claimant for the attention of accountants in recent months has been the impact of rising prices" (vide W.T. Baxter (editor) Studies in accounting, Sweet and Maxwell, London, 1950, p 363). (This is the first edition of a book which was subsequently issued in a different form).

It will be seen from this sentence that the problem of rising prices was regarded as being of secondary importance to the new Companies Act. This attitude has been one of the most serious problems to the development of management accountancy. Accountants have been more concerned with legal requirements for shareholders and taxation than with the planning, measurement and control of the economic resources which go to form a business.

In more recent times a number of writers and professional bodies have argued the merits and demerits of revaluation accounting. The Centre for Interfirm Comparison, set up by the British Institute of Management and the British Productivity Council in 1959, has expressed in favour of using a "measurement of real asset values in current monetary terms" for calculating the return on capital employed.

This statement must also be taken to read when the assets are being used effectively.

Most of the discussions on revaluation accounting have centred around the problems associated with the calculation of profit and maintaining capital intact. The internal measurement of efficiency has been practically ignored and yet, if standard costs are shown in terms of replacement values, the calculation of annual profit in realistic terms becomes a proposition at the time the sacrifices are made; i.e. when costs are incurred.

(5) Standard Costs Represent What Costs Should Be and Not What They are Expected To Be.

This feature is very closely related to the one described in the previous section. The important emphasis is on the maximization of efficiency and on distinguishing between standard costs and estimated costs.

Standard costs are predetermined with a full knowledge of all relevant facts and after an assessment has been made of all factors which affect material quantities, material prices, wage rates, labour hours and the prices of services. The aim should be to arrive at standards which are objective and without undue, personal bias.

Work study should be employed throughout a factory in which standards are being established. This technique has the advantage of allowing a systematic study to be made of all relevant details.

Work study is divided into two distinct, yet closely related, techniques, "time study" and "method study". In the words of

R.M. Barnes (Motion and time study, Wiley & Sons, New York, 1949):-

"Motion and time study is the analysis of the methods, of the materials, and of the tools and equipment used, or to be used, in the performance of a piece of work - an analysis carried on with the purpose of (1) finding the most economical way of doing this work; (2) standardizing the methods, materials, tools and equipment; (3) accurately determining the time required by a qualified person working at a normal pace to do the task; and (4) assisting in training the worker in the new method". (pl).

Turning to "estimated" costs (as opposed to standard costs) the important point is that these are costs expected to be incurred in a factory at the existing state of efficiency, whether this is low or high. In the words of Kearsey:-

"A cost standard, however, does differ fundamentally from a cost estimate. A scientifically prepared standard is a fact, always provided that efficiency of performance prevails, and that predetermined conditions are existent. On the other hand, a cost estimate is not prepared entirely upon a factual basis, and rather depends upon the law of averages to see it through. An estimate does not differentiate between basic cost and permissible variation, but takes an overall figure which experience in the past has proved to be approximately correct. Preparation differs both with regard to conception of the basis of computation and to accuracy and sufficiency of available data."

In short, therefore, a cost estimate is based upon historical costs which may or may not represent a reasonable standard of efficiency. An average of past data is calculated, a few guesses are made, and the result is the cost estimate. This is of very different origin and pedigree from the true standard cost (cf. Batty, Standard costing, p 7; also Sorgdrager, op. cit., p 34).

(6) Defining Responsibilities

The acceptance of the concept of "profit centres", "responsibility centres", "cost centres" and "budget centres" is now fairly general. These terms all have a very similar meaning, namely; a department or part of a department for which costs are predetermined, accumulated and controlled.

Responsibility should be defined for each cost centre and for the segments of work within that centre. The performance of the work as a whole should come within the jurisdiction of a departmental manager. In the producing cost centres (where products are actually made) the responsibility will rest with the foremen, chargehands and operators whose work it is to ensure that a saleable product is made. When a service cost centre is involved, the responsibility may be on the basis of work done within its own cost centre or actually done in a producing cost centre. The important difference is that the service cost centre does not manufacture products, but provides an essential service to those departments which do produce.

The break down of responsibilities must commence along broad lines by function, then by departments and, finally, by cost centres.

A normal functional division is as follows:-

- (a) Manufacturing Division which is divided into (i) producing cost centres and (ii) service cost centres.
- (b) Administration Division which includes all general management, financial, secretarial and clerical services.

- (c) Selling and Distribution Division which is responsible for the marketing warehousing and delivery of products.
- (d) Research and Development Division which deals with pure and applied research and the development of new products and methods.

The manufacturing division is the one in which standard costing can be applied to the greatest possible extent. This is because the elements of cost relating to each component and product can generally be predetermined with accuracy.

When dealing with service cost centres of a manufacturing division or with the divisions b) to d) above, there is need to adopt a more general approach to control of costs. Instead of controlling in detail it is necessary to predetermine costs for appropriate cost units which may be specified targets (e.g. sales), cost centres (e.g. sales office) or personnel (e.g. sales representatives).

More details of the procedures are given in chapters 4 and 5.

However, it is important to notice that many writers in Britain have mistakenly construed standard costing as a form of budgetary control. Els recognizes this fact when, after quoting from a number of British books, he states:-

"The basic attitude to cost control in Britain is that of budgetary control. Expenses and costs are first of all budgeted and these budgeted amounts are used for control purposes; an amount above which a cost should not go. Thereafter, standards are developed which are finally used in the control of cost in the day-to-day operations". (op.cit., p 50).

Strangely enough Harrison, who is regarded by many as the pioneer of modern standard costing, was an Englishman who went to the United States of America and then published his now famous work on the subject, which was quoted from earlier. In Britain the emphasis has tended to be on budgetary control because the existing literature has been on this subject. In 1932, two years after the book by Harrison on standard costing, A.W. Willsmore wrote his Business budgets and budgetary control, (Pitman, London). This book is still being published and has changed very little from the original edition. Other authors in Britain followed the lead given by Willsmore and developed ideas for control of costs but never really got away from the budgetary control concept. The first break from the tradition was in STANDARD COSTING (Batty) where standard costing is developed for all the functional divisions of a business. The statement made on the budgetary control approach should be read in conjunction with the historical description given earlier in this Chapter.

The extent to which standard costing is being employed as a tool of management at the present time is shown in Chapter 5.

Turning back to control in the producing cost centres there is a need to indicate the difference in approach between budgetary control and standard costing. As implied by the term, budgetary control sets targets through the medium of financial statements (budgets) prepared for each department. These are intended to show:

- (a) how much can be spent, and

- (b) a means of comparing budgeted costs with actual costs for each department.

On the other hand, standard costing shows the detailed cost of products and deviations are brought to light promptly, and in such a way that any defect is localized.

There is no suggestion that budgetary control principles should be forgotten. These should be part of any efficient management accountancy system, and when product standard costs cannot be developed then budgetary control must be employed. Furthermore, even when standard costing can be used, there is still need for co-ordination and this can come through budgetary control. However, the danger that budgeted costs may simply be projected historical costs should be remembered.

- (7) Variances are taken to be Variations from the Expected Levels of Efficiency

If standard costs are regarded as representing normal efficiency, then any variations can naturally be taken to be deviations from what is expected from men and machines. This assumes that the standards have been set correctly and that there have been no significant changes in conditions. If the standard costs are inaccurate then the variances will be meaningless.

A cost variance is the difference between the standard cost and

actual cost. In order to pinpoint responsibility it is usual to calculate variances for each element of cost; labour, materials, and overheads. These are further subdivided so as to indicate which variances are "controllable" and which are "uncontrollable"

The extent to which variances should be included in the books of account is a matter which must be determined when planning and operating a standard costing system. There are two principal types of standard costing system. The most usual is one which employs current standards; that is, standards which are amended regularly, generally once a year. As opposed to this system there is the employment of basic standard costs - those which remain in operation for a number of years.

A comparison of the two accounting systems is made in Standard costing (Batty, p 35) in the following terms:-

"The accounting systems used for recording Standard Costs and variances can be divided into two types according to whether Current Standards or Basic Standards are being adopted.

- (a) Current Standard accounting system.
These may be divided into two principal forms, the main differences between them being in the way the variances are recorded and the time when they are calculated, so that they may be recorded. The Work-in-Progress Account (also known as Work-in-Process Account) may be regarded as the central point, where the differences in recording are revealed: accordingly, the two forms may be distinguished by reference to the Work-in-Progress Account as follows:

- (1) Method I. - Debit Work-in-progress Account with Actual Cost and credit it with Standard Cost.
- (2) Method II - Both debit and credit entries in the Work-in-progress Account are made at Standard Cost.

Under Method I the variances are calculated at the end of each accounting period and are then analysed by reasons. In the Cost Ledger the control accounts for materials, labour and overheads are kept at Actual Cost. The Work-in-progress Account is the only account affected by the Standard Costs and variances. The variance for material prices will relate to usage only, whereas, with Method II, the variance is calculated when the materials are actually purchased. This delay, generally in isolation of variances is a weakness of Method I.

Method II overcomes the principal weakness of Method I in that it brings forth the variances when, or before, the accounting entries are made. Usually provision is made for isolation of daily or weekly variances, thus enabling management to take action in good time.

(b) **Basic Standard accounting systems.**

There are two outstanding features of accounting for Basic Standard Costs and these are:-

- (1) The recording, side by side, of Standard and Actual Costs, both for debits and credits.
- (2) The use of ratios, often stated as percentages, to show the relation between standard performance and actual performance (may be Basic Standard Costs).

Some systems may use three columns, one for Actual Costs, one for Standard Costs, and one for variances. Alternatively, instead of the column for variances, the ratios could be shown".

When controlling performances and costs there are great advantages from employing current standard costs. These reflect up-to-date conditions and, therefore, are regarded as being realistic by those who have to use the standards.

(8) Action is taken Promptly to Correct Adverse Tendencies

Action is a vital, indispensable part of the management process.

Unless this is taken, promptly and correctly, there is no justification for analysing variances and reporting the facts to those who are responsible for controlling costs.

Recognition that action is essential is not enough. If a standard costing system is to be efficient there must be some means of stimulating action. Personal contact with workers, foremen and departmental managers cannot be ignored. Yet contact with all interested employees will tend to make the costing service prohibitively expensive.

There is much that can be done to stimulate action by appropriately designed forms and statements. It is in this field of endeavour that individual accountants can show initiative and ingenuity.

(Chapter 4 deals with communication.)

A characteristic of standard costing is the revealing of deviations as the work progresses. At each significant stage of manufacture it is possible to predetermine costs and then to calculate or isolate variances. Ideally, if there are deviations from what is expected, there should be an automatic "feedback" to the managers concerned, who in turn take immediate, corrective action. In a fully automated system the feedback and corrective action would take place almost simultaneously with the occurrence of an unexpected event. However, in the majority of cases in practice there will be no fully

automated system, but, instead, there is generally a time lag between something going wrong, discovery of the fact, reporting to managers, and corrective action.

There are two systems of control: (a) open loop, and (b) closed loop or feedback. The latter incorporates a device for correcting any adverse tendencies: this is the true cybernetic system discussed in this thesis.

(9) The System Should be Flexible

Any system which serves management should be flexible enough to allow for all occurrences to come within its sphere of operations. Service should be the key word; if a system fails to be an efficient tool then it should be amended or even discarded. All too often, efficiency is held back because of strict adherence to an inflexible system. Linked with flexibility is the revision of standards. As conditions and methods of production change, then standard costs should reflect this fact. More will be said on this matter at a later stage. Here it is emphasized that revisions will be necessary, although these should not take place so frequently that the standard costs become meaningless as measures of efficiency.

(10) Greater Overall Efficiency

Standard costing may be used in planning, co-ordination, control and other functions of management, including the very important role of decision making. The latter is present in all management

situations and, therefore, any system which aids in making the correct decisions is a vital tool of management.

The theme of this dissertation is how standard costing can assist management and Chapter 4 has been devoted to some of the problems which may be solved by the employment of modern techniques which include standard costs.

e. Variance Analysis

The meaning of control and cybernetics is outlined in Chapter 2.

Variance analysis is part of this process and involves the calculation of variances and the interpretation of the results.

"The resolution into constituent parts and the explanation of variances" (Institute of Cost and Works Accountants Terminology of cost accountancy, London, 1966, p 19). This section is concerned primarily with suggesting a theoretical model which could be applied in a business.

(1) Classification of variances

Most writers on standard costing classify variances under broad headings according to the main type of cost involved:

(a) Material.

(b) Labour.

(c) Overheads.

(i) Factory.

(ii) Selling and Distribution.

(iii) Administration.

(iv) Research and Development.

The categories (c) (ii), (c) (iii) and (c) (iv) are included here, but are often excluded from a standard costing system although advocated for budgetary control.

A standard classification for variances has been suggested by the Institute of Cost and Works Accountants and this is summarized in the chart (Fig 3) . (Terminology of cost accountancy p 19).

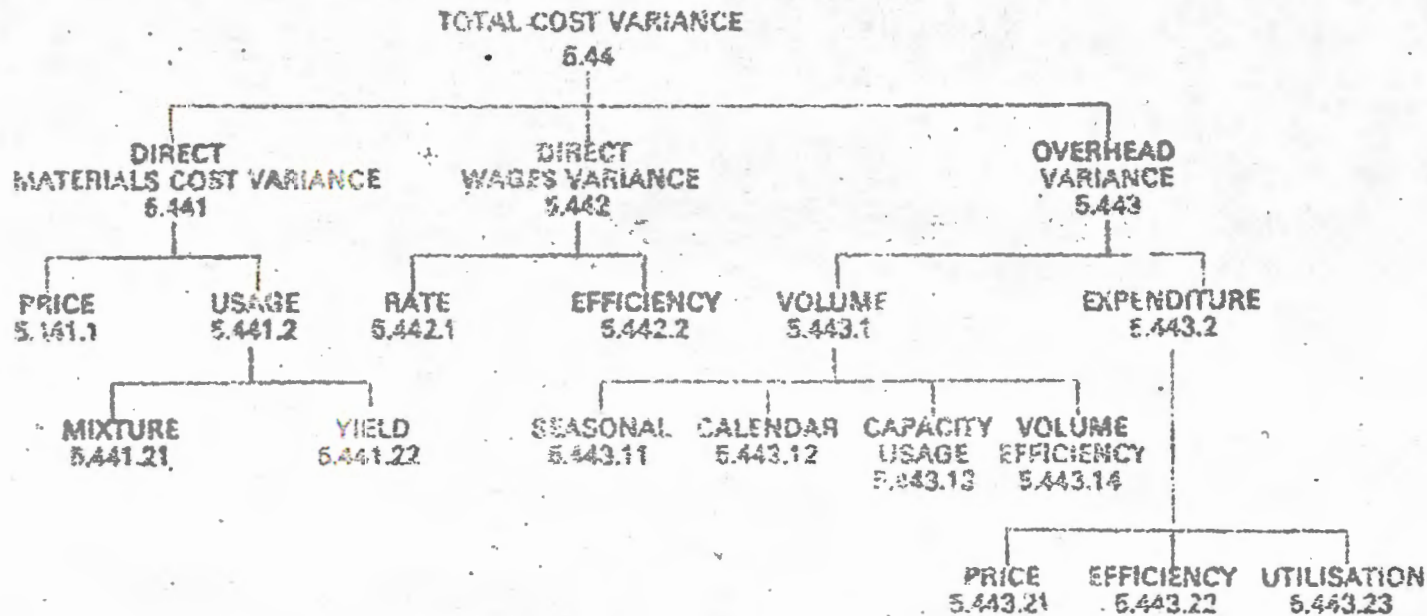
A full reproduction of the classification is given in Appendix II.

The descriptions apply to a comprehensive system. In practice, as shown by Chapter 5, there are many variations. Hilton has stated that variances often have names which are quite different to those shown in textbooks. (op.cit.,p475). He describes this approach as "hardheaded realism" which results in "down to earth titles like 'scrap variance', 'commercial weighing discrepancies', 'additional operations', etc.

This view cannot really be endorsed because any attempt to get away from a commonly understood language can only lead to difficulties. If standardized terms are employed then accountants and managers know what is being discussed. This should lead to better understanding and should make standard costing more useful.

Some difficulties can arise in that variances calculated under broad headings can lead to the wrong conclusions. For example, a material usage variance may be brought about by a multitude of

VARIANCE ANALYSIS



METHODS AND REVISION VARIANCES CAN ARISE UNDER MATERIALS, WAGES OR OVERHEAD AND SHOULD NORMALLY BE ISOLATED BEFORE OTHER VARIANCES ARE CALCULATED.

FIG. 3. Variance Analysis Chart.

reasons and only by evaluating each one can some progress be made. Whilst admitting this problem it is only necessary to add that variances can be analysed into their main divisions (sub-variances) or into minor divisions which are simply reasons for the variances or sub-variances and for which there would be some difficulty in evaluating with accuracy each separate item.

Care should be taken to ensure that the evaluation is not taken too far. Any variance analysis should keep within reasonable limits, bearing in mind the clerical costs and comparing these with likely benefits (Hilton op.cit., p 475). Related to this matter is the need to avoid creating an impression that variance calculations are an exercise which must be carried out to the greatest possible lengths. If there are 20 primary causes of variances it has been calculated that by combinations and permutations it would be possible to list 1,048,575 different single and joint variances. (Hilton op.cit., p 474). There should be avoidance of what one writer has called "mathematical gymnastics", the juggling of figures simply for effect and without any useful purpose. (R.W. Dobson, an introduction to cost accountancy, Gee, London, 1954, vol. I, p 196).

The calculations of the principal variances are now well standardised and, therefore, it is not proposed to repeat these as part of the thesis. Details may be obtained from any standard textbook on cost accountancy.

(2) Reasons for the Variances

As indicated earlier in this section, it is not the mathematics of variances analysis which are important, but rather the reasons behind the variances. These lead to the necessary action by managers and other personnel and, in turn, improve efficiency. The reasons for the variances are examined in the order shown below:

(i) Direct Material Variances.

(ii) Direct Labour Variances.

(iii) Overhead Variances.

(i) Direct Material Variances

According to Hilton (op.cit., p 475) material usage variances are usually calculated, but material price variances are generally omitted from the routine. The reference is to British experience based on Hilton's research. There is recognition that changing economic conditions make the revision of material variances extremely difficult and involves a major clerical operation. The same author goes on to say that if it is stated that there is an adverse price variance "is surely to suggest that the buyer has been negligent or inefficient; and who is to be the judge of that?"

In the view of the author of this thesis, Hilton is wrong in making this assumption that a buyer is always efficient. If the buyer is involved in setting the price standards then he should be prepared to explain them when variances arise (but see below when price variances are discussed).

Excessive usage of materials is very much a loss to a business and should be investigated immediately. According to Gillespie (op.cit., p 62) the system used "depends on the available physical controls over materials". An example quoted is that of comparing yards of cloth used against standard yardage for each order for garments in a clothing factory.

The analysis of the usage variance should come from Excess Material Requisitions (see Chapter 4).

Gillespie suggests causes as waste, defective materials, rejects on inspection, or obsolescence. (*idem*).

Henrici (op.cit., p 306 et.seq.) analyses the usage variance into a number of minor variances. The spoilage variance denotes the spoilage losses, whereas the scrap variance indicates how much is lost in the process of cutting the raw materials. A shrinkage variance is suggested for industries which have process losses due to evaporation or other reason. Sometimes the reverse process occurs when the customer gets a better finish than specified in the standard; e.g. when an article gets a needlessly heavy plating.

Batty (Standard costing p 62) summarises the possible reasons for the material usage variance:

- "(a) Sub-standard or defective material.
- (b) Carelessness in the use of material.
- (c) An abnormal number of components or products failing to pass inspection, further materials being necessary for rectification.
- (d) Pilferage
- (e) Wastage due to inefficient production methods or unskilled employees.

- (f) A quality of material being used other than that specified as standard.
- (g) A non-standard material mixture being used".

In connection with material quantities it is important to notice that standards would be set after full consideration has been given to the economics of purchase. There is, therefore, a need to consider the price and the possible market fluctuations as well as the technical specification. The latter should not be finalized without reference to the possible price. Any change in price should not be treated as being inevitable and uncontrollable, but should provoke action to try to introduce a material specification which uses a cheaper material mix. This is what Els has called the "economic approach" rather than the technical approach (op.cit., p 275). It is vital to the correct understanding of standard costs and variances. There is now recognition to this concept, implied in the value analysis approach being made to cost reduction in many companies (vide Chapter 4).

With price variances the mechanics of determining the causes depends upon the system of accounting in operation, a matter explained earlier. When the work-in-progress accounts are debited at actual cost and credited at standard no account is taken of the price variance until the material is used (referred to as Accounting Method I). On the other hand, when both debits and credits are at standard cost then the price variance is brought to light when the purchase is made. The latter method is to be preferred for this is in line with the normal approach adopted in standard costing; namely that

variances are investigated as early as possible so that preventive measures can be taken. (Batty, Standard costing, p 35)

Reference has already been made earlier in this section to the problem of isolating responsibility. As noted, Hilton argues that nothing should be done with the price variance. This view is not shared by the author of this thesis although difficulties are admitted. The fact that the purchasing department's standard prices may be subjected to external influences outside their control has to be recognized. There may be inefficient planning on the part of the factory, rush orders may have occurred or there may have been hold-ups, including strikes. (Gillespie op.cit., p 63).

This does not excuse the accountant or manager who tries to ignore any price variances. If the buyer is not to blame then this fact should become apparent from any analysis made. Sometimes the material purchasing is made the responsibility of a manager on the production side when he must be held responsible for its control (vide Li op.cit., p 306).

Possible reasons for material price variances are as follows:

- "(a) Changes in the basic prices of materials.
- (b) Failure to purchase the quantities anticipated when Standards were set, resulting in higher prices directly, or indirectly, through not obtaining quantity discounts.
- (c) Not taking cash discounts when Standards were set in anticipation of receiving all such discounts.
- (d) Changes in the charges incurred for transport inwards, purchasing and storekeeping, when these are debited to the material cost, thus increasing the issue price per unit of material.

- (e) Failure to purchase the standard quality of material, this resulting in a different price being paid."
(Batty, Standard costing, pp 61/62)

It is in the realm of material prices that business men come nearest to the application of the replacement value theory as developed by various writers, especially by Sorgdrager in the cost accountancy field. Unfortunately, there is no general recognition that replacement prices (or values) as defined earlier should be used. (vide Chapter 5).

(ii) Direct Labour Variances

According to Hilton (op.cit., p 475) almost all systems installed started by dealing with shop floor direct labour. This appears to be confirmed by the research findings. The analysis of direct labour costs is certainly given the most attention by many companies (vide Chapter 5).

The labour efficiency variance is generally taken to be the responsibility of a line production manager or supervisor. Li takes the view that the effectiveness of a departmental manager can be evaluated by reference to this variance (op.cit., p 298). The same author gives possible reasons for this variance as "changes in design tolerances, in quality standards, or in material specifications" or "due to personnel reasons such as improvements in workers' efficiency or changes in labour turnover rate" or "due to improper production scheduling" (op.cit., p 300).

Gillespie (op. cit., p 69) gives a detailed explanation of how to trace the causes. Lost time is defined in terms of waiting time, machine delay, and repair or faulty work. This applies to hourly paid work, but waiting time, machine delays and transfer allowances may arise when incentive plans are in operation.

According to Henrici (op. cit., p 272) there should be no labour efficiency variance when a straight piece rate is in operation.

However, in Great Britain it is usual for a minimum wage to be paid so that if a worker cannot achieve the standard quantity a make-up allowance would be paid. For this reason Henrici's observation would not apply.

A further classification into reasons is given below:

- "(a) Use of sub-standard employees due to -
 - (i) Insufficient training.
 - (ii) Incorrect instructions.
 - (iii) Workers' dissatisfaction.
 - (b) Failure to obtain the best results from employees due to:-
 - (i) Poor working conditions - inadequate, or excessive, heating, lighting, and ventilation.
 - (ii) Inefficient organisation - delay in routing work, materials, tools, and instructions.
 - (iii) Use of machinery and equipment which is defective, or the wrong type for the operations being performed.
 - (iv) Incompetent supervision."
- (Batty, Standard costing, p 64).

Els points out that the use of non-standard material can result in a labour efficiency variance (op.cit., p 283). This stresses the importance of the interdependence of variances, one affecting

the other in value and importance (cf. Batty, Standard costing, p 67).

The labour rate variance is concerned with showing whether a lower or higher rate than standard has been paid.

When calculating the wage rate an attempt has to be made to ascertain what the wage rate should be in the future period. (cf. Batty, Standard costing, p 40). Els (following van der Schroeff) has called this concept the "replacement price" of labour or the "wage rate at the time of the exchange" (op.cit., p 280). Due emphasis is thus given to the economics of engaging labour - making the best bargain and utilizing labour as effectively as possible. (cf. Sorgdrager op.cit., p40). These concepts are vital to the proper understanding and interpretation of variances.

In some instances the use of an average rate of pay may be employed, provided the work embraced is of a similar nature. This has the effect of simplifying the system and reducing the cost of operation (cf. Batty, Standard costing, p 41). However, it is admitted that this would reduce the accuracy obtained. Sorgdrager (op.cit., pp 40-42) discusses the social and economic problems associated with labour. The possible reasons for the rate variance are: using the wrong type of labour, long service increments paid to employees, excessive wage awards, abnormal overtime, using a gang of a composition different from that anticipated, and changed efficiency levels. (Buyers and Holmes op.cit., p 376). Some of these reasons are open to doubt: for example, any awards made to long-service employees could be anticipated and, therefore, should be included in the normal standard rate.

If a wage award is made which has not been anticipated when the standard rate was set then the amount should be isolated in a revision variance account (vide Wheldon, op. cit., p 426; Buyers and Holmes, op.cit., p 407; Batty, Standard costing pp 57/58). This action not only reduces the work involved in operating a standard costing system but also allows a clear distinction to be made between "controllable" and "uncontrollable" variances (see below under Controllable and Uncontrollable variances)

(iii) Overhead Variances

All indirect costs are classified under the broad heading of "overhead costs". They include all expenses over and above prime cost (i.e. direct labour, direct material and direct expense).

(Wheldon, op. cit., p 9). The aggregate of indirect material, indirect labour and indirect expense is known as "overhead" (Buyers and Holmes, op. cit., p 15). This line of approach is followed by Li (op.cit., p 172), Backer and Jacobsen (op. cit., p 5) and others. When cost incurring results in a benefit which cannot be directly traced to, and therefore charged to, a product or batch of products, such costs are indirect costs or "overheads". (Batty Management accountancy, p 27).

For an excellent analysis of the distinction between direct and indirect costs the reader is referred to Sorgdrager (op. cit., pp 67-74).

Costs "which can initially be traced directly to the product" are the direct costs, whereas the remainder are indirect (Sorgdrager, op. cit., p 72).

Indirect costs have to be traced to products by means of allocation or apportionment. Some method should be found for attaching responsibility for the cost. To "allocate" means charging in total or pro rata on the total according to actual usage or benefit received by a product. To "apportion" means charging in total or pro rata on total, according to estimated usage or benefit received by a product. This paragraph summarizes the conventional approach to the recovery of factory overhead costs (cf. Batty, Management accountancy, p 21). A description of charging costs to cost centres, and then to products by means of a machine hours rate or direct labour rate can be found in any conventional textbook on cost accountancy.

