THE RELATIONSHIP BETWEEN BUDGETING AND STANDARD COST IN COST CONTROL

by

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ABSTRACT

The objective of this thesis is to find a cost control method appropriate to the needs of small business organizations. We review commonly applied cost control methods of the modern business environment. Budgeting is a prediction of probable future results and standard costs which are preestablished costs based on historical data. These commonly applied methods are critically analyzed. The weaknesses and strengths of each method are pointed out. The mutual relationship of these two cost control methods is underlined.

Cost control can be achieved successfully through proper mutual cooperation between budgeting and standard costing functions. The emphasis is to tailor these techniques to the individual business and its specific requirements.

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1.1 INTRODUCTION

The major objective of a business is to make a profit. Profit equals the selling price less total product cost. Quantitatively, profit is defined by the following equation and the pictorial of figure 1.

PROFIT = SELLING PRICE - TOTAL COST