Sorgdrager (op. cit., p 97 et. seq) has developed a theory which he calls "particularization of costs". Very briefly, this concept requires costs to be traced to cost centres and/or products by tracing a causal relationship between the incurring of the cost and the manufacture of products or a specific product. There is no question of all fixed costs being put into a pool and not traced to products as in marginal (direct) costing, nor all costs being allocated or apportioned as in total or conventional costing. Instead, each type of cost is treated on its own merits and action taken accordingly. If it can only be traced as far as a cost centre then

it should remain there. This statement oversimplifies the theory and readers are referred to the original source.

The existence of this third concept of dealing with overhead costs is mentioned because it can be of vital importance in arriving at correct decisions. Moreover, it allows the benefits of total costing and marginal costing to be gained without taking the disadvantages of both. There is no difficulty in reconciling this concept with standard costing and this practice is to be recommended.

An understanding of how overhead costs can be dealt with is vital to the correct approach to variance analysis.

The variance analyses for overhead costs are dealt with in the following order:

- (a) Manufacturing or Factory Overhead.
 - (b) Selling and Distribution Costs.
 - (c) Administration.
 - (d) Research and Development.
- (a) Manufacturing or Factory Overhead

As indicated earlier in this section, these are the indirect costs of manufacture incurred from the point when the order is received to the stage of despatch to the customer or to the finished good store (Wheldon op.cit., p 10). Buyers and Holmes (op.cit., p15) define these costs as "the cost of the process which begins with supplying materials, labour and services and ends with primary packing of the product".

Analysis of the variances should reveal spending discrepancies. Whether the variances are computed for individual units depends upon the system employed. Warwick Dobson takes the view that "it is impossible to calculate the variances which arise on each cost unit" (op. cit., p 212). Whilst it is agreed that in some cases it will be extremely difficult to isolate variances for products this is not to say that it is impossible and, therefore, Warwick Dobson is wrong in his approach. (Batty, Standard costing pp 50-51).

Els states, in connection with the "overhead capacity variance", that the method recommended is "per unit product, because the unit product is the cause of cost and is in fact the cost bearer". (op.cit., p 297).

There should be transfer of the service-cost-centre costs to producing cost centres:

- (i) By use of a standard overhead rate applied by reference to standard usage.
 - or (ii) By apportioning the service costs on the basis of standard usage.
 - (iii) Combining (i) and (ii).
- (vide Batty Standard costing, p 50)

Gillespie (op.cit., p 89) recommends charging service costs at standard service rates on an hourly basis. Henrici (op. cit., p 195) takes a similar view and suggests that services should be charged on

the basis of "sold hour rates". A variance is then calculated for each cost centre this being the difference between the cost paid for buying the services (actual cost) and selling them at the standard rates. (Henrici op.cit., p 196). Irrespective of the actual method employed for controlling service costs and the usage of services by producing cost centres, there is a need to consider (a) the control of expenditure in each service cost centre and (b) the control of the usage of services within the producing cost centres. A flexible approach is the one advocated because charging on the basis of standard hours will not necessarily give the best results (cf. Batty, Standard costing p 51)

Henrici cites R.N. Anthony as stating that there are "at least a dozen ways in which the costs of the maintenance department can be charged to the several operating departments and each gives a different 'message' to the foremen as to how they should view their responsibility for maintenance". (op.cit., pp. 192/3).

The producing variances advocated by leading authorities generally follow a similar pattern to that advocated by the Institute of Cost and Works Accountants, although differences are found in the names used. The likely reasons for each variance in broad terms will be apparent from the definitions given earlier.

The budget or expenses variance may arise from any reason which is likely to cause over or underspending. Each item of expense should be compared so that the source of the variance can be ascertained (Li op.cit., p 351 and Batty, Standard costing p 66).

The overhead volume variance shows the "over-or under-absorption of fixed costs" (Institute of Cost and Works Accountants, Terminology of cost accountancy, 1966, p 21). This may also be divided on the basis of "capacity usage" and "volume efficiency" (Institute of Cost and Works Accountants op. cit., p 22).

Li (op.cit., p 301) prefers a two-variance classification - spending and volume. The latter occurs when "actual production volume is below target volume".

Buyers and Holmes (op.cit. p 381) state that the volume variance is a reflection of the effect of working above or below the budgeted volume (measured in labour or machine hours).

Many accountants take volume variance to be synonymous with capacity variance, but this is a matter of terminology rather than interpretation (cf. Batty, Standard costing, p 65).

Possible reasons for the overhead volume variance are:

Slackening of sales due to a competitors' price cutting, economic conditions or other reasons (Li op. cit., p 303).

Other possible reasons are as follows:-

- (i) Failure of the Sales Department of obtain sufficient orders.
- (ii) Machine breakdowns.
- (iii) Non-delivery of essential materials.
- (iv) Defective materials.
- (v) Labour troubles.
- (vi) Inefficient planning - routing of work or faulty instructions.
- (vii) Power failures.

(Batty, Standard costing, op. cit., p 66)

Care has to be taken when interpreting the volume variance because it is "rather difficult to pinpoint responsibility" with any certainty (Li op. cit., p 303).

The capacity selected as a basis for setting the standard costs will have a considerable influence on the nature of this variance.

Gillespie (op.cit., pp 95/6) distinguishes between "average capacity" and "practical capacity" and shows how the variances differ depending upon the capacity selected.

Els prefers what he calls the "norm" capacity which is the level of operations which represent "optimum attainable efficiency" (op.cit., pp 91-92).

There is a need to separate costs into their fixed and variable elements, but this matter is discussed below under Controllable and Uncontrollable Variances.

The overhead efficiency variance is related to the labour efficiency variance and may be caused by similar reasons. It affects the recovery of the overhead costs. (Wheldon, op. cit., p 432).

According to Buyers and Holmes (op. cit., p 380) the overhead efficiency variance may be analysed on the same basis as the labour efficiency variance by jobs, departments, processes or operations.

(b) Selling and Distribution Variances

Costs incurred in selling and distribution should be subject to the same treatment as manufacturing costs for the following reasons:

- (1) "The desire to increase turnover leads, in many cases, to the entering of markets where the potential volume is small. Large-scale production can bring about a tremendous

reduction in average unit cost. The aim, therefore, is to expand sales so that minimum average unit costs can be obtained. Often unprofitable areas are worked in the hope that, eventually, the extra costs incurred will be covered by increased sales.

- (2) The need to create a demand for speciality products, such as accounting machines, washing machines, vacuum cleaners, refrigerators, and television sets. Once established, the speciality lines offer large profit margins, but a large amount of advertising and sales promotion is essential before this is achieved. Moreover, to keep abreast with competitors, continuous efforts are essential, so that at all times selling costs tend to be large.
 - (3) With the growth in competition, in all types of business, there has been an increase in direct selling costs and in advertising and sales-promotion costs. In addition, there is an increased tendency to grant "services" to shopkeepers and other tradespeople. The cost of painting a shop front or a delivery van for a retailer may be met by the manufacturer, provided the retailer incorporates a particular advertisement into the painting or sells a particular line of product only. There are other similar benefits which can also be awarded.
 - (4) By the provision of improved delivery service distribution costs have also increased in some types of business."
- (Batty, Standard costing p 232).

There is now full recognition that marketing (covering selling and distribution) cannot be treated in isolation from the other functions. (cf. A. Wilson, editor, The marketing of industrial products, Hutchinson, London, 1965, p 180).

Without proper planning and control there can be overtrading and possibly business failure. Moreover, if there is to be control then a standard must be set and comparisons made between actual events and expected events (Wilson op.cit., pp 181 and 182)

One of the greatest problems in setting standards is the lack of standardization for many of the functions involved in selling and distribution. Nevertheless, many of the tasks, particularly handling and warehousing can be standardized (J.A. Beckett, The art and science of distribution costing, N.A.C.A. Bulletin, New York April, 1951, p 897, quoted by Gillespie, op.cit., p 180).

Gillespie (op.cit. p 180 et.seq) suggests an analysis into:

- (i) Warehousing.
- (ii) Order department and cash collecting.
- (iii) Selling and promotion.
- (iv) Delivery.

He advocates separation of all costs into fixed and variable elements. Wherever possible "work units" should be established for measuring the output or effort in relation to cost. For example, travelling expenses may be established on the basis of a standard costs per "the day" or "the mile" travelled. (cf. Batty Standard costing, p 238).

In connection with profit variances, resulting from not achieving standard sales volume or prices Gillespie prefers what he calls the "standard direct costing" approach. In British terminology this would be called standard marginal costing (or marginal standard costing). (vide Batty, Standard costing, p 287). This aspect is considered further in Chapter 4.

R.I. Dickey recommends that variances should be isolated for sales volume and sales mix for each product line. The effect on variable costs and variable profit are calculated for each situation. (Accountants' cost handbook, Ronald Press, New York, 1964, p 18-29). Knight and Weinwurm (op.cit., p 89) recommend that sales quotas (standards) should be established for product and territorial managers and, ultimately, for individual salesmen. The variances should then be analysed to show what departure has been made from planned volume and mix. Weekly or daily reports on the major reasons for the variances are recommended. These two authors have a very enlightened approach to cost control, but unfortunately, they reach the conclusion that the quotas should "reflect actual results expected to be attained". The standards thus developed cannot be said to represent true standards as envisaged under a properly conceived standard costing system.

No book, American or British, gave a fully comprehensive analysis of selling and distribution variances. There is evidently a great deal to be done in the control of activities which come within this field. For details of the principal variances which may be calculated readers are referred to Batty, Standard costing p 249.

(c) Administration Costs

These costs are:

"The cost of formulating the policy, directing the organization, and controlling the operations of an

undertaking, which is not related directly to a production, selling, distribution, research or development activity or function". (Institute of Cost and Works Accountants, Terminology of cost accountancy, London, 1966, p 14).

Brech (op. cit., p 759) states that variance analysis should take the form of comparing "actual expenses with the original budget".

A word of warning is added to the effect that the absence of variances does not necessarily mean that operations are being carried out effectively. The budget may simply be a projection of expected actual costs.

Brech (idem) suggests ad hoc studies of the factors involved, thus obtaining cost savings which can be incorporated into the standard costs. In this connection there is conflict with Drucker's ideas. However, how the organization and methods studies would be co-ordinated is not explained by Brech and, therefore, any disagreement may be more illusory than real. (see p.4).

T.K. Cowan (The cost accounting function, Sweet and Maxwell, London, 1965, p 111) states that administration costs should be classified in a manner which allows "planning, control and distribution of these costs to be carried out effectively". These costs should be divided into fixed and variable and variances calculated for each category (op.cit., p 257).

G. Mills and O. Standingford (Office administration, Pitman, London, 1966, p 72 et. seq.) suggest a variety or combination of one or more methods for analysing cost standards and, therefore, variances. They are as follows:

- (i) For each main cost prepare a forecast and then calculate variances.

Examples are given. In the wages department an establishment would be set and a wages budget would be compiled. Other expenses such as stationery, postage, telephones would be treated in the same way.

- (ii) Employ operation costing for the work to be done.

Basically the idea would be to break down each task into operations and then place a "value" on each. When dealing with sales invoicing a standard cost could be fixed for "receiving and sorting", "pricing", "extending and calculating" and so on.

- (iii) Use cost indices to show the efficiency being achieved.

Example: total cost of office expressed as a percentage of turnover.

This method is not a separate system, but is a way of relating cost to effort.

It will be seen from the above description that Mills and Standingford believe that the setting of standard costs for administration costs is a worthwhile proposition. Unfortunately, very few writers give more than a few lines to the matter and yet these costs can be a very large part of the total cost of a business.

- (d) Research and Development Variances

Research costs are incurred in "searching for new or improved products, new applications of materials, or new and improved methods".

(Institute of Cost and Works Accountants, Terminology of cost

accountancy, London, 1966, p 14).

Once research results in a new product or other improvement development costs are incurred up to the point of "commencement of formal production" (idem).

Budgeting is generally recommended for controlling research and development costs. Each project is treated as a separate job, a total cost is authorized and this becomes the basis for a budget (G.B. Carson (ed) Production handbook, Ronald Press, New York, 1964, p 17.25)

The setting of standards and control through variance analysis is far from easy. Often research expenditure is of a somewhat doubtful nature: it may produce a result, but there is no guarantee. According to Carson (op.cit., p 7.25) only about "one out of every ten projects may be expected to lead to increased profits".

There should be a proper balance established between the costs incurred and probable returns. If budgeted expenditure is too low the results may be negligible, but at the same time it must be kept within reasonable limits (Carson: op. cit., p 17.26)

Budgeting may not always result in effective cost control but it can be "invaluable in the detailed planning of the work, in balancing the programme over different company activities, over new introductions and continuous development and over short term and long term objectives and in co-ordinating the programme with other company goals" (M.E. Braithwaite, Management control of research expenditure and its interest to the auditor, Accountancy, London, April, 1967, p. 248).

Matz, Curry and Frank (op. cit. p 484) take the view that the project authorization is a form of budget. This enables an assessment to be made of the value of the project and, subsequently, allows control to be exercised within the limits laid down.

Backer and Jacobsen (op. cit., p 486) suggest that control should be exercised through period comparisons of budgeted and actual costs both by project and by research cost centre. Another possibility is to analyse variances for each class of expense (cf. Batty Standard costing p 285).

(e) Controllable and Uncontrollable Variances

For effective control of costs there should be a distinction made between controllable and uncontrollable variances. The former have been defined as those "which can be identified as the primary responsibility of a specified person". (Institute of Cost and Works Accountants, Terminology of cost accountancy, London, 1966 p.19).

The reason for the variance determines its category. In some circumstances a variance may be controllable, but, due to a policy decision or other reason, it may become uncontrollable. Often "price" variances are uncontrollable, whereas "quantity" variances are controllable. However, this is not an inflexible rule and therefore, should be used with caution (cf. Batty, Standard costing p56). The distinction between variable costs and fixed costs is extremely important when classifying controllable variances. However, as Dickey (op.cit. p 17.23) points out, "It should not be assumed, that fixed costs are always non-controllable and variable costs are

always controllable by a departmental manager". This situation is often the case, but the assumption should not be made without knowing all the facts.

(f) Favourable and Unfavourable Variances

When actual cost is smaller than standard cost the result is a favourable variance; vice versa the product is an unfavourable variance. (Batty, Standard costing, p 57)

Variances should not be viewed in isolation, but one should be considered in relation to another. Responsibility for a variance may be a joint one and may be difficult to assign with any certainty. Backer and Jacobsen (op. cit., p 325) take the view that in these circumstances there should be joint action by the parties concerned.

All variances should be investigated, whether favourable or unfavourable. They represent a danger signal which should show where economies can be effected. Henrici (op.cit., p 348) states that knowing why actual cost differs from "budget, if it is less, merely tells us of good performances already obtained, - if it is more, it tells us of a highly perilous situation".

(g) Significance of Variances

There is no standard size of variance which would be regarded as "significant" and, therefore, would call for action. Much

depends upon the circumstances and the nature of the problems and costs involved. However, some general observations would serve as a guide.

Dickey (op.cit., p 17.14) shows on an example of a direct labour variance summary that any variance of less than 10 per cent would not be analysed, and this gives some guide to what sort of figure would be regarded as significant.

Knight and Weinwurm (op.cit., p.297) speak of the budget manager having to decide whether action should be taken on a "small variance". Unfortunately, they do not explain this term fully.

Backer and Jacobsen (op.cit., p 298) have the following comments to make:

"In standard cost systems, a difficulty that presents itself is determining when a variance is significant. It might be argued that if the standard represents a level of good attainable performance, all deviations are meaningful. However, experience with actual cost data shows that the data will vary upward or downward (from the mean) and that most of these variations are inherent in the data; that is, the deviations are normal or occur for uncontrollable and probably unknown reasons".

Backer and Jacobsen (idem) take the view that statistical control charts are the answer. These would have limits within which the normal or chance occurrences would take place. Any variances outside the control limits would be investigated. The normal variations would be determined by the application of statistical method; in particular by ascertaining the normal distribution and the standard deviation.

A similar view is taken by joint authors of a book on business controls. They state that an effective system of control requires a "procedure for quantifying the vague expectations we have of the differences that probably will occur among values of the variable" (J.T. O'Neil, L.C. Farwell, and F.V. Boyd, Quantitative controls for business, Irvin, Illinois, 1965, p 248).

The answer lies with probability analysis of the data. This subject is outside the scope of the present work, but it is important to note that variances by themselves are not necessarily of significance.

In practice the cost accountant will know the approximate significance of a variance from his knowledge of the figures and the situation. Knight and Weinwurm (op. cit., p 296) take the view that the most important variances can be calculated as a routine matter and then other variances can be analysed in detail, possibly by special studies.

(h) Variances and Flexible Budgets

For control purposes it is usual for flexible budgets to be employed. Variances can then be calculated for the actual output achieved. This matter is considered further in Chapter 4.

3. CONCLUSION

Standard costing is a managerial tool of long standing. In Britain there has been-- and still exists - a certain amount of confusion between budgetary control and standard costing. This has led to the creation of the impression that all control has been attempted by the use of budgetary control. Lack of published work has been partly to blame for the erroneous impression.

There is a real need to regard standard costing as a comprehensive system which covers all functions of the business. Recognition that standard costing should form part of management accountancy is also very essential.

Standard costs should not be regarded as "estimated costs".

In predetermining costs the technical and economic factors should be considered. As far as possible, replacement values should form the basis of any calculations.

Variance analysis is one of the most important aspects of a standard costing system. This is the process whereby the reasons for variances are ascertained. Although standardized definitions of variances may not always be feasible, wherever possible this is very desirable, thus giving maximum benefit for comparative purposes.

CHAPTER 4

CONTROL OF MANAGEMENT RESOURCES

1. CONTROL SYSTEMS

The fact that management involved the transformation of resources was noted in earlier chapters. If work is carried out effectively with all effort being fully utilized then cost and economic sacrifices can be said to equate. When unnecessary sacrifices are made it follows that some of the "costs" are waste and are losses to the business concerned. Sorgdrager (op.cit., p 128) has stated that there should be a clear distinction made between sacrifices, costs and expenses. The historical cost or expense price is of little or no value except as a record of cash exchanged. In itself it does not show the true sacrifice involved in the transaction. Research has shown that managers should be made aware of what consequences will probably result from taking particular courses of action. As far as possible, they should be guided along the path which results in the minimum amount of waste. In short, they should be put into a position where the following formula will apply:

$$\text{COST} = \text{ECONOMIC SACRIFICES}$$

If on the other hand, the position achieved is:

$$\text{COST} \text{ minus } \text{ECONOMIC SACRIFICES} = \text{WASTE}$$

then there is a loss to the business which should be written off to the profit and loss account. The waste is not a true cost and, therefore, should not be included in the cost of products. For an interesting discussion on the definition of waste and loss, readers

are referred to Sorgdrager (op.cit.p.44 et.seq.)

This chapter is concerned with the managerial problems which are faced by a manager. An analysis is made of how standard costing may be employed as a tool of management.

2. MEANING OF CONTROL.

Reference has already been made to cybernetics (Chapter 2).

Basically, it was explained as a system which was self-regulatory.

How far does standard costing come towards being a cybernetic system?

According to Guilbaud (op.cit., p 36) a number of requirements would be necessary to constitute cybernetics. There would have to be net-work analysis to find out how a business operates and how the different sections and personnel react upon each other. Standard costing requires full attention to be paid to this aspect.

All functions should be examined and made efficient before standard costing is introduced (cf. Batty, Standard costing, p 29) A further requirement is effective "communication". This is used in a technical sense to include all functional networks which give off a continuous stream of signals (a nervous system is an example).

In practice, for industrial application, the continuous response is difficult to achieve. However, according to Eddison, Pennycuick and Rivett (op. cit., p 149 et. seq.) it is possible to achieve a very speedy response by means of a computer. Moreover, any abnormal deviations can automatically be singled out and their variation from normal limits can be calculated by standard deviation or other

mathematical measure. Whether a computer can always be justified is not a matter for this thesis. However, even when this is not available it seems possible that a communication system can be devised which will be adequate. In technical terms it will not comply with the true cybernetic concept, but it should be sufficiently responsive to give managers the necessary danger signals. How standard costing does this has been explained in earlier chapters and it will be elaborated in this chapter. The feedback requirement, mentioned in the definition given in Chapter 2, does operate in a standard costing system. However, it is not necessarily automatic in the sense of being mechanically or electronically induced. Action is often indicated from the opinions of the accounting staff who interpret the results; no automatic system could carry out this function. However, automatic segregation of abnormal costs can be achieved by the introduction of distinctive forms or other "exception" devices. The feedback is expected to induce corrective action. This implies that the person responsible for the corrective action is known. Standard costing allows responsibility accounting to be operated. This process is vital to efficient management. Fox (op.cit., p 176) has stated:

"If we cannot establish accountability - the extent to which people have discharged their responsibilities - we will be greatly hampered in our ability to take effective corrective action".

a. Material Cost Control

Kearsey (op.cit., p 109) has stated that control should be organized so that excess cost is shown as well as its sources and causes: simply recording losses is not good enough.

This implies that there should be an efficient method of analysing variances which finds out the reasons and provokes action.

When setting standard costs for materials it is necessary to pay particular attention to the technical specification. A wrong specification can result in a much higher quality of material being employed with higher consequent cost: Evans-Hemming (op.cit., p 53) calls this a technical control point. It emphasizes the strong link which must necessarily be present between the technical and accounting functions.

Evans-Hemming (idem) also stresses the need to fix the appropriate allowance for the material content of a product. However, he does not show clearly how this amount should be calculated.

Setting the allowance presents practical problems for much depends upon the degree of efficiency assumed for the purpose of setting the standards. Many definitions are possible. Els (op.cit., p 180) recommends a norm cost, defined as one which is established after considering the economic proportion of factors calculated by reference to replacement values.

When setting the standard quantity due allowance should be made for cutting and other normal waste. Any excessive waste should not be included as part of the standard material quantity (Batty,

Standard costing, p 25).

Sorgdrager (op.cit., p 46) quite rightly stresses that the most economic way of cutting the material should be considered. The method used may be influenced by speed of operation or other factor and this in turn will affect what is the normal allowance for cutting or other waste to be included in the normal product cost. Gillespie (op.cit., p 59) poses a number of questions relating to a material wastage allowance. He uses the terms "absolutely unavoidable", achieving "good performance" and "recent actual performance". Unfortunately, he avoids tackling the problem and quotes the NACA Research Bulletin as stating that any allowance should reflect an "attainable level of good performance" (A re-examination of standard costs, NACA, Series No. 11, Feb. 1948 p 705). This statement is too vague to be of value and, therefore, can be dismissed.

Henrici (op.cit., p 180) examines the problem of scrap and waste in some detail. Practical examples are given, but Henrici also ignores the fundamental problem of what waste can rightly be included in the sacrifices involved. The assumption made is that waste is unavoidable and it is up to the accountant "to compute their effect on standard material costs".

Backer and Jacobsen (op. cit., p 281) take a more enlightened view of the problem. Spoilage allowances should be included only for those items which are "normal or unavoidable". Any amount in excess of the standard allowances should emerge in the material

usage variance.

From the above observations it should be apparent that the correct usage of material is of the utmost importance in controlling costs. However, the control should go much deeper than indicated by these explanations. There should be an examination of all facets of material control including storekeeping, purchasing, requisitioning, and the flow of material through the factory. A framework which locates responsibilities for all functions affecting materials is vital (Batty, Standard costing, p 135).

Excess material requisitions should be employed to segregate, quite automatically, any usage which is in excess of standard quantities. Gillespie (op.cit., p 62) refers to these as "excess piece requisitions". Properly designed records should be employed to show immediately the balance on hand at any time. This is the perpetual inventory system which shows "the physical movement of stocks and their current balance" (Institute of Cost and Works Accountants, Terminology of cost accountancy, 1966 p 28). In addition, a continuous stocktaking programme should enable physical and book stocks to be reconciled, thus reducing the danger of having fictitious stock figures and also avoiding possible production hold-ups. As Backer and Jacobsen report (op.cit., p 72) a perpetual inventory system, together with a material requisition system, is an important technique for management control.

Turning to prices it is true to say that many writers are content to use expected actual prices. Henrici (op.cit., p.169) states there is no reason why the standard price cannot be based on actual costs (average for previous year is suggested). Gillespie (op.cit., pp 60-61), is of the opinion that no rules can be given for setting standard prices - "expected actual" and "quoted" actual are advocated.

The use of actual costs is not advocated unless these have been adjusted for the future and after considering "the most efficient purchasing and storekeeping" and of course the economic conditions expected to prevail. Only by considering the replacement price will the variances be meaningful and, therefore, allow realistic control to be exercised. (vide Els, op.cit., p.213; Sorgdrager op.cit., p.35; Batty, Standard costing p.39).

It was noted earlier (Chapter 3) that control of price could be exercised at the time of the purchase or when actual usage takes place. Most authorities adopt this attitude: Henrici (op.cit., p.316) Batty (Standard costing, p.35) take the view that any variance analysis should be made as early as possible. Henrici is of the opinion that this method is in "line with the philosophy of standard costing as well as being more convenient clerically".

Gillespie (op.cit., p.62-3) recommends the use of a separate price variance for each class of material or group of related materials.

The variance analysis is described in Chapter 3.
Reporting to management is covered later in this chapter.

In conclusion it may be said that control of material costs requires a comprehensive survey to be made of all functions.

- (1) Standard costs should be set which are a true indication of economic sacrifices and,
- (2) As a corollary, no avoidable waste should be included as part of the standard costs.

Only when these facts are realized can effective control be obtained through the stimulation of action by managers.

b. Labour Cost Control

For effective control of labour the times for operations and jobs should be set by means of work study. Moreover, the process should be in the hands of professional engineers who have been properly trained in the techniques. (T.F. McNeill and D.S. Clark, Cost estimating and contract pricing, **Elsevier**, New York, 1966, p.22). The authors state that before commencing the work there should be a thorough study made of all matters which affect the operations and the worker. Once done, the methods can be analysed, the operations can be broken into elements and the basic job data can be recorded. It is only then that the timing is carried out (*ibid.*p29). Gillespie (op.cit., p 59) considers the various bases which may be used to arrive at a standard time. Examples quoted are "time attainable by best operators", "attainable good performance" and "average past performance". The author does not give any positive guidance on this matter, but seems to favour the use of different

standards for different purposes, a suggestion which is both unrealistic and impracticable.

Dickey (op.cit., p.15.23) states that generally the performance level selected for setting the standard cost is quite high when the object is cost control. This statement is acceptable although there is by implication a suggestion that the standard should not be tight if for a purpose other than cost control: this implication is not accepted.

All modern writers accept that there should be an allowance made for "fatigue, inherent delay, etc." (cf. Backer and Jacobsen, op.cit., p 282). Unfortunately, they do not all indicate how the allowances should be conceived.

It is essential that the standard times represent efficient performance. Therefore, for the arguments used in connection with material usage, any times which are not necessarily incurred as a sacrifice in producing, should be regarded as avoidable waste and should be excluded from the standard cost.

A. Rae (Work study - a practical primer, Odhams, London, 1965, p 93) has defined standard performance in the following terms:-

"The standard performance is the optimum level of working which a competent operator can reasonably be expected to maintain throughout the working day and throughout his working life, provision for necessary rest being made."

There should be an effort made to ensure that time worked is "effective time" the latter only being included in the standards.

Dickey (op.cit., p 17.36) states that any excess labour cost indicates conditions which call for correction.

Many accountants favour some form of incentive scheme to encourage the worker to achieve the standard time. Henrici (op.cit., p 38) points out that with an incentive plan in operation there will be no danger of understating the times not booked to jobs. If the worker is paid "waiting time" then he will be anxious to make sure that it is booked. However, this may not occur when straight piecework is in operation.

Besides being in favour of an appropriate incentive scheme (based on standard hours) for workers, Henrici (op.cit., p 368) recommends the use of a plan for supervisors. The view adopted is that the supervisor is encouraged to reduce variances by being paid a bonus on performance. As a general rule, the best incentive is provided by a scheme which pays each individual on the basis of work done by himself. However, where group work is essential then the incentive payment may be based on the work of a number of employees (cf. Batty, Standard costing, p 168).

Irrespective of whether or not a scheme of incentive payment is adopted there should be systematic control of the times of employees. There should be "unquestionable evidence" relating to attendance times and the work performed for each employee (Matz, Curry and Frank, op.cit., p 194). Regular reporting to the appropriate managers so

that action is stimulated is essential. Fundamental records have been recommended to show:

- "(1) Individual, group or departmental efficiencies.
- (2) Idle time and lost time.
- (3) Piece-work losses.
- (4) Scrap and rectification costs.
- (5) Overtime and shift working.
- (6) Ratio of piece-work to day-work time worked on direct labour."

(Institute of Cost and Works Accountants, Cost reduction, London, 1956, p 29).

Li (op.cit., pp 258 and 298) has stressed that the distinction between a "quantity" variance and a "price" variance is of vital importance because this procedure allows responsibility to be defined. Generally speaking, the quantity aspect is held to be controllable by a particular line manager. However, this is not an invariable rule because the fault may be due to inefficient production planning.

Another factor which influences responsibility is the use of a classification of labour which is not specified as being appropriate for a particular task. If this substitution is not the fault of the line manager then he cannot be held responsible for any variance which arises (Li, op.cit., p 298). On wage rates Gillespie (op.cit., p 60) states that: "Expected actual rates are probably the most frequently used type".

Backer and Jacobsen (op.cit., p 282) state that the hourly rate may be based on a contractual agreement. They also assert that the standard would be based on the "average rate per hour expected to be paid." Although these approaches face up to the realities involved

in setting standard wage rates they can be criticized on the grounds that they do not define a standard rate or indicate how this should be set.

Sorgdrager (op.cit., p 40 et. seq.) analyses the problems associated with the setting of wage rates. The specific occupation and the demand for a particular type of labour must play an important part. Considering the economic and technical factors is the only sound way of arriving at the appropriate wage rate. If the actual rate is used as a basis for calculating the standard rate, then this should be modified in the light of future trends and policy. Only then can the wage rate represent what it should be for an efficient level of operations. (cf. Batty, Standard costing p 41).

c. Overhead Control

Whether dealing with factory, administration, selling and distribution, or research and development costs the problems are very similar. Indirect costs have to be authorized and then kept within the control limits. Budgeting, or the setting of standard costs within a co-ordinated system of financial planning, provides the answer. Cowan (op.cit., p 244) states that budgeting, with its emphasis on future plans and costs, provides an excellent tool for evaluating alternatives and for controlling costs.

This view is accepted provided the budgets are based on standard costs and not simply expected actual costs irrespective of the level of efficiency being achieved. Sorgdrager (op.cit., p 35) indicates

that budgets can limit costs, but not necessarily control them.

Research findings have confirmed that there is a tendency for this to happen. The "limit" is not necessarily downwards:-

it may be upwards even though short-capacity working has taken

place. A number of managers indicated that once the budgets had been established they were used to give guidance on how much could be spent. Quite often there was no direct consideration of how the expenditure would affect efficiency - they were spending within the planned amount, nothing more.

It was stressed earlier that cost should be related to economic sacrifice. From this statement it should be apparent that incurring cost without regard to the effect on the business and its earning capacity is quite contrary to sound management practices. For this reason budgets should be based on standard costs which, by definition, are costs for predetermined conditions and level of activity. If there is a change in conditions or activity this should be reflected in the standard costs. The limiting characteristic of budgeting based on actual costs has no place in a properly conceived control mechanism.

Matching standard costs for actual activity with actual costs for actual activity is vital for effective control. Evans-Hemming (op.cit., p 3) has stated that:

"the budgets must be capable of adjustment so that they can represent a fair measure of performance under different conditions of activity."

In short there should be "flexible", not "fixed" budgets, for controlling costs.

A flexible budget allows costs to be predetermined for different levels of activity - possibly at, say, 5 per cent intervals. Any activity which falls in between the 5 per cent intervals is obtained by interpolation. An essential requirement is that costs should be classified into "fixed" and "variable". This is also an essential feature of marginal costing considered later in this chapter. A variety of methods is available for establishing variability when costs are semi-variable - partly fixed and partly variable. Regression charts, least squares calculations, high and low points assessment, and other methods are employed. None gives complete accuracy and for any system to be effective "some trouble has to be taken both in setting up the classification" and in carrying out the division (Institute of Cost and Works Accountants A report on marginal costing, London, 1961, p 73).

The characteristics of successful budgeting have been very ably explained by Knight and Weinwurm (op.cit., p 51).

- (1) That all levels of management should participate actively in the development of the budget.
- (2) The budgets should be both understandable and attainable in terms of particular operating factors for which they apply.

- (3) Flexibility should be built into the budgeting system in both its planning and control phases.

In connection with participation Li (op.cit., p.261) takes the view that special efforts should be made to secure the confidence and cooperation of employees. A standards committee may be formed to educate all personnel on the meaning and use of standards. When dealing with the type of standard to use for control purposes it is necessary to consider the appropriate level of activity (capacity) and the level of efficiency which should be implied. On the appropriate capacity there are varying views. Backer and Jacobsen (op.cit., p.149) give a typical exposition of the types of capacity which may be used. The budget may be based on:

- (1) Expected actual activity
- (2) Practical capacity
- (3) Normal capacity.

The expected actual activity may be looked at from the point of view of maximum capacity, there being no delays. Alternatively, a deduction may be made for all normal delays which could be expected and this then gives the practical plant capacity. If a further adjustment is made to allow for idle capacity due to fluctuations in sales then the "normal capacity" emerges.

A diagrammatic representation of the various capacities is given by Henrici (op.cit., p.63) reproduced from another publication (T. Lang (ed), Cost accountants handbook, Ronald Press, N.Y., 1944 p 1073). This diagram shows what allowances should be made according to the nature of the capacity adopted.

"The relationship between various conceivable levels is set forth in the following extract:

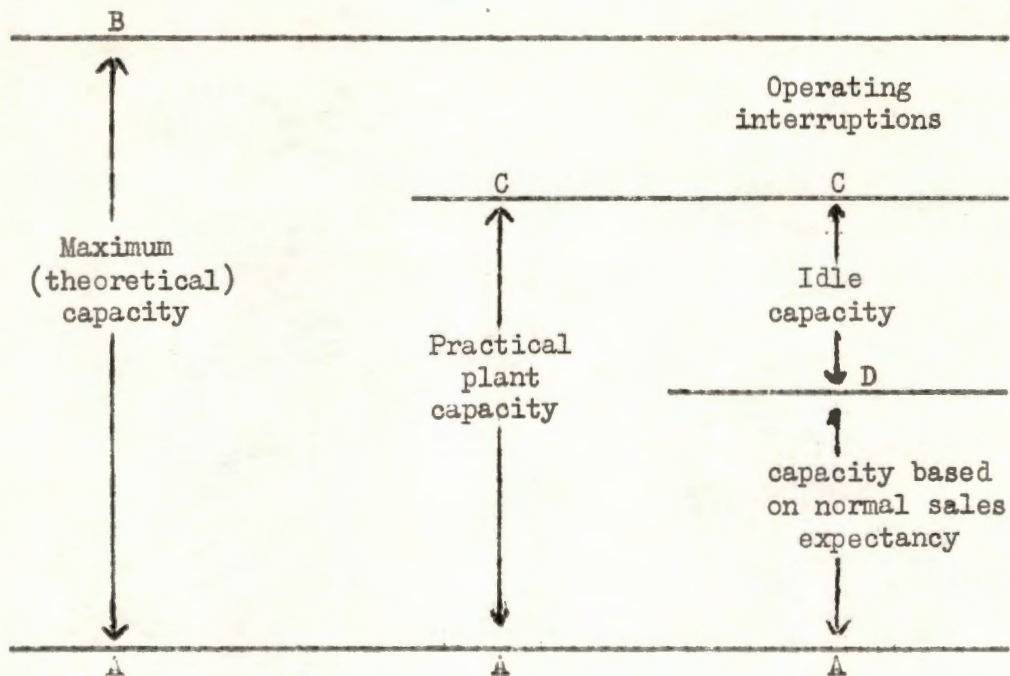
The chart adapted from one appearing in an article by James (N.A.C.A. Bulletin, Vol. 16), illustrates the major relationships involved. The maximum possibility of theoretical capacity of a plant or department to produce would be that achieved under 100% operating time. This involves no limitation for waits and delays of any character, and it is not achievable. In Fig.4 it is represented by the line AB.

Practical plant capacity is maximum capacity less operating interruptions, and is shown by the line AC. This represents practical utilization of the physical plant, without regard to commercial demands

Idle capacity (line DCC) is the unutilized portion of the plant and equipment, due to lack of customer demand. Capacity based on sales expectancy (line AD,) is measured by the productive equipment required to meet the average commercial needs over a period of time. On the chart, this is the difference between practical operating capacity and idle capacity.

The capacity based on normal sales expectancy is often referred to simply as normal capacity. The standard product cost is usually calculated with reference to this normal capacity.

Capacity Relationships



Source: Theodore Lang (ed.), "Cost accountant's handbook," p.1073, The Ronald Press Company, New York, 1944.

A further possibility, not covered by Backer and Jacobsen or Henrici, is the short period capacity to sell.

Because of the importance of the selection of the capacity the full section dealing with this topic is reproduced overleaf from Batty (Standard costing, p.43 et.seq.)

STAGE 1: Quantities to be produced

This section will be divided into two to cover an explanation of:

- (a) Capacity for producing cost centres.
- (b) Capacity for service cost centres.

(a) Capacity for producing cost centres.

The activity expected from plant, in terms of production hours or units or production, must be estimated before fixing the standard overhead rate. Obviously, for given conditions, the greater the activity, the larger the total overhead cost: 30,000 units of a certain product will cost more to produce than 10,000 units. The extent of the extra overhead cost will, of course, depend upon the size of the variable and semi-variable elements contained in total overhead.

There are many meanings given to the term "production capacity," the chief of which are as follows:

I. Maximum theoretical capacity.

The maximum - 100% - is expected of plant. There are no breakdowns, no waiting time, and no delays. If the various machines can operate a total of 2000 hours per month, provided they are operating fully at all times, then the maximum theoretical capacity is 2000 hours or, if a unit of production takes up one hour, 2000 units of production.

Maximum capacity will very rarely be achieved, so its use as a basis for calculating overhead cost cannot be recommended. However, it does provide a basis for understanding the other methods now to be described.

II. Normal capacity

This is usually taken to mean one of two things, either:

- (a) Normal Capacity to Manufacture (also known as Practical Capacity); or
- (b) Normal Capacity to Manufacture and Sell.

These two meanings require further explanation.

(a) Normal capacity to manufacture. - Maximum theoretical capacity is calculated, and from this is deducted an allowance to cover all normal time losses due to breakdowns, setting up machines, material shortages, labour absenteeism, and holidays. An efficient level of operations is assumed.

The size of the allowance will largely depend upon the types of product being manufactured and the efficiency of plant. The attitude of management to the type of

Standard Cost to adopt will also influence the amount to be allowed. With Expected Standard Costs all estimated losses, due to normal causes, will be taken into account: a smaller figure will be used if Ideal Standard Costs are to be adopted. Obviously, a modern plant should have fewer stoppages than an old, outdated plant. Having regard to all relevant circumstances and the aim of management, a figure which represents 20% of maximum capacity will often be a quite reasonable allowance and, in some cases, a much higher figure would not be exorbitant.

Usually a yearly, estimated capacity figure is taken, for this has the advantage of smoothing out seasonal or monthly variations in production.

(b) Normal capacity to manufacture and sell. - Practical plant-capacity potentialities and sales may not coincide; in fact, in some industries, they never do. Some accountants argue that failure to achieve necessary sales to keep plant operating at practical capacity will, at times, be inevitable, and this will bring about abnormal idleness. The number of hours representing the Capacity to Manufacture can be reduced by the expected abnormal idleness, and the overhead rate thus be increased to cover the cost of idle facilities. The variable cost per unit of production will, of course, be the same under either method; it is the fixed cost per unit which will differ, for the treatment of that part of the fixed cost which represents idle facilities is where there is a difference in approach.

A comparison of (a) and (b) and Maximum Theoretical Capacity is possible as shown in Fig. 5.

The period upon which estimates are based for the Normal Capacity to Manufacture and Sell is sometimes taken to cover the estimated serviceable life of the plant and equipment. Alternatively, the length of the business cycle can be used, say, seven years. The latter period is an approximate guide only: reference to post-war experience will show that this is so.

The theoretical concept of Normal Capacity to Manufacture and Sell has much to recommend it, for the principle is an extension of the idea of eliminating seasonal production variations, adopted with the "Capacity to Manufacture". The fluctuations

estimated to take place over the life of the plant, or over the trade cycle, are averaged in the same way as the monthly fluctuations, when a yearly overhead rate is adopted. The costs of idle facilities are, of course, included in the overhead rate.

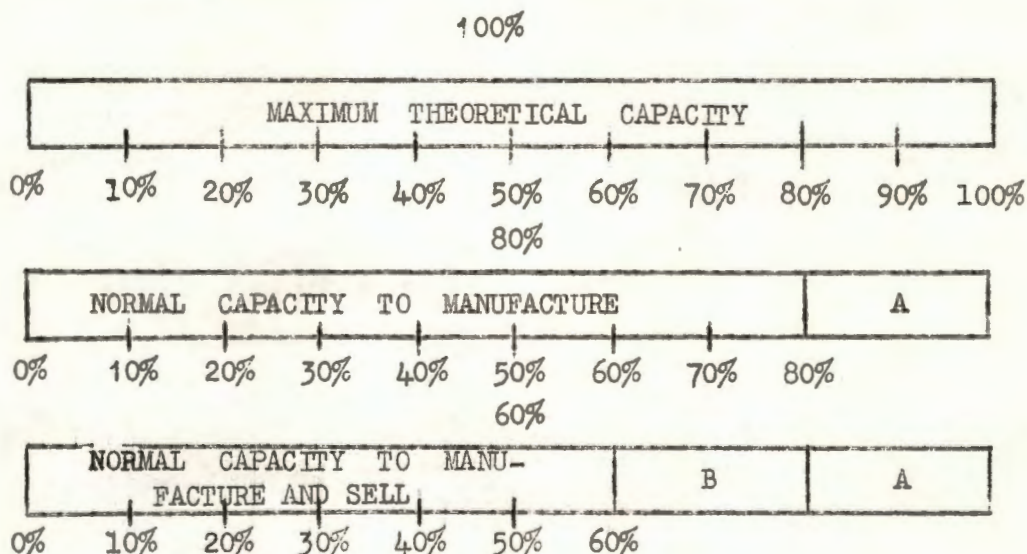


Fig. 5. - Comparison of Capacities.

NOTES.

1. A - Normal time losses due to normal idleness, breakdowns, lack of materials, holidays, and other, similar, causes.
2. B - Idle facilities due to the inability of the sales force to obtain sufficient orders to cover available plant capacity. (There will be a price below which selling price will not be allowed to fall. This will tend to limit the volume of sales.)
3. Maximum Theoretical Capacity is reduced by 20% to give Normal Capacity to Manufacture. A further reduction, again of 20% is taken so as to give the Normal Capacity to Manufacture and Sell. These percentages would, of course, vary from industry to industry and even between different business enterprises in the same industry.

From a practical point of view the method tends to be weak; this is due to the uncertainty and, accordingly, difficulty of accurately estimating long-term sales. When adopted, large variances are inevitable. Moreover, because the overhead rate is inflated to cover the cost of idle facilities

there is a danger, when prices are based on costs, that orders will be lost. There are many arguments in favour of rates based on the Normal Capacity to Manufacture. The unit costs are more reliable and, from a practical viewpoint, more useful to management. Recent costs are being considered, not the expected average costs over the next few years. Decisions on whether to make components or purchase them from outside contractors are greatly facilitated. The costs of idle facilities are not covered up, but instead can be brought to the notice of the management through variance analysis. Another factor is that the accounting rule for valuation - cost or market value, whichever is lower - is easier to apply. Unused capacity, it is argued, is not a true cost, and therefore should not be included in the values attached to the stocks of finished goods or work-in-progress. Normal Capacity to Manufacture has, thus much to offer. Unfortunately, it has a major disadvantage. In times of depression there may be a large under-absorbed capacity, and yet the product costs being accumulated, and acted upon by management, will ignore this fact. Accordingly, even if Normal Capacity to Manufacture is adopted as the basis for calculation of the overhead rate, there is a case - when full capacity is not being used - for additional measures being taken. Any expected falling off in sales should, if possible, be anticipated, and any resulting reduction in capacity estimated. In some cases it may be possible to use a supplementary overhead rate to cover the cost of idle facilities. Management will then be aware of the true cost of producing and, at the same time, know that the extra overhead, calculated per unit of product, has, if possible, to be covered. The next meaning given to production capacity provides a means of covering the cost of idle facilities.

III. The short-period capacity to sell

This is similar to the Normal Capacity to Manufacture in that an estimate is taken to cover, say, a year only. It differs in that total sales expected for the period, instead of total, possible, production for the period, forms the basis for the calculation of the overhead rate. Because a short period is taken instead of a number of years, this approach is likely to be more useful than where the Normal Capacity to Manufacture and Sell is used: the shorter the period being reviewed, the greater the accuracy is likely to be - the sales for one year can be estimated with reasonable accuracy, but it becomes a different story when a number of years' sales have to be estimated. The costs of idle facilities are, in this case,

covered by the overhead rate. For many accountants this fact constitutes a weakness of the 'Capacity to Sell': management, they argue, should be fully aware of the cost of such facilities when they are present.

Conclusion on capacity to adopt.

The choice of the appropriate capacity to use, when calculating the standard overhead rate, is a matter for the individual business concerned.

Generally speaking, if sales tend to fluctuate from one year to another the Short Period Capacity to Sell would appear appropriate. When the volume of sales remains reasonably constant the Capacity to Manufacture may be used. The presence of abnormal idle facilities may be covered by the use of a standard overhead rate, which is supplementary to the ordinary, standard overhead rate. Usually it will be unwise to ignore one factor - sales or production - relying solely on the other as the basis of the calculation. Sales and production are very much related and, moreover, are dependent upon each other."

Note: Capacity for Service Cost Centres section not included.

Cowan (op.cit., p.87) has stated that a flexible budget should provide an indication of the optimum volume levels. This factor should certainly have influence on the choice of the capacity to adopt for the recovery of overhead costs.

Sorgdrager (op.cit., p 107 et. seq.) has considered in some detail the problems associated with the capacity level to adopt. The solution, it is suggested, lies with the selection of a capacity which reflects the effective use of both the economic and the technical factors. The economic proportions which give the best combination of the factors of production should be the aim. The capacity which considers the technical feasibility and the optimum level of operations determined by the economic proportionality should

be the one adopted.

Flexibility of the system was mentioned earlier. Knight and Weinwurm (op.cit.p.53) suggest a number of ways of achieving this desirable state. Variable (flexible) budgets, supplementary budgets, authorized variances, supplementary forecasts and review and revision are all cited. These are devices for allowing flexibility to be built into the system. One of the great difficulties is that a system may be allowed to become so rigid that it will not permit plans to be changed. However, if there is too much flexibility the control instrument may lose some of its sharpness. Constantly changing plans is just as bad as being too rigid. (Batty, Management accountancy p 59). Once standard budgets have been compiled (budgets based on standard costs) the control can be exercised by comparing standard costs and actual costs.

The variances which may arise have been defined in Chapter 3. Here it is important to notice that the size of the variances which will arise will be affected by the looseness or tightness of the standards set. Furthermore, there is always the danger, according to Backer and Jacobsen (op.cit., p 402), that the same degree of tightness or looseness cannot be expected to occur throughout a business. Fox (op.cit., p 181) expresses the view that a "standard cost represents the attainable ideal for a given set of circumstances". For control purposes, provided the aspects outlined earlier have

been considered when setting the standards, the "attainable ideal" should be the aim.

Li (op.cit., p 259) sums up the position by stating: "Since standards are to be used to evaluate performances, setting standards at a realistic level seems to be more logical." This level should require a reasonable amount of effort and should signify a reasonable degree of accomplishment.

Cowan (op.cit., p 225) has put this matter more forcibly. They should be costs expected to be achieved under active management striving to minimize costs. There needs to be a good chance of achievement, but this should come from working efficiently to achieve a satisfactory standard.

d) Reporting to Management

Fox (op.cit., p 307) stresses the need for the effective flow of feedback data. This takes two main forms:

- (1) Control data showing the differences between standard costs and actual costs.
- (2) Information on the revision of standards.

(1) Control Reports

In this connection reports can take two principal forms - routine reports which are produced at regular intervals and special reports which are produced at the request of management and cover unusual

events. It is the routine reports, built into a system, which should produce the necessary results. Some of the desirable characteristics are examined: Cowan(op.cit., p. 339) stresses that reports should be presented in good time before "it is too late to take action." Backer and Jacobsen (op.cit., p 325) take a similar view. Any variance can only be used to correct future production activities: accordingly there should be prompt and frequent reporting to "keep operations in control as production activities take place".

This should not be construed to mean that all reports should be presented immediately. The purpose of the report should determine its urgency (Batty, Management accountancy, p 335).

In this connection Fox (op.cit., p 403) has emphasized the conflict which may exist between speed and accuracy. A computer may provide the means of supplying the necessary information at a very rapid speed. In addition, analysis of the accuracy required for the particular purpose can save time and clerical expense. Sampling techniques may produce a degree of accuracy which is quite adequate: if so these can be employed with a consequent reduction in the volume of work.

A time schedule for routine reports should assist in determining when reports should be presented and will enable the necessary mechanism to be set up for collecting the relevant information.

Backer and Jacobsen (op.cit., p 325) state that direct material and labour variances should be reported daily, whereas factory overhead variances are better reported on monthly.

Knight and Weinwurm (op.cit., p 290) do not give general rules. Instead, they stress that the value of current information should be balanced against the cost of preparing, reading and assimilating the information. They are quite rightly implying that managers should not be expected to read numerous reports in excess of what is necessary for efficient control. Fox, cited earlier, gives the computer as a solution to producing more reports, but does not indicate how managers are to find the time to read these. Part of the answer is in the nature of the report itself. Li (op.cit., p 293) lists four additional requirements as being "comparative", "analytical", "concise" and "pertinent".

Comparative means that standard and actual costs are compared and significant variances are brought to the attention of the responsible managers. The "principle of exception" should be operated.

Analytical requires that the probable causes of the variances are stated on the reports, thereby locating the areas where waste is occurring. Conciseness means the emphasizing of key figures and eliminating all superfluous details. This reduces reading time and allows better comprehension. This is the accounting law, the "standard of materiality". On the aspect of being pertinent Li points out that the information should be included only if it initiates some action - this is a part of the concept of responsibility

accounting.

Unfavourable variances can be distinguished from favourable variances by the use of the two-colour technique (Li, op.cit., p 293): unfavourable variances are shown in red and favourable variances in black. Dickey (op.cit., p 20.44) lists ways of speeding up the issue of reports. These range from careful planning of operations to the use of electronic data processing. Two of the suggestions are the employment of standard costs and the careful training of accounting personnel.

On the content of the reports there are two main possibilities: they can be expressed in physical units or in financial terms. Often both may be employed within the same system.

Henrici (op.cit., p 366) states that the financial values provide the "objective measuring stick of supervisory accomplishment".

However, other measures may also be employed such as lost-time percentages, scrap ratios, and breakdown reports. The difficulty with these physical measurements is that their importance is hard to assess unless a financial value is also given.

Dickey (op.cit., p 20.44) is of the opinion that operating supervisors generally understand physical facts quite readily and therefore reports should be presented primarily in terms of physical quantities. Although Dickey is correct in some circumstances this general rule that supervisors' reports should be in physical quantities is

somewhat misleading. In a complex situation the supervisor may have difficulty in appreciating the true significance of physical "variances". In any case the supervisor should not be expected to evaluate his own performance. More usually a copy of the reports issued to supervisors would also be sent to departmental managers who would also wish to know the significance of the information. Usually the only common factor is the financial values; i.e. the actual and standard costs. For this reason reports in physical terms only should be used with caution.

(2) Organization for Reports

Reports should be organized along systematic lines so that they emerge at the right time and in the right place. Gillespie (op. cit., p.153) suggests that the reports should be organized as a pyramid, with the president's report at the apex and the foremen's reports at the base. Backer and Jacobsen (op.cit., p 325) suggest that the structure of the organization and the assigning of responsibilities should be quite certain and explicit.

Co-ordination of the control aspect should receive attention. A business is a dynamic organism which is in a constant state of motion.

In practice - as seen from experience and research - there is a tendency for reports to be produced long after their usefulness has ceased or when they are largely inappropriate. The numbers and types of reports should be kept to a minimum and they should all

be part of a co-ordinated system. Reports prepared and issued in isolation tend to be of limited value.

The organization processes of control can often best be served through a budget committee. Li (op.cit., p 337) suggests that such a committee can be charged with the responsibility of reviewing divisional budgets and dealing with the approvals for each budget. The advantages claimed are the increased divisional co-ordination, better participation by managers and the emphasis on planning as a line function.

Backer and Jacobsen (op.cit., p 396) stress the need for establishing well-defined company objectives. In addition, there should be a causal relationship between plans (means) and objectives (goals). This in accordance with the theme of this dissertation: that management planning and control should be organized along lines which embrace all functions. "The organization of the management accountancy system should be designed for the particular business. It should be capable of providing the information required for all levels of management in order to achieve maximum efficiency". (Batty, Management accountancy p 13).

Dickey (op.cit., pp 20.46/47) states that although electronic data processing and computers can speed up reporting there is a danger that too many reports will be issued. Furthermore, the significant facts can be "overlooked in the sea of data". There is a necessity to review the entire list of reports at regular intervals, eliminating any that cannot be justified.

The organization should enable all relevant facts to be collated before a report is issued. Cowan (op.cit., p 343) emphasizes that a complex problem requires a study of all the facts and "off the cuff" conclusions should be avoided. Reports which mislead or are capable of a number of interpretations should be avoided.

In connection with the organization for reporting it is important to notice that the purpose of reporting variances is primarily to show managers what is going wrong. Knight and Weinwurm (op.cit., p. 295) look on the process as one which determines causes and responsibilities. It should not be regarded as an inquisition to find guilty parties or scapegoats. The aim should be to prevent a repetition of unfavourable occurrences and to effect improvements in the future (cf. Chapter 3).

Evans-Hemming (op.cit., p 22) strongly recommends that integrated accounting should form part of the organization. This means that one set of accounts would be employed to cover all aspects of management accountancy, instead of separate accounts for costing and another set of records for financial accounting. This point-of-view has much to commend it provided the system is designed for management and not primarily for financial accounting or taxation requirements. For a discussion on the weaknesses of a system which is orientated in the field of conventional accounting readers are referred to Batty (Management accountancy ppl4/15). Sorgdrager (op.cit., p 12) has also stressed that integration as advocated by

the earlier writers has resulted in cost accountancy "developing into a technical and professional technique without any background". This is a very severe criticism which, unfortunately, is very true. Although financial accounting is now being put in its true place in relation to cost accounting there is still a considerable legacy left from the early developments. (see Chapter 5). Effective use of reports is vital to the operation of a system of control.

Dickey (op.cit., pp 20.48/49) stresses the need for co-operation between those who prepare reports and the managers who use them. Good communication is essential and the accounting staff should assist as much as possible in showing managers and supervisors how they can utilize the facts. If the corrective work involved is very large the manager should be assisted as far as possible by letting him know which variances are of significance so that they can be tackled first. Backer and Jacobsen (op.cit.,p409) report that social scientists have been critical of accounting methods used for evaluating performance. All too often the standards are regarded as "pressure instruments" and as a result they can build up resentment within the organization. In addition, performance standards can cause departmental conflicts by managers trying to pass the blame onto other departments. Finally, the standards are often inflexible with the result that they are soon out-of-date.

These criticisms can be very real and efforts should be made to overcome them or, better still, to avoid them altogether.

Having managers and employee representatives involved in setting standard costs can avoid resentment. The author regards participation as an essential part of budgetary control. It should certainly be treated the same way for standard costing. The departmental conflicts can result from the lack of clear organizational lines and definition of responsibilities. Li (op.cit., p220 et. seq.) stresses the need to have a sound organization which gives the required information. In particular he suggests that there should be a clear distinction made between cost in any particular department and cost incurred elsewhere. In short, there should be a clear indication when cost was added and by which cost centre. This procedure would certainly avoid the possibility of conflict between the various managers.

Flexibility of standards is stressed earlier in this chapter. The need to revise periodically is covered in the next section. Once the appropriate organization has been established the detailed analysis of reports can take place. These will show the detail and contents appropriate to the level of manager concerned. It is not intended to give a complete report structure here. One is referred to suggestions in the works of Gillespie (op.cit., p 153), Evans-Hemming (op.cit., p 25), Dickey (op.cit., pp20.38/39) and

Li (op.cit.p.303.et.seq.) (see Chapter 5). One possible breakdown is into:

- (a) General reports - for top management
- (b) Production reports.
- (c) Sales reports
- (d) Distribution reports.
- (e) Administration reports.

This follows the normal functional organization and is to be recommended. It is both logical and all-embracing. (Batty, Standard costing p 298).

(3) Revision of Standard Costs

For any standard costing system to operate efficiently the standard costs should be realistic, accurate and meaningful as prescribed in the earlier parts of this thesis. Moreover, there should be means provided for keeping them up-to-date.

Gillespie (op.cit., p53) states that in practice some companies revise standard costs once a year. This author then goes on to explain how the revision work can be effected by having special columns on the standard cost cards.

Another view is that "standards should be reviewed periodically to ensure that recognition has been given to changes...."(Backer and Jacobsen, op.cit., p 297). Henrici (op.cit., p 390) takes a more positive view. If new operations or processes are added the recommendation is that the standard costs should be compiled

and/or revised immediately. For other changes an annual revision would generally be adequate. From an accuracy standpoint the sooner a revision is made the better, but the administrative costs involved may decree deferment to once a year. Any significant changes can be separated by means of a revision variance. (cf. Batty, Management accountancy, p 355.)

A feature which should be incorporated into any standard costing system is the need to keep standards constantly under review. Even when variances are favourable there should be no question of assuming that performance is satisfactory. If favourable variances are consistent they should be investigated with a view to incorporating the improvement in the revised standard costs (Evans-Hemming, op.cit., p 59).

Cost control often lacks a dynamic approach so necessary for effecting cost reduction. Standard costs may be left unchallenged over a period although the variance analysis will have made some contribution towards improving operating efficiency (Institute of Cost and Works Accountants, Cost reduction, London, 1956 p.8).

There is a need to give full recognition to the fact that methods and processes can be improved and that conditions do change. Improvements can result in cost reduction, a higher level of efficiency can reduce waste and, therefore, also reduce costs.

It follows that standard costing should be cost reduction orientated. "Products, processes, procedures and personnel are subject to continuous scrutiny to see where and how they can be reduced in cost" (Institute of Cost and Works Accountants ~~ibid~~ p8). There should be continuous and planned research which is constantly being followed up.

Value analysis is a special form of cost reduction programme. It seems to have evolved as a separate technique in the early 1950s. The Design for Production productivity team report produced in 1953 refers to its use. Its main purpose is to examine every possible idea, process, material or other aspect to consider whether costs can be reduced. This is done in a systematic fashion.

All aspects are considered from two angles - the costs and the likely value as determined by market conditions. A brief definition has been formulated in the following terms: "the comparison of the cost of an object with the value obtained from it, to determine whether the value justifies the expenditure". (Glossary of management techniques, H.M.S.O., London, 1967; no number).

Suggested questions which may be considered by a value analysis committee are as follows:

- (a) "Does its use contribute value?
- (b) Is its cost proportionate to its usefulness?
- (c) Does it need all its features?

- (d) Is there anything better for the intended use?
- (e) Can a usable part be made by a lower cost method?
- (f) Can a standard product be found which will be usable?
- (g) Is it made on proper tooling, considering quantities used?
- (h) Do material, reasonable labour, overhead and profit total its cost?
- (i) Will another dependable supplier provide it for less?
- (j) Is anyone buying it for less?"

(Institute of Cost and Works Accountants, op.cit., pp 47-49)

This is the value analysis approach to cost reduction. This should be built into a programme which is fully co-ordinated with the management accountancy system.

Knight and Weinwurm (op.cit., p 344 et. seq.) are in agreement with revising budgets when necessary. However, they warn against the too ready acquiescence to budget revisions. The budgets, in these circumstances, may be treated too lightly. Only if the goals laid down are impossible should the lesser goals be agreed. In any case, the decision for any change should rest with the appropriate committee or senior managers. Line managers should only be allowed to suggest changes, but never to carry them out unless approved.

(4) Conclusion on Control

True cost control can only come from properly established standard costs operating within a co-ordinated system. Variations from plans made should be brought to the notice of managers so that action can be taken as early as possible.

The organization for control must be planned so that variance analysis and reporting are as 'automatic' as possible, thus complying with cybernetic principles. Because of the dynamic state of any business, there should be adequate provision for revising the standard costs.

3. USES OF STANDARD COSTING

Many managerial uses have been advocated for standard costing.

This section is concerned with examining the principal benefits claimed. Various writers have put forward their views and these are summarized: Cowan (op.cit., p 226) gives the following uses of standard costs:

- (a) Cost reduction and cost control.
- (b) Pricing.
- (c) Stock valuation.

Henrici (op.cit., 375) mentions other possibilities:-

- (d) Salary evaluation.
- (e) Cost estimating.

Gillespie (op.cit., p 13) gives a number of uses mentioned by Cowan and/or Henrici. In addition:

(f) Measurement of profits.

(g) Business planning.

a Cost reduction and cost control

These are considered in the order shown, except cost reduction and cost control which have been examined earlier.

b Pricing

Pricing products is fraught with difficulties. In his classical work A. Marshall (Principles of economics, Macmillan, London, 1920 (1949, 8th edition, reprint), p 290) discusses the role of supply (cost of production) and demand (utility). Both are important, but there is a tendency for demand to have the greater influence in the shorter period. As Marshall states:

"We might reasonably dispute whether it is the upper or the lower blade of a pair of scissors that cuts a piece of paper, as whether value is governed by utility or cost of production".

Certainly both supply and demand will influence price. In this section the concern is with how much reliance can be placed on costs as a basis for pricing.

The Institute of Cost and Works Accountants (An introduction to budgetary control, standard costing, material control and production control, London, 1950, p 33) state that standard costs can be used to predict costs. Where the demand for a product is elastic, this information can be used as a basis in fixing selling prices.

J.E. Smith and J.C.W. Day (Advanced cost accountancy, Gee, 2nd Ed.

1964

London, p 70), state that "cost alone does not determine selling price". Competition often determines price so that the main task of a manufacturer is to control costs. These should be based on costs, but with the necessary adjustments made to allow for market conditions. There is, therefore, a strong body of opinion which acknowledges that costs alone should not determine price. This does not mean that costs can be disregarded.

In many fields, where contract work is involved, the estimated cost is often the only information available on which to base prices.

McNeill and Clark (op.cit., p 86) state that before starting to produce a new commodity an estimate should be made of the probable cost. This stresses the planning aspect: there is a need to decide beforehand what is going to be involved in terms of cost.

Buyers and Holmes (op.cit., p 203) observe that many jobbing and contract businesses are relatively unaffected by the prices of others. If an estimate is reasonable then the customer accepts and the work is done. These are general observations. They show that there is a distinct relationship between cost and price, but the extent of this will be determined by the circumstances and the length of period being considered. It would be most unwise for a businessman to rely solely on costs as a basis for pricing. Between the incurring of expenditure and the "value

judgement at the moment of exchange" there can be a considerable difference between the original cost and the replacement value.

(vide Sorgdrager, op.cit., p 41).

In addition to changes through time there is also the question of effective utilisation of the business resources. As stressed earlier, there should be a clear distinction made between avoidable waste and cost - only true costs should enter into the total cost of a product.

Standard costing, with its emphasis on efficient and optimum activities should come as near as possible to showing what costs are to be incurred on a replacement value basis.

On the length of period involved a number of accountants and others have advocated that, in the short period, marginal costs are more meaningful than those given by the total or absorption cost methods. This assertion is based primarily on the difficulties associated with the allocation and recovery of fixed overhead costs.

D.R.C. Halford (Differential costs and management decisions, Pitman, London, 1959, p.5) notes that price is made up of two elements: the cost and the profit. The argument put forward is that these two elements are not related and, therefore, should be treated quite separately. His arguments for this proposal are not at all clear and, therefore, are not reproduced.

Halford then goes on to develop a theory of marginal costs (or differential costs). The direct expenditure - that which can conveniently and wholly be identified with the particular unit - has to be determined (op.cit., p 7). Backer and Jacobsen (op.cit., p.368) stress that fixed costs are treated as period costs rather than products costs. This means that the direct costs only are recovered in the cost of the products.

The Institute of Cost and Works Accountants (A report on marginal costing, London, p.8) defines marginal costing as:

"The ascertainment, by differentiating between fixed costs and variable costs, of marginal costs, and of the effect on profit of changes in volume or type of output".

The concern here is with marginal costing in so far as it may be employed for ascertaining prices; in particular, the use of marginal costs within a standard costing system. Nevertheless, it is important to notice that there are differences of opinion on the definitions employed and their interpretation. For an analysis of the position readers are referred to Sorgdrager (Is direct costing a useful tool for management? The accountant, London, 18th June, 1966, p 774).

With marginal costing the selling price is determined by reference to the variable costs. These are not distorted by changes in the volume of output as are fixed costs (unit costs vary according to the number of units produced). (Institute of Cost and Works Accountants, A report on marginal costing, p.17).

The marginal costing approach to pricing may be summed up by the formula:

Sales price minus Marginal cost = Contribution

(Batty, Management accountancy p 278)

If a sales price makes a contribution (i.e. a figure in excess of marginal cost) then, so the theory states, the price may be regarded as satisfactory.

Backer and Jacobsen (op.cit., pp517/8) assert that this form of pricing gives greater flexibility. The pricing executive has more latitude. He can estimate the price and volume which will maximize profits. This means that when there is excess capacity, orders which cover more than marginal costs should be accepted by the business.

The advocates of marginal costing stress that pricing on marginal costs is logical and consistent. However, this view is not generally acceptable. Some of the problems associated with the idea of using marginal costs only for pricing are very real.

H.L. Thomas (A critical examination of direct costing, the Australasian Institute of Cost Accountants Bulletin, Oct-Dec 1964, p 35 et.seq.) examines the claim that direct costing is of assistance in fixing prices. This author is of the opinion that the contribution thrown up by a direct costing calculation would be useful in showing the relation of one product to another in terms of the ability to earn contributions; this is not the same as the correct approach to pricing.

In many cases the price is not even determined by management, but by competition; even if the price can be set by management, reference to direct costs alone may be misleading. Fixed costs have also to be recovered in the selling prices. A much better plan is to have information on the direct costs, but "absorption costing which allows for fixed costs in the cost sheet is a better aid for management in selling price decisions than direct costing".(p.36).

The Institute of Cost and Works Accountants (A report on marginal costing, London, 1961 ppl4 and 34) qualify the general approach by suggesting the use of a limiting factor - "that factor in the activities of an undertaking which at a particular point in time or over a period will limit the volume of output" (p.32). Examples are shortage of direct labour, direct material or some essential service. When a limiting factor exists the calculation would weight the figures so that the importance of the limiting factor would be considered in the calculation.

In the calculations given a number of assumptions are made in order to illustrate the appreciation of the selling price technique. These include the total sales value and the profit expected. Yet an alleged advantage of marginal costing is that it avoids the conflict which arises when volume of output has to be anticipated. Gillespie (op.cit., p 136) states that with absorption costing the standard cost will be affected by the particular volume being produced and

this fact will affect the total cost and the price. For the Institute to arrive at the budget and relevant figures (p.35)

a knowledge of the expected volume had also to be available.

For long term planning it would appear that knowledge of the volume of output is very essential. Gillespie (op.cit., p 136) an advocate of direct costing admits that: "Absorption costing emphasizes the long-run view, which is concerned with the amount of cost that must be received in selling prices to stay in business." Thomas (op.cit., p 29-40) stresses that the alleged disadvantage of fluctuations in output is now more illusory than real, especially with the tremendous improvements which have taken place in forecasting in recent years.

On the matter of fixed overhead costs their exclusion from the calculation of product cost may be feasible provided the methods of production are similar for all products. If the processes and degree of mechanization are not similar then fixed costs cannot safely be ignored.

From what has been stated it should be apparent that the marginal costing approach to pricing is primarily a short-term concept. A general adoption of this practice can be dangerous and unsound. Marginal costs can be useful in fixing prices or in ascertaining the likely profitability of products, but, in the long run all costs have to be considered.

Sorgdrager (Is direct costing a useful tool of management? op.cit.,

p.777) sums up the position when he states:

"From a theoretical and critical analytical point of view, the D.C. method must be considered ineffectual. But this does not mean that ~~it~~ is unusable. Despite certain objections to it the system can be fully utilized, provided a system of full costing is also employed."

Thomas explains that direct costing does not eliminate the problem of the unfilled shop, but rather helps to isolate the difficulties. This author then goes on to state that he doubts if any manufacturing business using up-to-date methods of standard costing or budgetary control would find any advantage by switching to direct costing.

c Stock Valuation

The importance of stock valuation has been summarized in the following terms:

- "(1) The desire to show a true and fair view of the operations for a particular year in terms of profit earned. Changing the basis of valuing stocks of raw materials or work-in-progress can affect the figure shown for profit. Accordingly, there is general agreement that, once the most suitable method of valuing has been determined, this should be used consistently. Arising from (1) above, there are other factors which may be affected.
- (2) Profit earned affects the tax payments due in respect of a particular year.
- (3) The capital of a business, expressed in real terms is affected by the method of pricing issues from the stores. Some methods use actual costs and, therefore, tend to overstate profit in a period of rising prices. Others attempt to employ current material prices and, therefore, to charge replacement costs, thus more truly stating the profit earned in a particular period.
- (4) The price of shares of a company tends to be affected by the cyclical movements of profits.

(5) Optimism or pessimism may be induced by the profit earned in a particular year. This can have far-reaching effects on the attitude of directors and lending institutions such as banks, leading, in turn, to expansion or reduction of production capacity. In short, there tends to be a close link between trade recessions and profit-earning." (Batty, Management accountancy, p 618).

Stock valuation is surrounded by problems and, as one author has stated, even accountants cannot agree amongst themselves. (vide P. Gumbrell, Some problems of stock valuation, the Accountant, London, 27th May, 1967. p.698 et.seq.) This is not the place to examine all these problems, but to look at the question of valuation on the basis of standard costs.

If a standard costing system is in operation where the stores and work-in-progress accounts are kept in terms of standard costs then much work can be avoided by leaving the stocks at these values.

A further advantage of the procedures is that material stock cards can be recorded in terms of quantities only. (Matz, Curry and Frank, op.cit., p 160). This procedure can result in clerical savings and speedier postings to the stock records (p.585). Gillespie (op.cit., p.13) states that "actual costs are not typical" and less clerical work is involved when standard values are used.

The supporters of marginal (direct) costing do not get recognition from the income tax authorities of many countries. Gillespie (op.cit., pp 135/6) provides evidence to show that direct costing is not allowable for stock valuation purposes.

Cowan (op.cit., p.298) states that this "view is supported by income tax law" - the main exception being the Duple Motor Bodies Case. (Ostime v. Duple Motor Bodies Ltd (1961) 2 all E.R. 167). For details of the findings of this case readers are referred to Batty: Management accountancy, p.622.

In substance, the outcome of the case was that any reasonable method of valuation could be employed - the determining factor was whether the valuation gave a "true and fair view of the profit or loss for the year". This view was reaffirmed by Recommendation No. 22 issued by the Institute of Chartered Accountants in England and Wales.

The position in Britain is that standard costs, whether marginal costs or full costs, would be acceptable, provided they are reasonably accurate and are current standards. (H.G. Thomas, Stock valuation - the revenue's view, The accountant, London, 17th February, 1962).

With stock valuation the effect on profit should always be borne in mind. If standard costs are carefully predetermined in accordance with the principles advocated earlier in this thesis, then both product costs and stock valuations are likely to reflect the economic sacrifices involved in the manufacturing and other processes involved in bringing the materials or products to their present state. The same prices will be charged to production and for valuation.

Because of this, profit figures should be more realistic than when other methods are used.

Henrici (op.cit., p 302) sees no difficulty in keeping stocks of raw materials, work-in-progress and finished goods at standard costs.

One problem which may arise is where the actual price paid is less than

standard cost. In this case Henrici suggests that the standard costs should be revised or an adjustment made to stock values.

This matter is linked with the disposition of variances. Where stocks are kept at standard cost the general rule followed is that variances are written off to profit and loss account. The arguments for and against writing off variances ~~are~~ **considered** by Henrici (op.cit., p.109 et. seq.) The objections are primarily concerned with the nature of the standard costs. Standard costs may be "hypothetical costs" which cannot even be attained. If standard costs are to be used then they should be realistic and attainable (cf. Batty Standard costing, p.329).

Cowan (op.cit., p.237) expresses the fact that the "majority view holds that standard costs are **normal** costs" and, therefore, stock valuation should be based on these. A qualifying statement concludes that some adjustment may be necessary to allow for over-absorbed fixed overheads.

A similar view is put forward by Dickey (op.cit., p.16.20) who quotes from the Accounting research bulletin No. 43 (American Institute of Certified Public Accountants): "Standard costs are acceptable" provided they represent current conditions. Moreover, they provide valuations which are conservative because the cost of waste, loss and inefficiencies have been eliminated from the true costs.

There does appear to be a strong body of opinion which would favour

valuation at standard costs. (p.16.21).(The position which exists in practice in Britain is covered in Chapter 5.)

d. Salary Evaluation

Henrici (op.cit., p 375 et.seq.) suggests a salary scale which has a positive link with the standard costing system and therefore standard costs. Supervisors are paid "for the authority and responsibility required to control a portion of the company's money in the form of wages, materials and manufacturing expense". For this reason it is recommended that job evaluation should be used. Job values would be determined by reference to the controllable costs and a bonus paid on efficiency achieved in controlling these. This principle could also be extended to the calculation of wages as opposed to salaries.

Gantt a pioneer of incentive schemes devised a system which allotted a standard time to each unit of production and paid the worker on the basis of the standard times achieved. This method is commented on by Dickey (op.cit., p.6.30) who observes that it is "especially adaptable to companies which use a standard cost system". This method is sometimes known as a "standard time system".

In recent years there has been a move towards "measured day work". This depends on scientifically determined work standards and is a system of "contractual relationship between management and workers". There are difficulties associated with introducing this method,

including overcoming the emphasis on the purely financial motive.

For further details of work measurement and piece rate schemes readers are referred to an article by G. Owen (When should piecework be abandoned? The financial times, 2nd Feb. 1967, p.13).

For the purpose of this thesis it is important to note that reliance is placed on standard times which would obviously be used within the standard costing system. There is, therefore, a direct relationship between the sacrifices involved and the payments made to workers for those sacrifices. This is in accord with the philosophy of standard costing as defined in Chapter 1.

Many other incentive schemes use standard times. Straight piece rates, piece rates with guaranteed day rate, differential piece rates, premium bonus schemes and various efficiency plans all depend upon the establishment of realistic targets (vide Institute of Cost and Works Accountants, Employee remuneration and incentives, London, p.25 et.seq.)

Any system which employs standard times determined by efficient time study has advantages because it can be used as a basis for production control and standard costing.

According to R.G. Williams (Methods of remuneration, Society of commercial accountants, Bristol, 1954, p.22), when speaking of differential piece rate schemes, any rate fixing "must be planned scientifically on the basis of time studies by qualified observers, otherwise the employer or worker will be penalised where the rates of remuneration are too high or too low respectively". This concept

was discussed earlier in connection with the establishment of standard times for standard labour costs.

e. Cost Estimating

On estimating Henrici (op.cit., pp380/1) states that the use of standard costs greatly facilitates estimating for new products. Actual operating costs are rarely very accurate. When standard costs are installed a thorough analysis of all operations is necessary and this results in greater accuracy.

McNeill and Clark (op.cit., p.38) observe that one of the earliest uses of cost accounting was to provide figures for estimating prices. This is still regarded as "one of its most important functions." The authors note that costs have to be predetermined for raw materials, equipment usage and labour times. The first two (raw materials and equipment) are regarded as having their values or costs determined by the action of the open market, "but without proper time values it is not aware of the manhours that should be expended in converting the raw materials to the end product". (ibid. p.324).

The authors are no doubt correct in stressing the importance of obtaining true labour standard times. However, they are wrong in giving the impression that a business can rely on the "open market" for accurate standards for materials and services.

Predetermination of costs for these two essential factors is often

quite difficult, and to suggest that labour standards are more important is misleading. P. Carroll (How to control production costs, 2nd ed. McGraw Hill, New York, 1953, p.101) asserts that material variances are "sometimes greater than all others combined". This certainly does not substantiate the views of McNeill and Clark. Nevertheless, the basic approach of these two authors in insisting on realistic standards is correct and cannot safely be ignored.

The difference between true standard costs and estimated costs is noted earlier. Many estimates used for pricing are far from the scientific standard costs envisaged by McNeill and Clark and other writers quoted in connection with the definition of standard costs. Dickey (op.cit.p.14.2) quotes a number of authors in establishing that estimated costs are not standard costs and that the former are usually less accurate than the latter. Often estimated costs are nothing more than guesses, although they may approach reasonable accuracy. Some estimators simply look for what the actual cost will be rather than what it should be as with standard costing. The defects of these "actual costs" are well known and the outcome of the estimating may be a result which is "somewhere between a very rough guide and a reasonable estimate". There may be loss of accuracy, difficulty of interpretation, and delay in taking action because nobody will be certain what the costs mean. (Batty, Standard costing, p.1). Wright (op.cit., p.92) looks at

the process in reverse when he states that cost estimates can be used for building up the standard costs. This author then goes on to describe how a printing company had redesigned the form of the cost estimate so that it could be used for a standard costing system.

The conclusion which must be reached is that standard costs can be extremely useful for estimating for contracts. When using predetermined costs of any kind a manager should be made aware of their nature and limitations: otherwise there is a real danger that losses will be made by quoting unrealistic prices.

f. Measurement of Profits

Gillespie (op.cit., p.129) appears to be in favour of using the direct costing approach for eliminating any variations in profit due to changes in the values of stock holdings.

The question of the correct approach to calculating profit is very much related to stock valuation and to the methods of dealing with the recovery of fixed overhead costs. Because there are differences of opinion on these matters (see "Stock valuation" earlier in this chapter), it is inevitable that there should be discord on the most suitable form of accounts to employ - whether marginal or total (orthodox) accounts should be used.

The arguments for and against are summarized by Batty (Management accountancy, p.235 et.seq.)

What should be noticed is that, when total standard costing is employed, the stocks will be valued at standard costs not some actual cost which has been affected by an unexpected fluctuation in the volume of output. In addition, if different sections of a business benefit in varying degrees from the use of assets which incur fixed costs, then a much more realistic approach would be to allocate and/or apportion fixed costs to the relative cost centres on the basis of the benefit being received. This would apply when one cost centre is highly mechanized whereas another is operated by hand labour.

When speaking of profits it is necessary to consider whether there has been the correct matching of costs and revenue. This process is vital for the calculation of profit for each year. It is the most practical method available, although there are others such as comparing the net worth at the beginning and at the end of a period (vide R.S. Gynther, Accounting for price level changes - theory and procedures, Pergamon Press, Oxford, 1966 p.38 et seq.)

Gynther (op.cit., p 41) states that accountants should not ignore price changes and they should "use current cost figures when matching expenses with revenues in the profit determination process". This approach coincides with the theory of cost accounting developed by Sorgdrager cited earlier, and is along the lines advocated by Batty (Management accountancy) who has stated:

"Showing costs at current figures with sales at current values is the only logical method of calculating the results of a year's operations" (p.629).

There is no universal agreement on the need to maintain capital intact in real terms and to show revenue and costs in current terms. However, more and more accountants are recognizing that the problem has to be tackled or the accountant is not showing the effectiveness of the utilization of management resources. Chambers (op.cit., p 114) states that maintenance of capital in terms of assets must be obtained in real terms for profit to be earned. The Institute of Cost and Works Accountants (The accountancy of changing price levels, London, 1952, p.9) makes it clear that there should be a statement made to show whether the real value of capital contributed has been maintained continuously. H.W. Sweeney (Maintenance of capital, from "Significant accounting essays." edited by M. Moonitz and A.C. Littleton, Prentice-Hall, Englewood Cliffs, N.J. 1965, p.257) asserts that "maintenance of absolute capital measured in terms of general purchasing power seems most worthwhile....." Other authors could be cited, but enough should have been said to indicate that the support for the maintenance of capital, and, therefore, revaluation accounting, is very strong.

The Institute of Cost and Works Accountants states quite firmly that:-

"To a certain extent standard costs (the use of which is constantly recommended) recognize the need for basing accounting information on current, as opposed to original, money values". (p.10).

The theme of this dissertation is that, provided true standard costs are developed and used, the matching should produce a realistic profit which may be used as a measure of management's progress.

The definition of such a cost is covered earlier.

In connection with profit determination it is important to establish that any principles followed should be used consistently and not varied to change the nature of the operating results. G.O. May emphasizes that: "Consistency is the second great virtue of accounting", but explains that flexibility and adaptability are also essential (Moonitz and Littleton, op.cit., pp 176/177) E.B. Wilcox and R.H. Hassler (Moonitz and Littleton (ibid p.146) state that "consistency calls for the avoidance of changes based on caprice".

In Britain this convention is given legal recognition. The Eighth Schedule to the Companies Act 1948 stipulates that any abnormal transactions or change in the basis of accounting which affect the profit and loss in a material fashion should be noted in the published accounts. (Part 1, para. 14, sub-sec. 6a) and b)).

Standard costing gives recognition to consistency by adopting well defined principles for equating economic and technical sacrifices in terms of financial values. There is no question of using a mixture of costs all of which have been incurred at different periods of time. Instead, along the lines advocated in this text, standard costs are employed which should show in a profit which is capable of comparison

from one period to another. If standard costing is extended to the whole field of selling and profit planning then standard revenues and standard costs are being compared and any deviations (variances) may properly be regarded as inefficiencies. This matter is considered further in the next section: the approach is in line with the complete integration of the accountancy systems which is stressed earlier.

g. Business Planning

(1) Profit Planning

Gillespie (op.cit., p.14) looks on business planning to include budgeting and the effects of changing cost-price - volume relationships. These matters are so interrelated that they should be included and, therefore, the question of management decisions will also be covered in this section.

Profit planning "in depth" is regarded by Wright (op.cit., pp140/141) as being one of the most important features of direct standard costing. This author argues that absorption costing is misleading and causes delays, whereas direct costing can produce "short cuts to executives decisions". The usefulness of this technique has been examined in connection with pricing. In the opinion of the author of this dissertation the classification of fixed and variable costs and the adoption of marginal costing principles can be very useful in appropriate circumstances, but the exclusive use of the

technique is not advocated.

The framework of management accountancy should be wide and comprehensive. There should be total integration of all systems. This framework should include financial policy and accounting, historical cost accounting, standard costing, marginal costing, budgetary control, decision accounting, control accounting, and revaluation accounting. If they are welded together into an efficient whole, they can then serve management in the best possible ways for the conditions and problems being encountered (vide Batty, Management accountancy, pp 4 - 15). Backer and Jacobsen (op.cit., p.465) favour the use of an integrated budget programme. This would involve a sales forecast and cost of sales and factory budgets. These would, according to the authors, be based on standard costs. The essentials of a profit improvement plan should include:

- (a) Specific proposals and the expected effect on profit of each.
- (b) A minimum rate of return for each division and standards of performance.
- (c) The plans should embrace all aspects of the business and be based on organizational lines.
- (d) Reports should be part of the system so as to control the deviations from the profit targets (p.488).

Backer and Jacobsen (op. cit., p.396 et.seq.) regard the setting of objectives (the plan) and the establishment of standards of performance as being part of an integrated system. However, in practice they observe that the budgets (plans) may be revised and reviewed on a monthly or quarterly basis, but the standards may be adjusted less frequently. The variances are profit "leakages" which affect the ultimate achievement.

In the view of the author of this dissertation the distinction between budgets and standards helps in understanding their true nature. Budgets present the broad framework, whereas the standards provide the necessary analysis and detail for making the budgets workable. The observation made earlier - that budgets should be based on standard costs - still applies.

A further view on integrating all aspects of the accounting function is presented by Li (op.cit., p. 337 et. seq.). Profit planning is regarded as "the matching of estimated revenue and estimated cost of a budget period." It is a top management responsibility which involves the co-ordination of all functional divisions and cost centres. Li's emphasis on "estimated" costs is unfortunate because he certainly has the correct approach to the integration of all accountancy functions. However, this may be a matter of loose terminology for an earlier reference speaks of standards being used for performance budgets which, "when assembled and co-ordinated at higher administrative levels, serve as the basis for overall operating and financial planning

of an enterprise". (p.271).

From the sources quoted above it should be apparent that integration of all systems is a desirable aim. This approach follows the logical pattern which should be adopted in business management: defining objectives and planning, controlling, co-ordinating and carrying out the varied functions which are involved in management. These are discussed in Chapter 2.

(2) Management Decisions

Decisions have to be made by managers of all levels. In fact, decision making is the specific task of executives: only they make decisions (P. Drucker, The effective executive, Heinemann, London, 1967, p.95). Knight and Weinwurm (op.cit., p.123) distinguish between two types of models for decision making. There is the kind which involves the selection of alternatives and the other type which conveys information and which may be used for co-ordinating and controlling. The second type may result in further decision-making. Examples are given of the two models - the discounted cash flow calculation for the first and the break-even chart for the second.

Since models are now the accepted form for presenting facts for decision making, M.J. Sargeant (Operational research for management, Heinemann, London, 1965, p.5) defines operational research in terms of the "formulation of mathematical models".

In more detail Sargeant (op. cit., p.10) gives the steps involved

in providing the information necessary for managers to make rational decisions:

- (a) Statement of the problem.
- (b) Collection of relevant data.
- (c) Analysis of data and building the model.
- (d) "Working" the model to obtain solutions.
- (e) Selection of the optimum course of action.
- (f) Checking the validity of the model.

This author then goes on to explain that "there is an obvious likeness between operational research and such techniques as budgetary control and standard costing". Operational research provides a dynamic model which gives detailed information on specific problems such as the alternative methods of transporting goods from one place to another. In connection with operational research it should be noted that just as Sargeaunt links management accountancy techniques, this has also been done elsewhere. (cf. Batty, Management Accountancy p.4) Fox (op.cit., p.41) also gives a similar list of steps for model building: he states that the best example of a "descriptive" model in business is the accounting system, "which is a symbolic representation or model of what is happening". A "descriptive" model describes what is happening, whereas a "predictive" model forecasts what is likely to happen. The example given of a predictive model is a budget. (p 42).

Drucker stresses that decision making involves a choice between alternatives. It is not simply a matter of getting facts, but also testing the relevance of information. Opinions have to be obtained on what is required and then the facts become important. The analysis on what is relevant should come first or the decision making can be based on wrong assumptions. (op.cit., pp 120-137). How does management accountancy, including standard costing, fit into this mechanism for making decisions? If it is to be an effective tool of management then it should provide the necessary information - both facts and opinions.

The importance of participation by all levels of management in the budgeting process has already been stressed. Backer and Jacobsen (op.cit., p.465) state that the profit plan "should be established with the full participation of the individuals responsible for its attainment".

Knight and Weinwurm (op.cit., p.73) give a good example of participation when compiling a sales forecast. The salesmen are consulted, the district managers are asked for their opinions and the sales manager gives his advice. All opinions are taken together before a forecast is made.

The availability of information of the right type at the appropriate time and in the most appropriate form are essential requirements of an accounting system. These needs can only come from the organization

which best fits the business concerned as determined by careful analysis (Fox op.cit., p 237). Standard costing, within the framework of management accountancy, should be able to supply all the data necessary for effective decisions. Some of the important areas for decision making are considered below.

Much of the controversy on pricing and other aspects of profit planning centre around the volume of output (or level of activity) being realized. Wright, for example, states that changes in volume cause confusion to non-accounting executives (op.cit., p 5).

Li (op. cit., p.372) has stated that there are four principal factors: cost, revenue, volume and profit, which form the basic equation for cost-volume-profit analysis. A change in one affects the others. There may be an increase or reduction in cost, a change in the selling price or a change in the units sold or the variety sold (the product mix). In forecasting production and sales it is usual to consider all relevant factors and weigh up probabilities before reaching a decision on what volume to take as the basis for the plans (Institute of Cost and Works Accountants. An Introduction to business forecasting, London, 1960, p.1).

The works of Sorgdrager and Els are quoted earlier in connection with selection of the optimum capacity which is chosen after considering the appropriate proportion of labour, materials, equipment and services to use in order to utilize the resources at the most effective economic and technical level.

The instrument used for showing the volume to be produced is the fixed budget which provides a "fixed base" essential for "effective co-ordination and control". (Knight and Weinwurm op.cit., p.41).

These authors explain that flexible budgeting is still necessary "because of significant variations in planned volume and these are almost certain to occur" (ibid p.43). Backer and Jacobsen (op.cit., p.168) regard the fixed budget as a planning device for predetermining the factory overhead rate.

Once the appropriate volume has been selected and shown in the fixed budget it will be necessary to have means of showing the effect of any changes which take place. As suggested in the preceding paragraph, this would be accomplished by means of a flexible budget. The supporters of marginal costing give the separation of fixed and variable costs as the principal reason for the employment of the technique. The Institute of Cost and Works Accountants (A report on marginal costing, London, 1961 p.8) states quite clearly that "differentiating between fixed costs and variable costs" is fundamental to the definition of marginal costing.

There is no denying the usefulness of the distinction, but can this alone justify the distinction into a separate technique? Harrison (op.cit., p.268 et seq.) appreciated that fixed costs had to be considered separately: this was in 1930! Henrici (op.cit., p.56) states that the classification is essential to the development of standard costs. This view is shared by most modern authors.

From these observations it should be realized that the classification of costs into fixed and variable is very essential. As Li observes (op.cit., p.262) the behaviour of costs is vital to an understanding of what might happen if there is a change in volume.

Break-even charts can also be useful for portraying the relationships which exist between volume, costs and sales revenue. Very many applications are possible. They can be used for showing the cash position, the contribution expected at different levels of activity, comparison of budgeted and actual profit, and the profitability of different products. (vide Batty, Management accountancy, p.256 - 269). They are not, as implied by some writers, the sole prerogative of marginal costing. G. Lisle (Published in Edinburgh and London but no publishers name given) had details of a break-even chart published as early as 1904 in The encyclopedia of accounting,

(cited by L.W. Keller and W.L. Ferrara, Management accounting for profit control, McGraw Hill, New York, 1966, p.644). According to Wright (op.cit., p.6) it was not until 1934 that the first system of marginal (direct) costing was installed at the Dewey and Almy Chemical Co!

Besides considerations involving volume, costs and prices, as related to the business as a whole, there is the question of whether to continue to operate different sections or to eliminate products from the range offered. Keller and Ferrara (op.cit., p.486 et.seq.) suggest the type of analysis necessary. If a department is not showing a profit then the business is faced with a number of alternatives:

- (a) Continue to operate making no change.
- (b) Continue, but on a different footing; e.g. on a rental basis so that the department is on its own (a profit centre).
- (c) Discontinue unprofitable lines and transfer profitable lines to related departments.
- (d) Close down the department.

These alternatives are presented in a slightly modified form.

They are given to show that alternative courses of action are available for managers to consider.

The approach recommended for comparing alternatives of this nature is via a marginal profit and loss account (Fig. 6A).

This is suggested by a number of writers. (vide Institute of Cost and Works Accountants, A report on marginal costing London, 1961, p.50; Backer and Jacobsen op.cit., pp 374/5; Wright, op.cit., p.206; Li op.cit., p.389; Gillespie op.cit., p.145 et.seq.).

In all cases the suggestion made is that the difference between sales revenue and variable costs should be taken to indicate the acceptability of keeping a department or product. This difference is known as the "contribution".

The marginal costing approach, using standard costs, can be extremely useful in presenting information in an intelligible fashion. As noticed earlier, in connection with pricing, there are difficulties.

Backer and Jacobsen (op.cit., p.375) have stated that the technique produces valuable data for short-term decision making. Li (op.cit., p.489) puts the point more forcibly by stating "though contribution to overhead is a useful tool, it must be re-emphasized that its validity is limited to short-term project planning." In the long run all costs have to be covered and a reasonable rate of profit must be produced. In most cases the return on capital employed would be the yardstick (cf. Keller and Ferrara op.cit., p.488). The exceptions to this general rule are discussed later in this section.

Before leaving the contribution approach to decision making it is important to note that the Institute of Cost and Works Accountants has made the following pronouncement:

"When the incidence of fixed costs is uneven in its effect upon the different segments of the undertaking, the publication of the contribution figures without any reference to the incidence of fixed expenses may be misleading" (A report on marginal costing, London, 1961 p.50) (vide FIG 6 B)

Other possible decisions are summarized below:

- (a) Whether to make a product or buy outside:
- (b) Selection of appropriate method of manufacture.
- (c) Determination of the profitability of products.

For examples of the calculations involved in these three decisions readers are referred to the Institute of Cost and Works Accountants publication on marginal costing (op.cit., pp 37 - 40)..

Marginal Profit and Loss Account of the
Arnold Co. Ltd.

Department	Sales Value	Marginal Cost	Contribution	Loss
	£	£	£	
A	80,000	24,000	56,000	-
B	40,000	15,000	25,000	-
C	60,000	46,000	14,000	-
	180,000	85,000	95,000	-
Less Total Fixed Costs			50,000	
NET PROFIT =			£45,000	

FIG 6A Conventional Marginal Costing.

Marginal Profit and Loss Statement
The Arnold Co. Ltd.

Department	Sales Value	Marginal Cost	Contribution	Traceable Fixed Costs	Gain + Loss -
	£	£	£	£	£
A	80,000	24,000	56,000	14,000	42,000+
B	40,000	15,000	25,000	8,000	17,000+
C	60,000	46,000	14,000	16,000	2,000-
	180,000	85,000	95,000	38,000	57,000+

Less Fixed Costs not allocated to
Departments 12,000
NET PROFIT = £45,000

FIG 6B. Marginal costing with
Traceable Fixed Costs taken to Departments.

(Source: Management accountancy, Batty, p275 and 277)

- (d) Whether to lease or buy a fixed asset. (for calculations vide Keller and Ferrara, op.cit., pp496-503).
- (e) Which fixed asset to purchase (vide Batty, Management accountancy pp 458-462).
- (f) Determination of optimum plant location (vide Backer and Jacobsen, op.cit., pp 634-636).
- (g) Selection of appropriate raw materials (vide Backer and Jacobsen op.cit., pp651-4).
- (h) Whether to sell or process further. (vide Backer and Jacobsen, op. cit., pp 655-6).

Other areas could be mentioned. If management is faced with alternative courses of action then a decision has to be made. In all cases managers have to make a decision; usually the accounting information can assist in evaluating the likely events which will occur following a particular decision. The accounting information itself will not produce an automatic decision. As Drucker has stated (The effective executive, p.121) "A decision is a judgment". However, in the opinion of the author of this dissertation if information is relevant and is reasonably accurate it can assist materially in the decision process. Standard costs, whether presented in marginal form or as total costs, can assist managers in making decisions. The justification for this statement is now presented.

Decision making is a part of planning and as such is concerned with the future. Fox (op.cit., p.27) analyses planning into:

- (a) Problem solving and decision making.
- (b) Providing the means for achieving the objectives.

The need for a co-ordinated and integrated system has already been stressed. It follows, therefore, that if standard costing is appropriate for control of costs there is much to be said in favour of using this technique for decision making. In this way the fullest use possible is being made of the management service. Defining company objectives assists in decision making. As Stewart observes (op.cit., p.71). The process is "made simpler if management sets the boundaries within which the business is to operate." These would include products to be made, type of market, relations with customers, location of plant, desirable size of company and the approximate yield on shares (ibid p.72). For decision making it is necessary to "quantify the differences between alternatives". (Keller and Ferrara, op.cit., p.486). When establishing objectives it is also desirable to quantify in terms of costs, values and physical units whichever is appropriate. There is no substantial difference between setting objectives in workable terms and in setting standards for sales, production and costs. Appleby, cited in the Introduction to this thesis, states that standards are absolutely essential. Fox (op.cit., p.177) follows the same approach in regarding objectives and the means of carrying them out as standards.

Managers are, therefore, accustomed to thinking in terms of standards. This is part of their normal work of planning and control. The use of standard costs for comparing alternatives should, therefore, be a process which would come naturally to managers thinking in terms of objectives.

The objectives should have as an end-product a satisfactory return on capital employed. (Fox, op.cit., p.186; Backer and Jacobsen, op.cit., p.436; Batty Management accountancy p.363).

As part of the planning for the realization of this aim it will be necessary to develop what Wright calls the "master profit plan" (op.cit., p.140). This would be incorporated in the master budget which would be part of the integrated system of management accountancy. Since standard costs have been advocated for budgeting then it is also logical to use them for making decisions.

The latter, taken together, should produce the overall effect which will be reflected in the return earned on capital employed.

Another factor which has been stressed earlier is the use of current values for computing the capital employed. This is part of the philosophy of standard costing; the use of costs which measure in a realistic fashion the economic worth of an asset. Gynther (op.cit., p.189) has stated that revaluation is essential to give "management and shareholders an accurate perspective of the 'real' funds tied up in the business". Unless assets are valued realistically there will be a tendency for profit to be grossly overstated.

The nature of the cost is also of vital importance. If a cost is not

defined precisely then management cannot appreciate the true significance of any decision made. Sorgdrager (Is direct costing a useful tool for management? The accountant, London, 18th June, 1966, p.774) has stated that a cost "must be technically necessary and essential and economically unavoidable". This agrees with the definition of a true standard cost as defined earlier. Unless there is a full realization by managers that historical costs can be misleading then the wrong decisions may be taken.

When making decisions, managers will require the data to be presented, along with any recommendations, so that a choice can be made from the list of alternatives (Keller and Ferrara, op.cit., p.486). The results may be presented so as to show (ibid p.489):

(a) Rate of return expressed as follows:

Rate of return per alternative =
$$\frac{\text{added revenue} + \text{added cost}}{\text{added investment}} ;$$

or (b) Cost and/or revenue changes.

This would apply where there is no change in investment. The net increase in revenue over costs would have the effect of increasing the overall rate of return on capital employed.

According to Keller and Ferrara (op.cit., p.490) great care should be taken when defining which costs are "variable" and which are "fixed" for the purpose of a particular decision. The definition normally adopted - costs varying (or not varying) with output - will not necessarily apply. This point is also emphasized by Batty (Management accountancy p.227). When dealing with ad hoc problems it may be

found that variable costs are quite fixed for the particular period under review. If a company has entered into an agreement to employ its workers for, say, 3 months, then the wages are definitely of a fixed nature for this period and should be regarded as such for the purpose of a decision being made; e.g. whether to accept a particular order when trade is slack.

An interesting classification of costs is suggested by Li (op.cit., pp 339/10). He suggests a division into:

(a) Committed cost

This is a cost which is the after effect of a decision made in the past. Rent for the lease on premises would come into this category. For the purpose of managerial decisions such costs have to be accepted for the period covered by the contract.

(b) Managed costs

These are costs which can be incurred at the discretion of management. They may or may not result in increased output. There is no direct relationship between volume and managed costs. For example, advertising expenditure may result in increased sales, but this is not guaranteed. However, once approved, the managed cost becomes a committed cost.

(c) Variable costs

The total of these will tend to vary proportionately with the volume of output or sales. There is, therefore, a positive relationship between what cost is incurred and what is done. If output is to be

increased then variable costs will tend to increase at the same rate. This would not necessarily be the case with a managed cost (cf. Batty Management accountancy, p.298).

Li is of the opinion that this division can facilitate decision making. In particular, management must look closely at the managed costs and decide how much can be spent in each budget period. (p.340).

Keller and Ferrara (op.cit. pp 489/10) add a word of warning on the nature of fixed costs. These are not "fixed" for all levels of output. If a decision made involves the expansion of equipment or facilities then the fixed costs become "incremental in nature". These authors also observe that, in appropriate circumstances, such as when considering decisions which involve a period of years, it will be necessary to "compute the present value of all receipts and disbursements related to each alternative". This would apply to capital expenditure decisions, such as the purchase of a machine tool. (cf. Batty, Management accountancy, p.439 et.seq.)

For the reasons stated in this section the use of a standard costing system is recommended for all business planning. This would be used as fully as possible, the only problem being whether processes or operations were standardized enough to obtain detailed standard costs. If the latter could not be obtained then, and only then, would estimated costs be advocated, but within a system of budgetary control. These are general statements which have to be qualified

on the basis of the observations made in this and earlier chapters. They should also be viewed in the light of the observation that not all decisions can be made on the basis of costs and/or revenues. Examples of where costing information will be of limited or no value in making the decision are summarized below:

- (a) Damage or some occurrence which affects essential production; e.g. damage to a road; production bottleneck (Keller and Ferrara, op.cit., p.493).
 - (b) "Welfare" projects such as improving health, safety and working conditions (Keller and Ferrara ibid).
 - (c) Interests of employees - long term good industrial relations.
 - (d) Keeping the products before the public - rather than let them disappear, even though not making a profit, e.g. in a trade depression.
 - (e) Danger of obsolescence of plant - special purpose machinery has to be used fully to be economical.
 - (f) Special problems arising from the technical processes such as the closing down of blast furnaces.
- (vide, Batty, Management accountancy, pp 286/7)

Li (op.cit., p.468) suggests that when a project cannot be justified on economic grounds then the intangible factors (such as those above) should be considered. These he defines in terms of matters which

affect employee morale, public image (use of a certain type of car) or other non-essential factor. The view taken is that these are "outside the province of management accounting" and "must be evaluated by management". Li does not expand any further on this matter.

However, his view would certainly not be accepted in its entirety: if the management accountant is doing his work thoroughly then he should consider the intangibles as well as the tangibles. The return from the profit-earning projects should be high enough to cover the existence of non-profit making projects.

Finally, the importance of feedback should be emphasized. This has already been discussed in connection with control. It is also of prime importance in decision making. Drucker (The effective executive, op. cit., p. 117) gives feedback as a vital stage in the decision making mechanism. This means that there is "a continuous testing" "of the expectations that underlie the decisions". The reporting back is an essential part of this feedback. But there is also a need to be involved - to "go and look" whether a decision has been effective. Standard costing meets with these requirements. Participation is stressed at all stages so that managers should always be aware of the consequences of action taken.

4. CONCLUSION

For effective control, cost should equal economic sacrifices. This can come through a system of standard costing, As part of this

there should be a full study made of all functions, effective communication and feedback.

This approach is in accordance with the cybernetic system which automatically controls through self-regulating devices.

Control should come through planning before the event, not after.

Only when realistic standard costs have been developed can the control function be really effective. In this process there should be full recognition given to the importance of classifying waste. Only when this is done can management hope to have standard costs which reflect efficient performances by all responsible. There should be complete appreciation that budgeted costs, based on past performances, can limit costs, but not necessarily control them. For control there should be a comparison of what has been done with the cost incurred. Cost and achievement should always be matched because one is meaningless without the other.

For budgeting of overhead costs there should be participation of all levels of management. In addition, flexibility should be a part of the system, otherwise there is a danger that the system will stifle initiative.

Considerable emphasis should be given to the selection of the appropriate capacity to adopt as a basis for the recovery of overhead costs. The technical and economic factors should be considered in arriving at the optimum level.

Reporting to management and revision of standard costs are an essential part of the suggested system. At the same time there should be an attempt made to reduce costs so that standards can be improved.

There are many purposes for which standard costing may be employed. They include cost control, cost reduction, pricing, stock valuation, salary evaluation, cost estimating, measurement of profits, business planning and making management decisions. Provided the standard costs are accurately set as described, they can provide useful comparisons on the likely effects of taking one course of action rather than another. They do not replace judgment, but armed with facts which are considered reliable a manager is much more likely to make a rational decision.

The suggestion made by many accountants that marginal costing is the panacea for all ailments is disputed. However, it is admitted that the marginal costing approach - distinguishing between fixed and variable costs - is vital within the framework of a standard costing system. There should be a full understanding of the advantages and limitations of the marginal costing technique, especially when applied to long term decisions.

For all the purposes mentioned above, there should be a completely integrated system of management accountancy. It should commence with the defining of policy, including the company objectives.

These should be evaluated in financial terms so that they become part of a comprehensive profit plan. The standard costs then become the foundation of the entire system. Failure to achieve the expected performances will result in increased costs and reduction of the profit. The variances are profit "leakages". Decision making is an indispensable part of management. Facts have to be presented in the appropriate form and these have to be relevant to the issues under consideration. Opinions are also vital for they often determine the "climate" in which managers are operating. If opinions are against a particular course of action then there may be some difficulty in putting forward an opposing view even with confirmatory figures. Standard costs can guide managers in their task of making decisions. The management accountant has to ensure that the guidance offered is appropriate, timely, and helpful.

CHAPTER 5

STANDARD COSTING IN GREAT BRITAIN

1. INTRODUCTION

The earlier chapters considered the principles employed in standard costing. They may be regarded as conventions, facts, and concepts which form together to make the techniques and systems into a tool of management.

There is no doubt that standard costing can be a sound investment in many businesses. At the same time, it must be acknowledged that the method is best suited to process industries or other concerns where the products are of a standardized and repetitive nature. Most writers on standard costing admit that where jobs are made to customers' specifications ("one off" businesses) then the expense of setting standards and operating a system may not be worthwhile. There is no clear evidence to show why companies do not employ standard costing or, where they do have it operating, the reasons for its existence.

The overall effectiveness of standard costing as a tool of management is difficult to assess. There is little or no knowledge on the systems being employed and, therefore, the task of making a sound assessment is very difficult. Lack of knowledge is a major weakness of any large, industrial economy. Individual businesses devise their own systems to suit the particular requirements. Yet, because of fear from competitors, the facts relating to individual companies are not

divulged so that mistakes which could be avoided are not made known. Errors are thus perpetuated and mistakes continue to be made.

The uses made of standard costing as a tool of management were the objects of the survey made: this is described below.

2. THE SURVEY MADE

Information relating to standard costing has been collected by the author over many years. Basic research was necessary to collect material for the books Management Accountancy and Standard Costing. Besides employment as an accountant in a foundry, in flour milling and in an electronics company, the author has visited and done research in many businesses and has obtained data relating to the management accounting systems being operated. So as to make the knowledge more complete a survey of approximately 500 companies was made. Which companies should be selected for inclusion in the survey was a major problem. It would have been a logical step to have taken a number of businesses from each major category - Chemicals, Electrical, Engineering, Food and Industrial - as classified by the "Financial Times" for the purpose of Stock Exchange quotations. This approach, which would have involved sampling, was rejected on the grounds that there was no way of ascertaining whether the businesses selected had any connections with South Africa.

The latter requirement seemed essential so that the research

findings would be valuable to both South Africa and Great Britain. Companies which had interests in both countries was the obvious choice. For this purpose, information was obtained from a commercial, banking organization. The companies selected represented all types of industry and logical conclusions were reached. The important fact relating to each of the 500 companies was that each one had a direct link with the two countries - South Africa and Britain. The findings from the survey are summarized in the sections which follow. Because of the confidential nature of the information the names of companies have been omitted.

3. THE QUESTIONNAIRE

The questionnaires were sent out with a letter, a copy of which is shown in the Appendix.

Also included in the Appendix is a copy of the questionnaire.

Where necessary, any elaboration of answers given to the questions, was obtained by personal visits to the companies concerned. The facts from these further enquiries are incorporated into the findings.

4. RESULTS OF THE SURVEY

There were 500 questionnaires despatched to companies. A summary of the results is shown below:

Completed Questionnaires	65
Letters of Regret	42
No replies	<u>393</u>
	<u>500</u>

From these figures it will be seen that approximately 13 per cent of the companies were willing to give the necessary information. A "follow up" of the questionnaire to some of those companies which did not reply did not obtain any additional, significant information. For this reason no further steps were taken. Before dealing with the answers to the questions the reasons for the non-disclosure are worthy of investigation and comment. These are covered below.

From enquires made it is possible to state that this figure of 13% corresponds favourably with the replies normally obtained from this kind of research survey in both South Africa and Britain.

a. Reasons for non-disclosure

Not all companies gave reasons for not completing the questionnaire. In other cases, the reasons given for non-disclosure are not worthy of mention. Where useful information was divulged this is given below:

- (1) "You may not be aware but is a holding company both in this company and overseas. Businesses range from quarrying, manufacture and laying of asphalt, roofing, engineering, chemical production and scientific instrument in the United Kingdom and overseas. The form is not, therefore, appropriate".

A number of companies gave "diversity of activities" for not completing the questionnaire. The surprising fact that emerges is that managements at the head offices of some holding companies do not appear to consider that modern management techniques are

appropriate. Yet companies such as these have many problems, especially in the field of control, and should be prepared to make extensive use of these methods.

- (2) ".....this company is purely and simply an importing organization and engages in no manufacturing processes of any kind: we are not able to help you at all with regard to the questionnaire".

Again, a number of companies took this particular line. There is a point-of-view expressed that unless a company is involved in manufacturing then standard costing, or even any form of costing at all, is not appropriate. This view is surprising because a large part of the ultimate price is added at the distribution stage. Some products have a 50 per cent mark up on cost (or wholesale price) and 25 per cent is quite common. For this reason alone more attention should be paid to the planning, co-ordination and controlling of all the distribution functions.

- (3) "The Group of Companies is involved in very many divisions of the trade and different costing systems are adopted in different units according to the types of product, methods of manufacture and other circumstances applicable to that unit. We regard information of this nature as being of the most confidential type and it has always been our policy never to disclose details of our various costing systems".

This kind of attitude has existed for many years and continues to exist. Companies argue that disclosure of certain facts such as size of turnover may give valuable information to competitors. This is now acknowledged to be quite fallacious unless there are special circumstances.

The questionnaire did not ask for detailed costs relating to a company's products. There was, therefore, no danger of information leaking out to competitors. Yet this very narrow outlook continues to persist, often by managers who advocate that more use should be made of modern methods.

- (4) "We are currently in the process of undertaking a study with a view to reorganizing our Accounting System in a somewhat radical way. We feel, therefore, that little purpose would be served in completing your questionnaire".

Another company had similar remarks to make:-

"..... we are currently involved in the development of our Management Accounting, using modern Data Processing equipment and in the present intermediate stage, any information we give as to our present practices, could give you a misleading impression of the extent to which we rely on standard costing and flexible budgetary control in the overall Management of our business.

These replies were typical of a number which were received. They indicated an upsurge in interest in methods of accounting for management. It would appear that managers are now seeing the possibilities which may emerge from the use of integrated accounting systems. This augurs well for the future.

b. Answers to the questions.

The answers to the questions were rather varied: some very brief and others quite lengthy. Rather than simply analyse the results numerically, question by question, the significance of each question and consensus of opinions is examined. In this way the importance of standard costing as an effective tool of management

is disclosed.

5. INDUSTRIES COVERED BY THE REPLIES

The industries represented in the replies are listed below.

It will be seen that there are 28 in the list.

Engineering .

Agricultural Machinery.

Food Manufacturing.

Electrical and Instrumentation.

Pharmaceutical Manufacturing.

Chemical.

Telecommunication Equipment Manufacture.

Vehicle Battery Manufacturing.

Printing Machine Manufacture.

Food Distribution.

Machine Tool Manufacture.

Steel Manufacture.

Lingerie and Hosiery Manufacture .

Motor Vehicle Manufacture.

Printing.

Rope Manufacturing.

Precision Engineering .

Diesel Engine Manufacture.

Fertiliser Manufacture.

Joinery Products Manufacture.

Carbon Paper Manufacture.

Paint and Lead Product Manufacture.

Steel Tube Manufacture.

Ceramic Tile Manufacture.

Garden and other Hand Tool Manufacture.

Spectacle Frame Manufacture.

Building and Civil Engineering.

Rubber Manufacture.

There is a certain amount of overlap in that the divisions are not clearcut. For example, steel tube manufacture could be included under steel manufacturing or engineering. In addition, whereas some industries had only a single representative (e.g. spectacle frame manufacture), others had a number, the largest being in engineering. Nevertheless, the wide range of industries covered enable conclusions to be reached.

6. COSTING SYSTEMS EMPLOYED

The costing systems employed are summarized below:

Job Costing	21
Process Costing	10
Standard Costing	33
Budgetary Control	29
Batch Costing	2
Unit Costing	1
Special Studies	1
Operation Costing	1

Many of the companies cited two or more costing systems, which was quite natural. However, a number of interesting facts emerge from the answers and these are summarized below.

a. Standard Costing and/or Budgetary Control as Single Systems

Many companies stated that they employed standard costing and/or budgetary control, but no other system. This was very surprising since, if there is any costing done, then it must take the form of either job or process costing or a variation of one of these. For this part of the questionnaire it was assumed that many companies regarded standard costing as a system on its own, but this appeared to be only a matter of using terminology which was not absolutely precise.

b. Use of Standard Costing with Job Costing

Theoretical cost accounting makes the assumption that standard costing will usually be used in conjunction with process costing. Companies which combined other systems are indicated as follows:

<u>Costing System</u>	<u>Industry</u>
Batch	Agricultural Machinery
Batch	Light Engineering
Uniform	Printing
Job:	Engineering
	Electrical
	Telecommunication Equipment
	Machine Tool Manufacture

Industry

Structural Engineering

Steelmaking

Motor Vehicle Manufacture

Chemical Manufacturing

Joinery Products

The reasons why standard costing was regarded as being appropriate are covered in the next section. However, some explanation of how jobbing industries are managing to use standard costs is very essential. A summary of these is given below:-

- (1) Some products can be produced on reasonably long runs. This involved standardisation which lent itself to standard costing.
- (2) Can be applied to routine production, but not complex production.
- (3) It is appropriate because multiple manufacturing processes are used on a multitude of raw materials for final assembly into a considerable variety of ultimate products.
- (4) For the batch manufacture of parts.
- (5) Only for joinery products, but not for structural engineering.

From these observations and the nature of the companies' operations it was apparent that the firms employing standard costing with

job or batch costing were not, in fact, using a complete system of standard costing. Rather, they were adapting standard costing to their requirements, especially for the standardized parts of activities (ad-hoc basis).

7. IS STANDARD COSTING APPROPRIATE ?

The answers to this question were generally in the affirmative, indicating that standard costing was appropriate for many purposes. A minority indicated a very limited use for standard costs and gave the impression that the task of setting standards was in excess of benefits received. For example, one company employed standard costing "predominantly for period valuation of work-in-progress and finished stocks". Another company stated that the standard costs were used as "a guide to cost movements". Another reply was that standard costing would be used in certain circumstances giving the impression that this was regarded as an ad hoc system.

These replies indicated that the companies concerned did not appreciate that standard costing was a complete control system. Fortunately, as indicated earlier, this was a minority viewpoint, and did not represent the general opinion of the majority of those who completed the questionnaire.

a. Companies using Standard Costing

Answers from those companies using standard costing as a tool of management are summarized below:

- (1) This is a flow production business and standard or batch costing is the best way of keeping up-to-date.

- (2) Accurate standards can be set for all aspects of production against which actual performance can be measured. Variances obtained are an effective means of control.
- (3) We have a standard product from which to measure variances from a standard cost.
- (4) Used for all forms of cost and managerial control and for budgeting profitability.
- (5) Continuous comparison between standard and actual performance makes for close control and early spotlighting of inefficiencies.
- (6) Products are manufactured to a specific formula requiring close control. Variations from standards of materials and labour efficiency are essential checks on quality and performance.
- (7) It enables us to locate errors and inefficiencies at source.
- (8) The costs can be predicted satisfactorily and, therefore, standard costing is invaluable for (a) control purposes and (b) computing prices in advance of actual production.
- (9) If standard costing is not employed, inefficiencies are lost in individual jobs or orders and the costing becomes mere accounting.
- (10) We have a wide range of products and manufacturing

centres and use of "actual costs" or "averaged actual" departmental overheads would not give sound information on which we could act.

- (11) It is an essential basis for forward planning, exception costing and the use of computers.
- (12) The system is necessary to assist in the operation of full budgetary control.
- (13) It appears to us to be the only method of analysing differences in costs.
- (14) A wide variety of products is manufactured - each in considerable quantity. Job or process costing is impracticable.
- (15) We are a mass production business in a highly competitive industry. Cost control is imperative and demands an objective "yardstick".
- (16) It is generally accepted that standard costing is most suitable to the food manufacturing industry because it gives us assistance on control of costs, price fixing, decision taking, cost reduction and profit planning.

Where two or more answers were virtually the same only one has been given in the summary shown above. What is important to notice is that the majority of companies employing standard costing did so for a reason which appeared quite logical and sound. They

regarded the technique as an effective tool of management because they were given assistance with:-

- (a) cost control.
- (b) budgeting profitability.
- (c) early detection of inefficiencies.
- (d) quality control.
- (e) price fixing.
- (f) use of computers.
- (g) operating budgetary control.
- (h) forward planning.
- (i) making decisions.

These may be compared with the uses given in Chapter 4. They are commented on in Chapter 6.

b. Companies not using Standard Costing

The reasons for companies not employing standard costing is of vital importance in determining whether the technique is really regarded and used as an effective tool of management. If companies are not employing standard costs because they are inappropriate for technical reasons, such as non-standard production, then the usefulness of the technique is not put in doubt. However, if standard costing is not employed because it does not assist in management then there is a serious failure in the technique or in the people available for employing costing systems.

Companies which had not employed standard costing belonged to the following industries:-

(1) Engineering

The reasons given were mainly connected with non-standard products. One company stated that each contract was a "one off" job which varied in size from approximately 2,000 to 40,000 production hours. This business was concerned with producing machinery and equipment for individual plants.

Another business stated that they were concerned with precision engineering and laboratory fittings and that standard costing was not employed because too great a variety was produced and each product was manufactured infrequently. The costing system given was batch costing and, therefore, it seemed strange that standard costing was not utilized. The answer to question 6, section 1, stated:

"We control through planned times for operations, material scheduling and budgetary control. Our costing, however, is done on an actual basis".

This statement gave weight to the possibility of employing standard costing. It seemed that this company was half way to using standard costs, but had not felt able to take the necessary additional steps. Other companies in the engineering industry which did not employ standard costing all stated that their products were the "one off" type.

(2) Paint and Lead Product Manufacturers

The single business under this category recognized that standard costing was "appropriate" but preferred to employ process costing based on historical costs. No good reason could be given for the

practice and this was clearly a case of where the accountant and the managers were not aware of the benefits which could be made available from standard costing.

(3) Chemical Manufacturing

Again, this was a single company which felt that standard costing was inappropriate, except in a very limited way. The reason given was that the technique would be too costly in relation to the value obtained.

A "considerable range" of products was being manufactured. This conclusion was not in agreement with other companies in chemical manufacturing and, therefore, cannot be taken too seriously. From other information given, such as the fact that the costing system did not assist in the fixing of prices or in a positive sense with cost control, it appeared that this company did not have adequate accounting facilities.

It should be noted that this company could not be regarded as typical. Other chemical companies did employ standard costing.

(4) Building and Civil Engineers

The companies involved in this category stated that they dealt mainly with large contracts to which "all direct expenditure is allocated at actual cost".

One company had the following statement to make:-

"Owing to the variety of contracts in respect to type, location and size, the fixing of standards would not be appropriate to this company".

(5) Manufacture of Spectacles

This was a single company which did not appear to have an effective costing system. No attempt was made to reduce idle and lost time or to eliminate spoilage and excessive material costs. It was admitted that standard costing would be appropriate in certain circumstances and these were explained as follows:

"This depends on the cost of the system and the quality of the management. At present we do not feel the necessity to use standard costing".

In the circumstances there seemed no good reason for not applying standard costing principles. The special nature of the product with (presumably) a more or less guaranteed market which was somewhat limited, made the management feel that there was no need to plan and control. This attitude is a dangerous one; it leads to complacency and possible serious losses when faced with fierce competition or innovation from competitors.

(6) Printing and Bookbinding

The businesses engaged on printing carried out work to customers' specifications. Typical answers are reproduced below:

"As we produce 2,600 jobs per year with completely different content, the application of standards would be too costly in staff".

Along similar lines another company stated:

"Each order we complete is different. It would be uneconomical to set standards for each order received".

These statements are what would be expected from jobbing printers.

They are in accordance with the accepted principles of standard

costing stated earlier. In no way do they detract from the known usefulness of the technique.

(7) Manufacturers of Carbon Papers and Ribbons

The company coming into this category employed process costing and budgetary control, but felt that they produced too large a variety of products for standard costing to be employed. However, the chief accountant concerned admitted that there was possibly a case for using the technique, but they had not yet been convinced of its superiority over the existing methods.

c. Conclusion on Technique

From the information given there is no doubt at all that standard costing is a useful technique which is being employed in practice. There are still some managers who are not convinced that its introduction would be worth while, but these are in the minority. The position in South Africa is also very similar. Els (op.cit., p.317 et.seq.) found confusion and lack of knowledge on many aspects of standard costing. For convenience the main findings are summarized below:

(1) Differences in meaning of "cost"

Els found that the term "cost" and "standard cost" had many meanings. Many of these were quite contrary to the achievement of a high level of efficiency.

Just as in Great Britain, little or no attempt was being made in practice to obtain a clear understanding of the true nature of the costs being employed.

(2) The capacity to employ was not clearly defined.

The capacity to be employed should represent the optimum level, having due regard to the technical and economic factors. Yet Els found that there was much disagreement on what was meant by "capacity". As a result the standard costing was not fully utilized or the full benefits were not received.

Confusion is bound to arise from lack of clear definition on the capacity to use. Unit costs would be affected and disastrous results could be forthcoming when prices are based on so called "costs."

There is no doubt that South Africa and Great Britain face very similar problems. Certainly the findings of the research, which is the subject of this thesis, agree substantially in many material respects with those of Els. Further details of the British position are given later in this chapter and an overall summing up is presented in Chapter 6.

8. USEFULNESS OF STANDARD COSTING.

A costing system must be justifiable on the grounds of usefulness. For this reason Question 5 on the Questionnaire went into detail on the assistance obtained from the costing system (see Appendix). Since the research is concerned with the effectiveness of standard costing, those companies employing the technique have been taken and the results analysed. It will be recalled from Section 6 in this chapter that 33 companies employed standard costing and their experiences are summarized below.

a. Conventional Benefits.

All of these companies found that standard costing was useful for controlling costs and for many of the other facets listed in Question 5. Surprisingly, though, there were cases where rather obvious benefits were not realized. Examples of these and the number of companies failing to take the benefits are tabulated below:-

<u>Possible Benefit</u>	<u>Number of Companies</u>
Reduction of Costs	2
Reduction of Lost Time	10
Reduction of Idle Time	10
Reduction of Spoilage	7
Reduction of Material Wastage	4
Reduction of Lost Machine Hours	13
Elimination of Unprofitable Products	2
As the basis of an Incentive Scheme	15
Fixing prices	1

These companies enjoyed the other benefits, but it is significant to notice that they tended to be the same ones which lost all the benefits listed above. In other words, they were the same 15 businesses which were involved. The remainder enjoyed all the advantages and cited others which are reproduced.

b. Other Benefits

The other benefits, additional to those listed in Question 5, were given to be as follows:-

- (1) Forecasting annual profit.
- (2) Stock valuation.
- (3) Assessing manufacturing efficiency.
- (4) Activity and expense variances.
- (5) Profitability of product groups.
- (6) Budgeting profitability.
- (7) Controlling stock investment.
- (8) Avoidance of over investment in fixed assets.
- (9) Material control.
- (10) Effect on change of product "mix" .
- (11) Preparation of monthly accounting statements.
- (12) Control of indirect expenses.
- (13) Statistical information for employers' federation.
- (14) General policy decisions.
- (15) Material mixture control.
- (16) Measurement of technical progress.
- (17) Cost comparisons of different operations and products.
- (18) Provision of general information on costs.

Detailed comments on some of the uses are reproduced below:

(i) Elimination of unprofitable products

"An appropriate system of costing and estimating; etc. plus liaison with other departments, means that unprofitable products do not get to the production stage".

(ii) Provision of costing information

Standard costing "an important means of providing cost and related information, with smaller clerical staffs than would otherwise be required".

(iii) Cost control

"The main control instruments are the Reports on Departmental Variances, the Profit and Loss details; Stock Reports and Defectives Reports; but control is being exercised continually by various means".

These all indicate that standard costing is a tool of management which has a multitude of uses. It will be noted that the benefits became available with a smaller clerical staff than would otherwise be required. However, final conclusions cannot be reached until all factors have been considered.

9. EXTENT OF USE

The extent of use of standard costing is an important factor in determining the effectiveness of the technique. Dealing with the normal functional breakdown of a business it is possible to consider the matter from the point of view of (a) a functional division (b) the managers within each division and general management including the board of directors.

A number of questions were included on the Questionnaire to obtain the necessary information. Since they are included in the Appendix they are not reproduced at this stage.

a. Use in Functional Divisions

The normal functional divisions are as shown below. The extent to which standard costing was employed in the various divisions was as follows:

<u>Division</u>	<u>No. of Companies</u>
Production	33
Selling and Distribution	27
Administration	28

These statistics show that of the 33 employing standard costing all used the standards in the production field. Four of the companies did qualify the answer by stating that the technique was not employed throughout the production divisions. For example, two of these stated that employment was "90%".

In the administration, and selling and distribution fields the use of standard costs was not as extensive as indicated by the figures of 27 and 28. Almost 50 per cent of these only used standard costing on a partial basis. Instead, they employed budgets for the non-manufacturing divisions, but these were used as a basis for establishing the amounts that could be spent. In many cases, no variances were calculated, but control was operated by keeping within the budgeted allowance.

In two cases the accountants concerned were having difficulties in convincing managers that standard costing could be used effectively.

The comments made were as follows:

- (1) "Unenlightened management, coupled with an abundance of all factors of production in a protected industry, make standard costing a difficult technique to sell."
- (2) "Top management do not regard the information worth the cost of collection".

The feeling was that standard costing could be used much more fully, but there would be difficulty in persuading managers that the venture was worthwhile.

b. Use by Managers

A tool of management should be judged on the use made of it by managers. This can be viewed in a narrow sense at cost centre level. It can also be considered in the wider sense where costs are employed to justify policy and to forecast likely results. The shop floor control aspects will tend to be the concern of departmental managers and supervisors. Policy making and planning will tend to be included in the functions of the directors and senior managers.

Separation of the various answers revealed a number of conclusions. Out of the total companies using standard costing 31 presented reports to General Management. There were 29 which gave attention to reports to production managers but only 23 covered sales managers. Office managers and supervisors received the same inadequate treatment, there being 14 companies which prepared reports for these managers. These figures came as a surprise and are commented upon in Chapter 6.

In the main it was found that managers did utilize the reports, but there were some reservations. A small minority of companies (3) found that the reports were used in "varying degrees". Most of the

blame for this appeared to rest with a lack of understanding on the part of the managers concerned, coupled with badly designed reports.

The objections were again in the minority (7) and the reasons may be summed up as follows:-

- (1) Need for education of managers.
- (2) Systems being installed by people who were not fully experienced.
- (3) Standard costing being blamed when a significant change in material costs affected gross profits.
- (4) Interpretation of figures is sometimes difficult.
- (5) Some managers ask for an actual cost without appreciating the deficiencies of an "actual" cost as against a standard cost.
- (6) Newness of the system - "teething troubles".

From these observations it will be seen that the objections are against the use made of the system or the lack of understanding, rather than against standard costing as such.

No company found the costs of operating standard costing too excessive. In fact, one reported that clerical costs of operating had been reduced by the introduction of the technique.

10. MECHANICS OF THE TECHNIQUE.

A number of important aspects may be termed the "mechanics of the technique". This term includes such matters as:

- (a) establishment of standards;
- (b) variances employed;
- (c) responsibility accounting, and
- (d) stock valuation.

These are considered in that order.

a. Establishment of Standards

This section may be viewed from two points of view. There is the question of how often standards are established and the type of standard being employed. The matter of replacement costs and the standards which present difficulties are related matters. The standard costs were established for the majority of cases once a year (21 companies). Three companies changed the standard at 3-4 year intervals. Other categories were as follows:

Every 6 months	2 companies
Constantly	2 "
No set time	2 "
Monthly	1 company
3 Monthly	1 "
Every 2 years	1 "

Those which had no set time for revising standards indicated that a change would be made if justified by significant material price or wage rate variations. A similar observation was made by the business operating 2 yearly standards. Another company had

difficulty in making changes and, therefore, had to revise when possible, generally taking 3 to 4 years to complete a revision. On the whole, the establishment of standard costs did not present formidable difficulties, but particular costs had their problems.

The principal of these were given as follows:

- (1) Administration costs.
- (2) Selling and distribution costs.
- (3) Overheads per unit produced.
- (4) Conversion costs.
- (5) Jobbing type of order.
- (6) Those materials which involve wide variations in yields.
- (7) Labour standards on day work sections - difficult to measure efficiency.
- (8) Purchased components.
- (9) Where there are no established time studies and no payment-by-results scheme.
- (10) Sales volumes.
- (11) Fixed costs per product - due to fluctuations in output (similar to 3 above).
- (12) For new or revised processes where quantitative data not available.
- (13) Multi-process products having different quality materials.

- (14) Standard batch size.
- (15) Multiplicity of operation products (high speed steel).
- (16) Heat treatment.
- (17) Tool room costs.
- (18) Novel plants which are experimental (chemical processing).
- (19) Iron making.
- (20) Tool and machinery manufacture.
- (21) Overhead rates as regards their complexity (this was an engineering company with batch production).
- (22) Metal standards because the price fluctuations are unpredictable.
- (23) Operation times.

The standards for items listed above did not present insurmountable difficulties, but there was a problem in arriving at accurate figures. It will be noticed that the items in question were either of a non-standard nature or were of the type which would be affected by outside influences: examples of these are material prices, component prices and sales volumes. The types of standard costs employed were as follows:

- | | | |
|-----|------------|---|
| (1) | Attainable | 26 companies (3 also used normal standards) |
| (2) | Normal | 8 |
| (3) | Ideal | 1 |
| (4) | Basic | 1 |

The company which advised that basic standard costing was being operated also stated that standard costs were revised annually. There was, in effect, a combination of current and basic standard costs.

These figures were what would be expected except for the eight companies which were operating normal standard costs. They came from the following industries:

- Food processing (2)
- Engineering (3)
- Electrical equipment manufacture (1)
- Agricultural machinery manufacture (1)
- Joinery products (1)

As indicated earlier, three of these companies also employed attainable standard costs. The implication was that attainable standards were used for prime costs (labour and materials) and normal standard costs were adopted for overheads.

On the interpretation of standard costs it was found that 14 employed "expected" standards and 18 used standard which reflected what costs should be. One accountant confessed that he could not understand the difference between the two forms of standard cost. Since the difference between what costs are expected to be and what they should be is of vital importance it is appropriate here to note that 14 companies were operating systems which did not give them the full benefits. Standards based on expected performances tend to hide inefficiencies and, therefore, are not true standards. The significance of this distinction is given

fuller treatment in Chapters 2 and 3.

Very much linked with what costs should be is the questions of replacement prices. Again, reference should be made to Chapters 2 and 3 where the idea of a true standard cost is examined. In this section the concern is with what happens in practice. From the answers given it was found that 19 companies considered replacement costs. Most of these (17) were in connection with raw materials purchased. In addition, there were 3 companies which considered depreciation on a replacement cost basis (two of these were included in the 17) and the other company dealt with packing material in this way.

With two exceptions the 19 companies cited regarded standard costs as being based on what costs should be and, therefore, they were employing standard costs which were approaching the "ideal" from a theoretical standpoint.

b. Variances Employed

The variances employed are an important indication of the nature of a system and the extent to which managers are informed of deviations from plans. Ideally, a full range of variances should be calculated to cover all levels of management.

(See Chapter 4).

Variances found in practice are listed below:

(1) Labour Variances

Labour Rate.

Labour Efficiency.

Male and Female Mix.

Revision.

Direct Charges Premium Payment.

Excess Idle Time.

Grade of Employee.

Idle Time.

Rectifications.

Waiting time.

Rate of Output.

Stoppages.

Volume on Labour Hours.

Lost Hours.

Labour Capacity.

(2) Material Variances

Material Price.

Material Usage.

Material Yield.

Material Quality.

Material Substitution.

Formula Change.

Material Mixture.

Material Waste.

(3) Factory Overhead Variances

Expense or Budget.

Volume.

Capacity .

Efficiency.

Expense or Budget:

(a) Fixed.

(b) Variable.

Stoppages.

Controllable.

Yield.

Scrap .

Under or Over Absorption.

Indirect Labour.

Extra Depreciation (difference between
replacement cost and original cost).

(4) Administration Overhead Variances

Expense.

Volume .

Calendar.

Remuneration Overspending.

Other Expenses (excluding Remuneration).

Total Variance.

Spending Rate Against Fixed Budget.

Variable Costs .

(5) Selling and Distribution Costs Variances

Expense.

Volume.

Calendar.

Product Mix.

Gross Profit.

Remuneration Overspending.

The majority of companies employed the conventional variances. Labour and Material Variances were divided into "price" and "quantity". Factory overhead variances consisted of budget, volume and efficiency. A strange diversion was that a number of companies did not calculate the cost of inefficient utilization of material, even though most companies stated that reduction in material wastage was a positive benefit.

Not all companies calculated overhead variances. For administration costs only 8 businesses bothered to try to calculate the effects of over or under spending. Fourteen companies made an attempt at variance analysis for selling and distribution costs; the majority of these were for expenses or sales volume.

The unconventional variances were used, but only by single companies. Three companies did not go any further with the variance analysis than comparing total budgeted cost with total actual costs. Some companies carried out the analysis to great lengths especially for labour costs. One company analysed labour variances into 22

different classifications. From this it will be seen that there were extremes: on the one hand there were a few companies which carried out little or no variance analysis and, on the other, there were a small number which went to great lengths. Typical of the sophisticated systems are the examples given below;

Example 1.

Electrical Engineering Company

Labour Variances:

- (1) Scrap.
- (2) Redundant stock.
- (3) Ineffective Daywork.
- (4) Training.
- (5) Over-rated Labour.
- (6) Alternative Methods.
- (7) Rectification.
- (8) Waiting Time.
- (9) Make up and Awards.
- (10) Overtime and Shift Allowances.
- (11) Salvage.
- (12) Excess Inspection.
- (13) Piece work Supplement.

Material Variances:

- (1) Price.
- (2) Scrap.

- (3) Redundant Stock.
- (4) Alternative Specification.
- (5) Excessive Cost of Sub-Contracting.
- (6) Plating and Processing Losses.

The same company did not calculate variances for factory overhead, administration, and selling and distribution costs.

Example 2

General Engineering Company

Labour Variances:

These variances are analysed under 30 different headings distinguishing between "controllable" and "uncontrollable" variances and times allowed against standards set.

Material Variances:

Price.

Usage.

Factory Overhead:

Activity.

Expenditure.

Example 3

Machine Tool Manufacturer

Labour Variances:

Efficiency subdivided into

- (1) Different batch quantities from standard.
- (2) Special allowances; awkward material, poor machine, etc.

- (3) Different grade or labour from standard
(e.g. apprentices).

Material Variances:

Different type of material from standard.

Different quantity of material.

Factory Overhead Variances:

Indirect Labour:

Differences in number employed, hours worked
per week, wage rates.

Indirect Material:

Differences in quantities in values.

General:

Changes because of Government decision (e.g. National
Insurance payments) .

Special expenses such as extra maintenance/reconditioning
of machine tools.

Difference in actual scrap charges from standard due
to new labour, new products or unknown causes.

Example 4

Chemical Manufacturing Company

Labour Variances:

Manufacturing cost centre variances

(a) Rate.

(b) Usage Efficiency.

Material Variances:

Price .

Usage .

Factory Overhead Variances:

Departmental by cost centres distinguishing between fixed and variable costs. Indirect labour costs are treated separately.

Administration and Selling and Distribution Variances

Variable expenses variances only are calculated.

One accountant who suggested that standard costing was being employed by his company did not understand what was meant by "variances".

On the whole, however, there was evidence provided to show that amongst accountants the fundamental principles of standard costing were understood. Yet there were clear indications that many companies were not utilizing the system fully or effectively.

Twenty companies, out of the 33 employing standard costing, computed variances for cost centres and/or departments. The remainder adopted a variety of methods such as:

- (1) Variances by factory.
- (2) Variances by product groups.
- (3) Variances by geographic sales regions within production divisions.

- (4) Variances by processes.
- (5) Variances for fixed expenses departments such as Welfare and Purchasing.
- (6) Variances by company divisions and subsidiary companies.
- (7) Total variances for each major function; production, selling; etc.

Some of these variances were also employed by the group of companies which analysed by cost centres. But there were individual companies which used one only of the methods in (1) to (7), and no other.

Accuracy of the standard costs is of vital importance. If variances are too large due to incorrect standard costs, then the latter lose their value as a tool of management. Only by having realistic standard costs can a business operate with a sound knowledge and confidence in the system.

Many companies were not aware of what accuracy was being achieved.

There were suggestions made that the accuracy varied in many cases depending on the age of the standard costing system. Early on a high level of accuracy was difficult to achieve, but after a few years, experience and knowledge allowed more accurate standards to be set and, therefore, variances tended to be smaller. On this matter one accountant had the following comment to make:

"The standard costs refer to our division which manufactures wire. At the present time the standards are not very accurate the variances exceeding 10 per cent. However, the system is in its infancy and we expect better results to be obtained at a later stage".

This bears out the suggestion that experience brings greater accuracy. In addition, the detailed analysis which comes from checking variances can lead to better results. (vide Accountants' cost handbook edited by R.I. Dickey, Ronald Press, New York, 1964, p.17.31).

Even the time of year in which the standard costs are being employed can have an influence on accuracy. In one company it was found by observation that standards were under 5 per cent inaccurate at the beginning, but tended to lose preciseness as the year progressed being in the 6 to 10 per cent category by the end of the year.

The results of the survey showed that the following applied:

Under 5% inaccurate	26
6 - 10% inaccurate	7
10% and over inaccurate	1

One company had labour standard costs in the under 5 per cent category and material costs in the 6 - 10 per cent classification. This accounts for the extra one in the total of 34. The single company which appeared in the 10% and over category was the one which explained that the system was in its infancy.

The reasons for the variances are of vital importance and for this reason a summary is given below:

(1) Labour Rate Variances

Wage awards.

Different class of labour .

Shortage of suitable labour .

Different labour "mix" .

(2) Labour Efficiency Variances

Excess overtime .

Inefficient supervision .

Stoppages .

Changes in planned method and sequence of operations .

Mechanical and electrical defects .

Changes in sizes of products .

Tool modification .

Rectification work excessive .

Production changes .

Heating availability .

Defective material .

Speed of operation .

(3) Material Price Variance

Supplementary purchases .

Unforeseen price increases .

Market fluctuations .

Unreliable information from supplier regarding future prices .

Market conditions, especially for metals such as copper .

Small quantities purchased .

(4) Material Usage Variance

Inefficient operation.

Excess scrap.

Faulty machine.

Faulty material.

Increased volume of output.

(a) Mixture Variance

Availability of materials.

Improvements to recipes.

(b) Yield Variance

Material spoilage.

Poor workmanship.

Inferior quality material.

(5) Factory Overhead Variances

(a) Budget Variance:

Use of other than standard machines.

Change in maintenance plans.

Excessive spending.

Government decision (e.g. National Insurance Payments).

Special expenses such as extra maintenance.

(b) Overhead Volume:

Inability to obtain orders.

Absenteeism.

Waiting for work.

Frequent and unforeseeable changes in fashion.

Programme fluctuations.

Introduction of new products.

Incorrect sales forecasting.

Plant inefficiency or unexpected efficiency.

Waiting for work.

(c) Overhead Efficiency:

High labour turnover.

Excessive scrap.

Unexpected stoppages.

Waiting for work!

New labour employed.

Usage of factory services.

(6) Administration Variances

Careless spending not justified by results obtained.

Price increases.

(7) Selling and Distribution Variances

Losses on stocks due to having to write down the values to give "sale line" valuation (applies to ladies fashion goods).

Differences in the sales mixture.

Advertisers' rates changing.

Changes in types of products.

c. Responsibility Accounting

"Responsibility accounting" is the term given to the organization of accounting in such a way as to define responsibilities in terms of cost so that the latter can be controlled. This theme is developed earlier in Chapter 4.

For convenience this subject is divided as follows:

- (1) Control of costs .
- (2) Control periods .
- (3) Principle of exceptions .
- (4) Accounting reports .
- (5) Stock Valuation .

(1) Control of Costs

For control of costs there should be predetermination of costs, comparison of results and a systematic approach to all matters affecting the utilization of resources. Action comes from making decisions on the information obtained from the accounting system. A number of questions on the questionnaire were designed to show how far companies went in attempting to control costs. A survey of the main points is given in the paragraphs below.

Direct material cost control should come from isolation of the two main variances - price and usage - and analysis of these into causes. The latter had been covered earlier. In connection with the price variance it was found that out of the 33 companies employing standard

costing 27 regarded the price variance as being the responsibility of the Purchasing Manager. In two cases a Purchasing Committee, responsible to the managing director, had the onus for explaining any price variances. Only one company made the factory manager responsible for the variance. The remainder (3) took no action on price variances and assigned no responsibility for inaccurate budgeting.

In connection with material usage only 12 companies used some form of special Excess Material Requisition. Many of the remainder recognized that there was need for analysis of the excessive material usage, but did not take the appropriate measures for automatically isolating or otherwise controlling the variances.

Direct labour cost control received attention from the majority of companies. Only two reported that they did not use some form of system for recording times. 15 had time recorders and 16 employed time sheets for each worker. There was some overlap with these figures because a few companies employed both methods. One business used job tickets and there were 9 companies which employed time sheets which contained the details for a number of workers. Again, a few of these companies employed more than one method. One company used job tickets as well as attendance time cards. Six companies made no attempt to control labour by the use of time records of any description.

Out of the total of the companies employing standard costing there were 14 which had an incentive scheme linked with standard times. Factory overhead costs were controlled in the main through the utilization of budgets. Surprisingly, some of the companies which had reported that they did not predetermine standard costs, did show that they employed budgets. This emphasized the fact that in some cases standard costs and budgeted costs were regarded as being different species. Twenty companies used fixed budgets and 22 employed flexible budgets. Only 2 companies did not attempt any form of budgeting proper for factory overhead. The discrepancy in the figures is explained by the fact that some companies used both fixed and flexible budgets.

There were 2 companies which reported an analysis into "direct" and "indirect" costs, but this was interpreted as simply the process of distinguishing between prime costs and overhead costs. There were only 16 companies which utilized departmental operating statements. On analysis of factory overhead costs it was found that 21 companies attempted some form of classification into "fixed" and "variable". In this same total there were 10 companies which distinguished semi-variable costs from other costs. All the companies concerned found the division of the costs as being useful for control purposes. The question on marginal costing was to elicit information on how far this technique was employed in cost control and taking decisions.

Only 3 companies stated that the technique was employed fully and one of these divided costs into only two categories - fixed and variable - semi variable costs not being classified separately. Twenty companies made partial use of marginal costing on such matters as:-

- (a) Sales problems.
- (b) Special exercises only.
- (c) Special contracts.
- (d) Computing selling prices.

Ten companies did not employ marginal costing in any form.

For administration costs there were 27 companies which prepared budgets. Fifteen of these calculated variances and 20 prepared departmental operating statements. Again some companies did not predetermine standard costs, but they did prepare budgets.

With selling and distribution costs there were 24 companies using budgets and for variance analysis and departmental operating statements the numbers were 15 and 19 respectively.

One company reported a separate functional classification; that is, into "technical costs". A budget was employed as well as variance analysis and presentation of information on departmental operating statements.

(2) Control Periods

A variety of control periods was found to exist. The question in this case applied to overhead costs and, therefore, daily control

periods were not expected or found. A summary of the position is given below:

- (a) Quarterly periods divided into sub-control periods of 4,4, and 5 weeks (9 companies).
- (b) Quarterly periods without sub-division (2 companies).
- (c) 4 - ~~w~~weekly periods (9 companies).
- (d) Calendar month (3 companies).
- (e) Bi-monthly periods (1 company).
- (f) Equal number of output days (1 company).
- (g) 12 accounting periods of either 4 or 5 weeks. This appeared to be another form of (a) above. (1 company).
- (h) 5 - weekly periods (1 company).

It will be seen from this summary that the quarterly period subdivided into three periods of 4, 4. and 5 weeks or the 4 - weekly period is the most frequently used control period.

(3) Principle of Exceptions

Design of reports so that they stress the exceptions is a fundamental principle of sound cost control. (discussed in Chapter 4). There were 28 companies which recognized this fact; 5 indicated that they did not adopt the principle.

(4) Accounting Reports

A wide variety of reports is produced. These are listed below on the basis of frequency of presentation.

(a) Daily Reports

Labour Efficiency Report.

Production Report.

Off-standard Processing Report.

Sales and Orders Received Report.

Shift Production and Yield Report.

Individual Piecework Performance and Earnings Report.

Cash and Bank Position Report.

(b) Weekly Reports

Hours Worked Report.

Weekly Operating Results Report.

Labour Standards Report.

Labour Variances Report.

Integration of Standard and Actual Costs Report.

Overall Variance Statement.

Labour Efficiency Report.

Labour Summary.

Labour Analysis Statement.

Activity Report.

Cost Centre Hours Utilization Report.

Departmental Operating Report.

Cash Position Statement.

Factory Efficiency Report.

Arc Furnace Operating Statement.

Departmental Effectiveness Summaries.

(c) Bi-Monthly Reports

Full Cost Report.

(d) Monthly Reports

Period Operating Results Statement.

Departmental Variances and Profit and Loss Statement.

Stock Movement Reports.

Factory Commercial and Technical Overhead Statement.

Management Results Statement.

Cost Accounts Reconciliation Statement.

Departmental Operating Statements.

Efficiency Report.

Material Price Variance Report.

Departmental Cost Account Sheets.

Branch Works Report.

Trading and Profit and Loss Account.

Divisional and Cost Centre Reports.

Finishing Department Operating Statement.

Labour Variances Summary.

Factory Operating Accounts.

(e) Annual Reports

Departmental Performance Reports.

Stock Reports.

Group Consolidated Accounts.

Statutory Accounts.

Cumulative Cost Report.

Cost Accounts Reconciliation Statement.

Budget Revision Statement.

Divisional and Cost Centre Reports.

Profit and Loss Account.

Balance Sheet.

(f) Intensity of Use

The use made by managers of the reports is analysed earlier in this chapter (section 8 B.) No one company employed all the reports. Surprisingly, many of the reports were presented long after the event had occurred. Examples are given below:

(1) Machine tool company:

The bulk of the reports were prepared on a 4-weekly basis. Labour reports on such matters as lost time and efficiency achieved were issued weekly.

(2) Pharmaceutical company:

All reports were based on monthly activity. In particular, efficiency reports and stock reports were prepared.

(3) Electrical equipment manufacture

The material price variances were reported monthly, whereas departmental cost sheets were issued quarterly.

(4) Motor vehicle manufacturer:

A factory report was produced weekly and a labour variance summary monthly.

In terms of actual figures there were 12 companies which prepared reports on a daily basis and 18 produced weekly reports. There were 30 companies which produced monthly reports. All the companies produced annual accounts, but only 12 of these produced annual reports for internal management use. Two companies produced quarterly reports and these were in the nature of cumulative cost statements. Reference should also be made to the section on Control Periods which appears earlier in this chapter. However, it is important to observe that those periods refer to the control of overhead costs and not to prime costs.

The nature of the reports obtained from companies showed that considerable thought had been exercised in drafting the forms. Moreover, attention had been paid to the important matter of whether costs were controllable or uncontrollable.

Many of the reports were too large to reproduce. If not too large they were printed with very small print and complex rulings which also made reproduction very difficult. The example (Fig. 7A.) given opposite shows the kind of analysis that is necessary in practice. It will be seen that the labour losses are analysed into "direct" and "indirect" responsibility. A detailed breakdown was given on the back of the form. (Fig. 7B.)

DEPARTMENT

FIG. 7A. Analysis of Labour Costs Form (Front)

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(5) Stock Valuation

The statistics relating to stock valuation showed that 7 valued at actual costs whereas 26 used standard costs. Eleven companies did not include overhead costs, but 22 did. On this matter of inclusion of overhead costs a variety of practices were found to exist and these are summarized below:

- (a) Divisional overheads included, but not depreciation.
or head office overheads.
- (b) Cost centre or departmental overheads included, but
not administration and selling.
- (c) General works overheads only.
- (d) Variable overheads only.
- (e) Packed stocks include overhead costs, but not raw
materials.
- (f) Factory overheads only.
- (g) Raw material stocks kept at actual cost, but work-in-
progress and finished goods are recorded at standard
costs.
- (h) Market values are used for the Balance Sheet where relevant.
- (i) Factory administration costs plus a proportion of the
buying division costs.
- (j) Kept at standard, but converted to actual for the
monthly accounts.

- (k) Full overhead costs - fixed and variable.
- (l) Factory and office overhead costs.
- (m) Stocks kept at standard costs less variances if the actual cost is less than standard.
- (n) Production overhead plus part of the administration costs.
- (o) A total equivalent to 100 per cent of direct labour is added for overhead costs.
- (p) Direct costs including variable overhead costs.
- (q) All overheads except selling and distribution are included.
- (r) All overhead costs except central administration and selling costs.

The methods employed for recovering overhead costs are relevant because these also affect stock valuation. The three methods listed in the questionnaire were:

- (1) Apportioning to cost centres.
- (2) Machine Hour Rate.
- (3) Labour Hour Rate.

It was found that 16 companies employed all three methods. One business used the cost centre and labour hour recovery methods, whereas another company had apportioned to costs centre and used machine hour rates. Some companies (7) took costs only to cost centres.

The remainder of the businesses reported that they either employed the machine hour rate or labour hour rate: this seems rather a doubtful statement because costs would have to be taken to cost centres before they could be recovered in the cost of the products.

II EFFECTIVENESS OF STANDARD COSTING

a. Summary of Findings

The remarks made on the effectiveness of the system as a tool of management are valuable and, therefore, are summarized below:

- (1) The system is effective provided the interpretation of the figures is made easy.
- (2) Standard costing, rather like a good incentive scheme, has its greatest impact in the initial months of use. After this period it is rather like working with the light on! The scheme is not so actively valued, but few would wish to 'switch the light out'.
- (3) Standard costing makes for ease of comparison, ease of evaluating work-in-progress and other stocks and makes possible the highlighting of variances. Its major defect is inflexibility.
- (4) It is effective so far as management at intermediate levels will allow.
- (5) There is no doubt as to the effectiveness of standard costing providing:-
 - (a) Standards are based on reliable technical specifications

and sound work study principles.

- (b) It is not imposed as an accounting necessity, but is collectively agreed as an improved aid to the managers and the supervisors concerned, and receives their full support and co-operation.
- (c) It is fully understood by all concerned.
- (d) Top management uses the results (variances etc.) as a basis for control.

Correctly implemented it encourages immediate remedial action to be taken on adverse results and clearly identifies areas for investigation and cost reduction.

A principal problem (rather than defect) is the control of work-in-progress value and this requires reasonably frequent verification by physical checks; etc.

- (6) The system is reasonably effective and is certainly better than any system of historical costing. However, the terms used in standard costing and the complicated arguments, such as the incidence of fixed costs, are rarely understood by any level of management.
- (7) Standard costing used selectively and judiciously is very useful. It is more suitable for repetitive batch production than for "one off" assembly work.
- (8) Operated efficiently, with the full support of top management and especially the Chief Accountant and his staff, no other system can really be compared to standard costing as a "yardstick of measurement"

and a tool of management. But it is important that a standard costing system is put in professionally and not piecemeal by an accountant employed by the firm (unless he has had installation experience with a firm specialising in this work and he is full-time on the assignment).

- (9) In a Group as large as ours (20 factories in U.K. alone) uniform standard costing is of paramount importance and contributes largely, not only to immediate cost control, but in rationalisation, long term planning, introducing new products and so forth.

- (10) Standard costing is a good tool provided the following conditions apply:-

Efficient methods of measurement; sensibly set standards; co-operation from production management; dynamic approach to setting of standards; reports used for action rather than mere reference.

- (11) Quite apart from the daily and weekly control exercised at the factories to maintain an high standard of efficiency, the prompt presentation of monthly accounts in detail to the Board of Directors and Heads of Departments would be impossible without standard costs. Appropriate, brief reports on exceptions permit prompt decisions being made.

- (12) The strength of the system lies in the effectiveness of the standards; revision of standards can cause tremendous

administrative problems.

- (13) Management is aware that an individual cost represents normal efficiency. The adverse variances by cost centres therefore signal the abnormal. This is control by exception. In a large Works like this (5,000 employees) it would be impossible to run a cost centre without standard costing and budgeting.
- (14) Standard costs allow proper decisions to be taken on sales price policy and relative profitability. The trend of movement in costs (prices) can be identified.
- (15) The limitations of standard costing lies mainly in the tendency to concentrate on costing sales rather than production. In a company of this kind, it can never be the whole story and, in practice, many assorted non-textbook techniques have to be used in order to exercise effective control and to present a balanced picture to management.
- (16) Provided standards are set at attainable levels the system is most useful. Variances can be attacked and corrected before they get out of hand. It is essential that all information is produced promptly.
- (17) Standard costing is an effective tool only so long as it is accurate to within 3%. Gross deviations can normally be isolated just as well by other means. It is convenient

too and saves time (even allowing for time taken in preparation of standards). It is necessary that all those concerned with using data based on standards realize fully what it means; i.e. a published standard is of little use in quoting selling prices where quantities vary materially from the budgeted quantity.

- (18) The standards should not be made elaborate, but kept simple, and thus readily understood at all levels. Variances thereon should be assignable to specific areas otherwise remedial action will not be forthcoming. Standards are becoming accepted as a yardstick for most management decisions and, if kept in the correct perspective, will continue to make demands for accurate Work Study.

- (19) It is essential to the understanding of the business and highlights where we have to make special efforts. The system has saved us a lot of money.

We still do not know how to **control adequately** expenditure on Maintenance and Repairs. Furthermore, in an integrated Works we find it very difficult at times to allocate responsibility; e.g. poor iron affects steelmaking and rolling mill yields; poor blast furnace performance affects gas availability throughout the Works.

- (20) The average production manager has little or no understanding of standard costing and the education of these people is a long job. For the system to be effective it must have the

- backing of top management.
- (21) Standard costing supplies the information on which action can be taken and is as effective as the action taken. It is an excellent basis for cost control, but like all other systems is only justified or useful if "line" management and directors use the information revealed. This does not excuse the responsible accounting function from "selling its wares" and pressing for action.
- (22) Standard costs are the only true costs at the moment they are compiled and, while they do afford a measurement against those actually incurred, they are sometimes confused with actual costs. I would rather see one set of costs only within a Company constantly revised for price changes, formula changes, etc. The whole cost effort could then be centred on providing up-to-date costs and the laboratories and production departments could be held responsible for investigating variations from technical performance.
- (23) There are many tools of management and most cost information is judged on a comparative basis; i.e. costs compared with sales, costs, expenses and costs compared with previous years and other factors. The existence of standard costs provides a very useful means of comparison.
- (24) Our line of business is much simpler than most and standard costing is less effective than in, say, complicated engineering businesses where its value is immeasurable.

(This company operated in food processing on a small scale).

b. Conclusion

Some of the replies duplicated the information given and, therefore, have not been reproduced. From these replies it will be seen that there is great support for the technique, subject to certain reservations.

12. CONCLUSION ON PRACTICAL ASPECTS

The research has revealed that standard costing is used quite widely in British industry. Nevertheless, many companies still do not consider that management techniques are appropriate to them. Standard costing was found to be employed in a number of industries, including those which employed process, batch, uniform and job costing. In the latter case a full system could not be said to be in operation.

New knowledge became available on the reasons for using the technique. Users felt that an effective tool of management was being employed in cost control, detection of inefficiencies, price fixing, planning and other important areas.

Within the functional divisions, standard costing was used fairly fully on production. Selling and distribution and administration were not considered quite as appropriate for employment of standard costs. One problem encountered by accountants was the existence

of managers who did not understand what control was really necessary. Reports to management were a feature of the systems in existence. Surprisingly, control on the shop floor was rather neglected. A similar position was found for office managers. Best served were general managers, almost all companies presenting reports to them. Standard costs were found to be revised once a year by almost two-thirds of the companies. Other revision periods were also found, but there was no positive leaning towards any particular period. Attainable standard costs were employed by the majority of companies. Next in line were normal standard costs with ideal and basic standards being isolated instances. A number of accountants did not really understand the true nature of standard costs as being costs as they should be and not what they are expected to be. An extremely wide range of variances was found to exist. However, they were not employed as fully as expected, especially in the field of material utilization. A few companies appeared to go to excessive lengths in the variance analysis, primarily for direct labour costs.

Cost control was exercised through cost centres by the calculating of variances for each. Other divisions were also found to exist. The high level of accuracy being obtained in setting standard was surprising, the majority of companies coming within 5 per cent of the targets set. This did not apply to all companies and some were

not even aware of the accuracy that was being achieved. Control of costs was regarded by many companies as being essential. Unfortunately, some of the methods used left much to be desired: alternatively, there were areas where cost control would bring benefits. A small minority used marginal costing in its fullest sense, although partial employment of the technique was more widespread.

The control periods in use tended to be quite conventional, but there was certainly a significant absence of daily reports. All too often a report seemed to be presented long after the event had occurred.

The stock valuation answers showed that the majority of companies used standard costs as a basis. A number of companies included overhead costs, but often this inclusion was limited to variable or to total factory overheads only.

On the whole the consensus of opinion was that standard costing was a useful tool of management. This matter is analysed in Chapter 6 when theory and practice are compared.

CHAPTER 6

THEORY AND PRACTICE COMPARED

1. INTRODUCTION

Standard costing as a tool of management has been examined in detail in the preceding chapters. The purpose of this chapter is to compare the theoretical framework with the practices adopted in industry.

In addition, suggestions are made on the possible approaches which could be made to make the technique more effective.

2. STANDARD COSTING EXAMINED

A comment on the apparent apathy of some companies to supply information is appropriate. Only by supporting serious academic study can a subject be examined, criticized and improved. There are some difficulties, especially those associated with completing returns and questionnaires for governmental reasons, including income tax. Nevertheless, even after allowing for this fact, it was felt that some companies could be more helpful. In the long run all businesses would benefit from the details made available. There was a clear indication that a number of companies still regarded cost accounting systems as a nuisance and something which did not apply to them. On the evidence of remarks made there was some doubt as to whether modern management ideas were being adopted in any significant fashion. Fortunately, these observations apply to a minority and a number of companies were looking into the possibility of adopting sophisticated techniques such as standard costing and budgetary control.

A very small minority regarded the information required as being confidential and as being contrary to policy to disclose. The questionnaire did not ask for information that was likely to be useful to any other business in specific circumstances. No details of costs or prices were requested. The questions were designed to elicit information of the methods adopted in controlling costs and arriving at management decisions.

a. Industries Using Standard Costing

In theory the assumption made is that standard costing will be used primarily when process costing is appropriate. This was largely borne out by the results of the survey. It was found to be not absolutely correct in that some companies using the technique were not in process industries.

Some jobbing firms used a form of standard costing, although in many cases this could not be said to be fully comprehensive.

Where long production runs were possible, or there was routine production of a standardized nature, standard costs were set.

In the motor car manufacture industry which provides an example of multiple costing (using a variety of costing methods) there was considerable emphasis given to the technique. In engineering firms on batch production, standard costing was found to be a very useful management technique.

There were some companies which did not consider standard costing

appropriate and yet they had the necessary conditions for success. An engineering business used standard times and employed budgetary control, but the detailed costs were purely historical. Yet batch production techniques were being employed.

In a similar category came single companies in the manufacture of paints and in chemical manufacture. Since these are process industries it was very surprising that standard costing was dismissed. In one case it was regarded as being appropriate, but not used; and in the other that it was too costly in relation to the benefits expected.

One business had a guaranteed market and, therefore, could sell all it could produce at a reasonable profit. For this reason cost control was regarded as being unnecessary.

The admissions made that standard costing was appropriate, but not used, or possibly too expensive to operate indicate a general complacency that should not exist in the management of companies. Managers responsible for failing to employ appropriate systems and techniques cannot be regarded as being efficient. They are missing a vital opportunity to eliminate losses and waste and so make their work more effective.

Some accountants had difficulty in convincing top management that standard costing could bring about improvements. A lack of education on the use of accounting as a tool of management was very evident. This was probably the main reason for a system not being

used or for its being employed only partially. In some cases there was ignorance displayed on the merits of standard costs as opposed to actual (historical) costs.

Whilst the bulk of the blame for not employing the technique fully can be traced to the apathy of some managers, the accountants cannot escape some responsibility. The minority of companies which objected to standard costing blamed installation by inexperienced staff and the presentation of figures which were difficult to interpret. Accountants in the past have been guilty of shrouding themselves in mystery. The emphasis on participation, stressed throughout this thesis, shows the importance of involving all responsible personnel. Yet this is not being done in some businesses. In addition, the education aspect should be very much a part of the accountant's "selling technique". If he cannot show management what can be expected from standard costing he is unlikely to succeed in operating a system successfully.

b. Standards Employed

Standard costs were found to be established once a year for the majority of companies. This complied with what had been advocated in the theoretical framework. One or two businesses had unusual periods for revising the standards such as 3 or 6 monthly or even every 3 or 4 years. These were some that had no set time, but revised when necessary.

A variety of difficult areas for setting standards was found to exist. This included administration and selling and distribution costs. Generally, the areas given were what was expected, although one or two should not have been insurmountable. For example, purchased components costs were stated as being a difficult problem to predetermine. Heat treatment costs were also regarded as presenting special problems. Yet these areas should be capable of study and the establishment of standard costs. They are not unusual or exceptional.

One of the main difficulties seemed to be the predetermination and calculation of a unit cost for overhead costs, mainly because of the variations in output and the incidence of fixed costs. This appeared to indicate that not enough thought is being put into the selection of the appropriate capacity for the particular business concerned.

The types of standard costs being employed were in accordance with the theoretical model. A substantial majority employed attainable standard costs. Provided these are based on realistic conditions, in an atmosphere of striving to achieve a high standard of efficiency, they would be acceptable. Unfortunately, this was not found to be the case.

Almost 50 per cent of the companies adhered to a concept of "expected" standard costs. This is quite contrary to the fundamental

definition of a standard cost -- a predetermined measure of what a cost should be. The implication was that these companies were simply looking for an approximate guide to efficiency. In short, they were content to let any inefficiencies stay as part of the standard costs. In these circumstances there was doubt as to whether a full investigation had been made into all the functions so as to make them operate efficiently. It will be recalled that this should be carried out before the standard costs are developed. This is one of the major advantages of employing standard costing. Replacement costs were found to be given some attention, but not as much as would have been desirable. Around 50 per cent considered replacement costs (or prices) for raw materials. There were 3 companies which looked at the problem of recovering depreciation on a replacement cost basis.

From these findings it is possible to state that most of the companies in the survey did not appreciate the nature of standard costs fully. They regarded them as a form of yardstick, but the attitude to definition and measurement left much to be desired.

c. Variances Employed

A far wider range of variances was found in practice than that advocated by writers on accountancy. Many were not generally recognized terms, although some would be self-explanatory, e.g.

excess idle time; rate of output; under or over-absorption variance. The use of terminology which is not standardized is unfortunate. Many benefits can be gained from using standard terms and the Institute of Cost and Works Accountants' Terminology of cost accountancy has much to recommend it. Education of managers can be assisted by the provision of official publications of this kind.

The actual use made of the variances varied tremendously. In some companies a comparison of total standard cost with total actual cost was all that was regarded as necessary. In others, there was considerable detail given, including one company which analysed labour variances into 22 different categories.

There was thus a mixture of many forms of control. Many companies did not bother attempting to control material utilization or overhead costs of any type. Yet when dealing with labour control there were some cases where the analysis was taken to extreme lengths. The bulk of the variances calculated applied to the production processes. The administration and selling and distribution aspects tended to be neglected. This approach is contrary to the fully co-ordinated and comprehensive system advocated in this thesis. For management to be fully effective an integrated system is essential, otherwise the main functional divisions are not operating in harmony so as to produce the desired return on capital employed.

Variances were calculated by factory, product groups, processes and cost centres. The majority (almost two-thirds) adopted the latter, thus locating responsibilities along the lines suggested in earlier chapters.

The accuracy of the standard costs and, therefore, the size of the variances are of considerable importance. In practice, it was found that most of the companies could get within 5 per cent. This appeared to be a considerable achievement, although by itself the figure is not of precise significance. Much depends upon the nature of the standard costs; how they are determined and the efficiency anticipated. If the standards are set rather loosely then any departure from them may mean very little. A small variance is not necessarily a sign of efficiency if the standard costs are simply a reflection of expected actual costs with all the attendant inefficiencies.

The reasons for the variances were, on the whole, those specified by the authorities on standard costing. However, a number of new reasons were given.

d. Control of Costs

Effective control of costs is one of the most important advantages of standard costing. This comes from pinpointing responsibilities and analysing the variances. As far as possible there should be automatic isolation of the variances; this complies with the feedback

requirement which is a vital part of cybernetics. The practice followed showed that material price variances were calculated and were regarded as the responsibility of the purchasing manager. This is in accordance with the conventional approach to price responsibility.

A surprising fact emerged from the procedures followed for controlling direct material usage. This is an extremely important cost area where excessive usage can result in considerable losses. Furthermore, material usage is generally a controllable cost. Yet it was found that only about one-third of the companies used excess material requisitions. The remainder appeared to treat the matter in a very light fashion. A much more positive approach to material control appears essential.

Direct labour control received more attention. Only a small minority did not record labour times in some way. A variety of methods was in use. Around 45 per cent used an incentive scheme. If standard labour times are to be achieved then there is much to be said for providing encouragement to employees and, therefore, the smallness of the number using an incentive scheme was surprising.

For the control of factory overhead costs, both flexible and fixed budgets were employed. Some used both, but others used neither. A serious defect was the fact that approximately one-third did not

employ a flexible budget. This indicated a rather **unenlightened** viewpoint on how control of overhead costs could be achieved.

A few of the companies may have had a relatively stable output from one year to another. Even allowing for this possibility, the approach adopted by the one-third appeared unsound.

Even companies which did employ budgets of some kind did not always trace the responsibility to departmental level. Around 50 per cent did not utilize departmental operating statements. This absence of a communication channel to departmental managers was indicative of faulty systems. From a cybernetics point-of-view these would certainly be regarded as defective. Feedback is essential for all areas of cost.

Around two-thirds of the companies classified factory overhead costs into "fixed" and "variable", but only half of this number made any attempt to deal with semi-variable costs. All these companies found the classification useful for controlling the costs. Since the division of overheads into fixed and variable costs is essential to the understanding of their behaviour, the one third which did not carry out this function could have been making little intelligent use of the costs.

Only a small minority (3) stated that they made full use of marginal costing. However, two-thirds of the companies indicated partial employment of the technique. Uses included sales problems, special

contracts, and computing selling prices. The main use was "special exercises" or ad hoc investigations. This approach is the one advocated in this thesis. It does not agree with the suggestion made by many writers that marginal costing should be treated as a complete technique. Indeed, the approach advocated in this work requires nothing more than the classification of costs into their variable and fixed categories and their use in the appropriate form.

e. Accounting Reports

A wide variety of reports was found to exist in practice. Pro-forma examples were studied and many of these came up to all theoretical expectations. They were presented promptly, reliance was placed on the principle of exceptions, and a distinction was made between controllable and uncontrollable costs and variances.

Not all companies used reports or, if they used them, they did not receive maximum benefits from them. Almost all presented information to General Management and a large majority kept production managers informed. Around two-thirds of the companies used sales reports in some form or other, mainly for sales volume and selling expenses. The administrative and supervisory functions received the least attention. Little more than one-third presented reports to office managers and to supervisors. Neglect of these areas, especially the supervisory aspects showed a marked disrespect for the first principle of responsibility accounting - namely, that

costs are best controlled at the point where they are incurred.

Variances and reports are limited in themselves. It is the action which is stimulated that counts. In practice it was found that where reports were presented they were utilized quite effectively.

A very small minority stated that the reports were not as effective as expected. The educating of managers to use accounting information has been commented on earlier in this chapter.

A serious condemnation of the practice followed was possible on the grounds that reports appeared to be presented far too late. One of the fundamental features of a standard costing system is that action is taken promptly so that adverse tendencies are corrected before much damage has been done. Yet if reporting is delayed, this means that action may not be taken at all because, after a period, the event becomes so historical that nobody is sure what went wrong. This is one of the main failures of historical costing and a disadvantage which standard costing is supposed to overcome.

Most emphasis was given to monthly reports which would be of very limited use except for controlling overhead costs. Just over one-third prepared daily reports which was a small percentage relative to the value likely to be obtained from informing supervisors and line managers of the direct material and labour wastage which had taken place.

f. Stock Valuation

Approximately 80 per cent of the companies used standard costs for stock valuation. The major divergence of opinion was on which overhead costs should be included in the valuation. This applied irrespective of whether standard or actual costs were used.

Around two-thirds included overhead costs of some kind. However, the practices varied so much that no generalization is possible.

As would be expected, a significant number stated that selling costs were excluded from stock values. Some businesses excluded administration costs altogether, whereas others took a proportion in the stock valuation.

The methods used for recovering factory overhead costs were as would be expected. There was one business which reported that overhead cost was added by taking the equivalent of 100 per cent of direct labour. From the information obtained on this company the percentage on direct labour method was certainly not the one to employ.

g. Decision Making

The use of standard costing as a tool of management should demand more than the control of costs. As indicated in Chapter 4, one of the principal tasks of managers is to make decisions. It is important, therefore, to obtain some idea of the use made of standard costs in this important field. The significant areas for which

companies used standard costs are summarized below:

Additional Benefits

- (1) Forward planning.
- (2) Operation of budgetary control.
- (3) Profit planning.
- (4) Price fixing in advance of production.
- (5) Cost reduction.
- (6) Making decisions on alternative courses of action.
- (7) Rationalisation.
- (8) Planning new products.

These are additional to the specific uses listed in the Questionnaire (see Appendix 1). The latter listed a number of purposes for which the costing system might be employed. These were:

Listed Benefits

- (1) Control of costs.
- (2) Fixing of prices.
- (3) Making decisions.
- (4) Reduction of costs.
- (5) Elimination of unprofitable products.
- (6) Reduction of lost time, idle time, spoilage, material wastage, machine hours lost.

More than 50 per cent of the companies using standard costing found that the system assisted them with all the purposes listed above, and as shown in the Questionnaire. In addition a number

of these also gave one or more of the additional benefits. Out of those not obtaining the full listed benefits, the areas in which there were significant weaknesses were reduction of lost time, idle time and lost machine hours, and as a basis for an incentive scheme. There was possibly some correlation between the loss of these benefits and the fact that daily reports were not prepared by a number of companies (discussed earlier in this chapter). Effective control of time would require prompt reporting. It is also significant to note that the companies which did not have any form of incentive scheme could not control times. This seems to bear out the suggestion made by some writers (cf. Henrici op.cit., p.140) that an incentive scheme is very desirable so as to stimulate workers to achieve the standard times.

3. EFFECTIVENESS AND RECOMMENDATIONS

The majority of companies using standard costing admitted that the technique was an extremely useful tool of management. The principal reasons are listed in Chapter 5 and, therefore, are not reproduced in full in this section.

What is more useful is to consider, in the light of earlier comparisons in this chapter, what could be done to improve the usefulness of the technique as a tool of management. There are a number of shortcomings to be found in British industry and the reasons for these should be examined with suggestions for overcoming the difficulties.

One of the problems encountered by some companies was difficulty in interpreting figures. This could be due to a variety of reasons. A misunderstanding of the nature of true standard costs, as indicated above, could cause difficulty. If these are taken to be expected actual costs then they are not proper measures of efficiency. One accountant stressed that the standards should be based on "reliable technical specifications and work study principles". A considerable part of the fault may lie with accountants who make no attempt to present the figures in the best possible manner and in accordance with the principles discussed in the earlier chapters. There is need for experiment in devising new methods which stimulate action. If facts are presented in a way which casts doubt on their authenticity or meaning, then standard costing is not serving management. That this practice exists is confirmed by the statement that "the terms used in standard costing and the complicated arguments, such as the incidence of fixed costs are rarely understood by any level of management". When this state of affairs prevails there is a need for the accountant concerned to refashion his ideas and concepts and to simplify the terminology used as well as the methods of presentation of facts.

The education of managers is also a very essential prerequisite to the efficient use of a standard costing system. Some companies did not get the support necessary to success, from top management. One accountant stated that understanding of managers is essential yet "the education of these people is a long job". This implies

that the company, and especially the accountant, has an obligation to provide the necessary facilities. However, this is only partially true. In Chapter 2, it was stressed that the functions of management had to be carried out by all managers. From this it follows that managers also have a duty to the business to ensure that they understand what can be done with the techniques used in the processes of planning, co-ordinating and controlling. If they condemn a system they are also criticizing themselves in that they should be aware of how standard costing can be applied. Often the attitude of a manager makes all the difference between success or failure of a system. The accountant, as a specialist, would advise on the feasibility of particular applications, but active participation would be essential from all managers.

From the brief analysis given earlier in this chapter it will be apparent that there are weaknesses in the practices followed. These have been discussed and commented upon. One of the major difficulties in the past in Britain may have been the shortage of suitable literature on standard costing. Far too much emphasis was given to budgetary control often based on expected actual costs. The latter are a poor substitute for standard costs as advocated in this thesis. Their very use means that management will not obtain as efficient a service and, therefore, any apathy which exists may worsen rather than improve. On the other hand,

if an efficient standard costing system is in operation, the results would speak for themselves and should generate higher levels of co-operation and satisfaction from the managers involved. At the root of the problem are the basic principles which must be applied. If these are not understood, then there is bound to be difficulty. The true nature of a standard cost and its relationship with losses and waste are absolutely vital to the maximum utilization of standard costing. Far too much attention is paid by professional bodies to the mechanical aspects of accountancy rather than to the philosophy underlying the techniques. It is not enough to know how to keep accounting records or even how to design a system which controls the business functions. There should be a clear understanding of the Economics of Management accountancy. The technical aspects of producing and selling are essential, but so are the economic aspects. Both should be considered within a dynamic environment. Only when this is done and the relationships between the factors of production are considered will a true understanding emerge. Change is inevitable and, therefore, any accounting technique worth employing should be capable of interpreting any developments which take place both in terms of quantities and realistic prices. The establishment of management accountancy as an academic discipline is a very necessary part of the approach which is vital to the proper understanding and employment of standard costing. Complete integration, as defined in Chapter 4, is also a very necessary requirement. In the "Introduction" it was stressed

that there are three distinct, yet related, aspects which make up the business. These consist of the operational activities, the personnel, and the financial framework. The latter is explained and described within the subject of management accountancy. If the fullest use is to be made of all the techniques then management accountancy should be fully integrated and fully comprehensive. On the basis of the research made there is very clear evidence that standard costing is an effective tool of management. Yet it is also true that the system is not employed as extensively as it could be, nor is it fully utilized by some of the companies which are using it as a tool of management. Nevertheless, there is a growing awareness of its importance both in South Africa and in Britain. If accountants and non-accounting managers work more closely together a better understanding should emerge. All concerned with improving business efficiency should strive towards a greater understanding of the philosophy of management accountancy.

APPENDIX 1.

- (1) Letter to Companies
- (2) Questionnaire

To: The Cost Accountant
or Management Accountant

Dear Sir,

I am carrying out research into: THE APPLICATION OF STANDARD COSTING AS A TOOL OF MANAGEMENT IN CERTAIN BRITISH MANUFACTURING INDUSTRIES. For this purpose I am working under Professor A.J.E. Sorgdrager, Head of the Department of Cost Accountancy at Potchefstroom University, South Africa. Successful completion of the project will lead to the Degree of D.Comm.

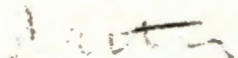
Early completion of the enclosed Questionnaire would be very much appreciated. All information given would be treated as CONFIDENTIAL and the name of your Company will not be mentioned in the dissertation.

A limited number of companies have been selected, generally those which have or are likely to develop interests in South Africa. Dr. J.H. Els has already conducted a similar research project on Standard Costing in South African Industries. It is hoped that the comparative study which will be made possible will be of benefit to both countries.

I hope that the results will eventually be published, thereby giving benefit to all who are interested in improving industrial efficiency.

For this reason I would ask you to be kind enough to spare some of your time to answer the questions.

Yours faithfully,


J. BATTY, M.Com., A.C.W.A.

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STRICTLY CONFIDENTIAL

→ Bld

→ HF

Questionnaire on STANDARD COSTING AS A
TOOL OF MANAGEMENT

Please complete and return as soon as possible to J. Batty, Head
of Department of Business Studies, Harrow Technical College,
Northwick Park, Harrow, Middlesex. (Envelopes marked "CONFIDENTIAL"
will ensure secrecy)

1. Name of your Company
2. Type of business (e.g. Engineering,
Building or Foundry)
3. Costing system employed: (please tick)
 - (a) Job Costing
 - (b) Process Costing
 - (c) Standard Costing
 - (d) Budgetary Control
 - (e) Other (please specify)
4. Do you feel that Standard Costing is appropriate for your business?
Please give brief reasons for your answer:

.....

.....

.....

5. Does the costing system you employ assist in the following matters?

- | | | |
|-----|--------------------------------------|---------|
| (a) | Control of costs | Yes/No* |
| (b) | Fixing of prices | Yes/No |
| (c) | Making decisions | Yes/No |
| (d) | Reduction of costs | Yes/No |
| (e) | Elimination of unprofitable products | Yes/No |
| (f) | Reduction of the following: | |
| | (i) Lost time | Yes/No |
| | (ii) Idle time | Yes/No |
| | (iii) Spoilage | Yes/No |
| | (iv) Material wastage | Yes/No |
| | (v) Machine hours lost | Yes/No |
| | (vi) Other factors | |
| | (Please specify) | |

.....

- | | | |
|-----|-------------------------------------|--------|
| (g) | As the basis of an incentive scheme | Yes/No |
| (h) | Other uses (please specify) | |

.....

6. If you do not employ STANDARD COSTING please give reasons:

.....

7. If you employ STANDARD COSTING please state whether used fully throughout the business:

.....

* Delete as appropriate

NOTE: Only companies which employ standard costing should answer the questions given below:

GENERAL QUESTIONS

1. How often are standards established? (Please tick)

Every six months

Every year

Every five years

Other period (please specify)

2. Are the standards obtained generally accurate within the following:

Under 5%

6% to 10%

10% and over ?

3. Which standard costs are the most difficult to set?

.....

4. Please list principal variances employed:

LABOUR

.....

.....

MATERIAL

.....

.....

FACTORY OVERHEAD

.....

.....

ADMINISTRATION

.....

.....

SELLING AND DISTRIBUTION

.....

.....

5. Are variances computed for separate:

(a) Cost centres

(b) Departments

(c) Other divisions ?
(please specify)

6. Which accounting reports are presented to management:

(a) Daily

(b) Weekly

(c) Monthly

(d) Yearly?

(Please specify name of one report for each period and if possible forward examples of forms, attached to this questionnaire).

7. Is action taken promptly on the information given in the reports?

Yes/No*

8. Are stocks valued at actual cost or standard cost?

9. Do stock values include overheads? (Please specify)

.....

*Delete as appropriate.

10. Is the basis of valuation accepted by the Commissioners of Inland Revenue?

Yes/No*

11. Does the Standard Costing system have the support of top management?

Yes/No*

12. Do you operate: (please tick)

- (a) Ideal standard costs (100% efficiency)
- (b) Attainable standard costs
- (c) Basic standard costs
- (d) Normal standard costs(average over trade cycle)

13. Do you regard standard costs as: (please tick)

- (a) What costs should be
- (b) What costs are expected to be
- (c) Other (please specify)

14. Which standard costs, if any, are based on replacement costs? (please state costs)

.....

.....

MATERIAL CONTROL

1. How are standard material prices computed? (Please tick)

- (a) Estimated replacement price
- (b) From past average prices
- (c) Other method (please specify)

*Delete as appropriate

2. Is any allowance given for the following when setting standard quantities? (please tick)
- (a) Normal waste in manufacture
 - (b) Waste through inefficiency
 - (c) Other allowance (please specify)
3. Do you use Excess Material Requisitions of a distinctive appearance to isolate excessive usage of material?
- (A copy would be appreciated)
4. Who is held responsible for Material Price Variances?
-

LABOUR CONTROL

1. What timing methods are used on jobs or processes? (Please tick)
- (a) Time recorder for each worker
 - (b) Time sheet for each worker
 - (c) Time sheet for a number of workers
 - (d) Other method (please specify)
2. Have you an incentive scheme linked with standard times?
- Yes/No*
3. Do you set standard times by: (please tick)
- (a) Work Study
 - (b) Past performances
 - (c) Other method (please specify) ?
-

*Delete as appropriate.

4. On what basis do you determine the standard costs?

.....

FACTORY OVERHEAD CONTROL

1. Do you use the following? (Please tick)

- (a) Flexible budgets
- (b) Fixed budgets
- (c) Departmental operating statements

2. Are costs separated into the categories: (Please tick)

- (a) Variable
- (b) Fixed
- (c) Semi variable
- (d) Other (please specify)?

.....

3. Is the division useful for controlling costs?

4. Which method of recovering overhead costs is employed? (Please tick)

- (a) Apportioning to cost centres
- (b) Recovery by machine hour rate
- (c) Recovery by labour hour rate
- (d) Recovery by other method (please specify)

.....

5. Are fixed costs shown in the costs of products? Yes/No*

*Delete as appropriate.

6. Do you employ Marginal Costing partially or fully?

7. What control period is adopted? (Please tick)

(a) Four-weekly

(b) Calendar month

(c) Other (please specify)
.....

ADMINISTRATION COSTS

1. Do you set Standard Costs for Administration Expenses? Yes/No*

2. Are the following employed? (Please tick)

(a) Variances

(b) Budgets

(c) Operating Statements

SELLING AND DISTRIBUTION COSTS

1. Do you set Standard Costs for Selling and Distribution? Yes/No*

2. Are the following employed? (Please tick)

(a) Variances

(b) Budgets

(c) Operating Statements

VARIANCES

1. Please list the principal reasons for the occurrence of variances most commonly encountered:

VARIANCE

REASON

.....

.....

.....

.....

2. Do you dispose of variances (please tick)
 - (a) Monthly
 - (b) Yearly
 3. Are variances disposed of by: (please tick)
 - (a) Writing off to Profit and Loss Account
 - (b) Adjusting stocks
 - (c) Other method (please specify) ?
 -
4. Do you follow the "principle of exceptions" when writing reports?
Yes/No*

EFFECTIVENESS OF STANDARD COSTING

1. Are reports produced for the levels of management: (Please tick)
 - (a) General Management
 - (b) Production Managers
 - (c) Sales Managers
 - (d) Office Managers
 - (e) Foremen ?
2. Are all the reports utilized by these managers? Yes/No*
3. Do any managers object to Standard Costing? If so,
what are their reasons?
.....
4. Is the system effective as a tool of management?
.....

5. Is the cost of operating the system reasonable in relation to the results obtained? Yes/No*
6. Do you have a committee for dealing with budgets, operating statements and variances? Yes/No*
7. Comments on the Effectiveness of Standard Costing as a Tool of Management:

.....

.....

.....

.....

.....

(Your views on the usefulness of Standard Costing or its defects would be welcome):

Signature

Date

APPENDIX II.

STANDARD CLASSIFICATION OF VARIANCES

Source: Terminology of Cost Accountancy, Institute of Cost and
Works Accountants, London, 1966, p.19 et.seq.

Sections 5.3 to 5.7.

5.3 VARIANCE ANALYSIS

The resolution into constituent parts and the explanation of variances.

Note: The following section gives brief definitions of some of the forms of variance analysis commonly used, the order of precedence being the order in which variances are normally identified and computed. The actual order will be settled according to the particular needs of the user. For example, a price variance on materials if measured on the standard quantity will leave the materials usage variance valued at actual price, but on the other hand if measured on actual quantities used will leave the materials usage variance valued at standard price. The variances ascertained in any business should be designed to provide the particular information which is apposite in the circumstances of that business.

It is not practicable in this Terminology to describe the forms and formulae necessary to calculate each variance. This needs a text book of its own.

The inter-relationship of the variances which are defined below can easily be followed from the chart (page 20). A small section on sales margin variances is included. Although not part of cost variances these are useful in investigating the relationship between costs, volume and profit.

5.4 COST VARIANCE

The difference between a standard cost and the comparable actual cost incurred during a period.

5.4.1 Controllable Cost Variance

A cost variance which can be identified as the primary responsibility of a specified person.

5.4.2 Methods Variance

The difference between the standard cost of a product or operation produced or performed by the normal method and the standard cost of the product or operation produced or performed by the alternative method actually employed.

- 5.43 Revision Variance
The variance between the basic standard cost and the revised standard cost.
- 5.44 Total Cost Variance
The difference between the total standard cost value of the output achieved in a period and the total actual cost incurred.
- 5.441 Direct Materials Cost Variance
The difference between the standard cost of direct materials specified for the output achieved and the actual cost of direct materials used.
- 5.441.1 Direct Materials Price Variance
That portion of the direct materials cost variance which is due to the difference between the standard price specified and the actual price paid.
- 5.441.2 Direct Materials Usage Variance
That portion of the direct materials cost variance which is due to the difference between the standard quantity specified and the actual quantity used.
- 5.441.21 Direct Materials Mixture Variance
That portion of the direct materials usage variance which is due to the difference between the standard and **actual** composition of a mixture. (Applicable only when direct materials are physically mixed.)
- 5.441.22 Direct Materials Yield Variance
That portion of the direct materials usage variance which is due to the difference between the standard yield specified and the actual yield obtained.
- 5.442 Direct Wages Variance
The difference between the standard direct wages specified for the activity achieved and the actual direct wages paid.
- 5.442.1 Direct Wages Rate Variance
That portion of the direct wages variance which is due to the difference between the standard labour hours specified for the activity achieved and the actual labour hours expended.
Note. Where efficiency is measured by a line speed or cost centre output as distinct from the output of an individual worker it may be possible to sub-analyse this variance between efficiency and amount of direct labour usage.

5.442.2

Direct Labour Efficiency Variance

That portion of the direct wages variance which is due to the difference between the standard labour hours specified for the activity achieved and the actual labour hours expended.

Note: Where efficiency is measured by a line speed or cost centre output as distinct from the output of an individual worker it may be possible to sub-analyse this variance between efficiency and amount of direct labour usage.

5.443

Overhead Variance

The difference between the standard cost of overhead absorbed in the output achieved and the actual overhead cost.

5.443.1

Volume Variance

That portion of the overhead variance which is the difference between the standard cost of overhead absorbed in actual output and the standard allowance for that output. (This represents the over - or under-absorption of fixed costs in the period concerned.)

5.443.11

Seasonal Variance

That portion of the volume variance which is due to the difference between the seasonally budgeted output and the average output on which standards have been calculated. (The sum of the seasonal variations over a complete year would be zero.)

5.443.12

Calendar Variance

That portion of the volume variance which is due to the difference between the number of working days in the budget period and the number of working days in the period to which the budget is applied. (The sum of the calendar variances in a complete year would be zero.)

Note: This variance arises from the convention that fixed costs are the same for each period, whatever the number of working days, and it can be eliminated by apportioning standard allowances and actual fixed costs on a working day basis.

5.443.13

Capacity Usage Variance

That portion of the volume variance which is due to working at higher or lower capacity usage than standard.

- 5.443.14 Volume Efficiency Variance
That portion of the volume variance which reflects the increased or reduced output arising from efficiency above or below the standard which is expected.
- 5.443.2 Overhead Expenditure Variance
That portion of the overhead variance which represents the difference between the standard allowance for the output achieved and the actual expenditure incurred.
- 5.443.21 Overhead Price Variance
That portion of the overhead expenditure variance which is due to the difference between the standard price of the service specified and the actual price paid.
- 5.443.22 Overhead Efficiency Variance
That portion of the overhead expenditure variance which is the difference between the standard allowance for the activity (standard hours achieved) and the standard allowance for the actual hours worked.
Note: This variance only arises on costs which vary with time taken rather than with volume of output.
- 5.443.23 Overhead Utilisation Variance
That portion of the overhead expenditure variance which is due to the difference between the standard quantity of the service specified and the actual quantity of the service used.
- 5.5 SALES VARIANCE
The difference between budgeted value of sales and the actual value of sales achieved in a given period.
Note: Sales variance can be analysed in many ways to suit a particular business, e.g. to isolate the effects of price changes, discounts and allowances from the effect of differing quantities of sales. A distinction is sometimes drawn between quantity and mixture variances. A mixture variance which is based on sales values only may be misleading because the effect of selling a different product mix than was budgeted is not only the difference in sales values but also the difference in standard cost of the mixture. In other words it is a difference in sales margins. The following definitions of sales margin variances are offered in preference to simple sales variances.

5.6 SALES MARGIN VARIANCES

5.601 Total Sales Margin Variance

The difference between the standard margin appropriate to the quantity of sales budgeted for a period and the margin between standard cost and the actual selling price of the sales affected.

5.601.1 Sales Margin Variance Due to Selling Prices

That portion of total margin variance which is due to the difference between the standard price of the quantity of sales effected and the actual price of those sales.

5.601.2 Sales Margin Variance Due to Sales Allowances

That portion of total margin variance which is due to the difference between the budgeted rebates, discounts, etc., on the sales effected and the actual rebates, discounts, etc., allowed on those sales.

5.601.3 Sales Margin Variance Due to Sales Quantities (Mixture)

That portion of total margin variance which is due to the difference between the budgeted and actual quantities of each product of which the sales mixture is composed, valuing sales at the standard net selling prices and cost of sales at standard.

5.7 PROFIT (OR LOSS) VARIANCE

The difference between the budgeted profit (or loss) and the actual profit (or loss). This will comprise the sum of variances appropriate to standard cost of sales, the sales margin variances and variances on any charges which have not been included in the standard cost of production.

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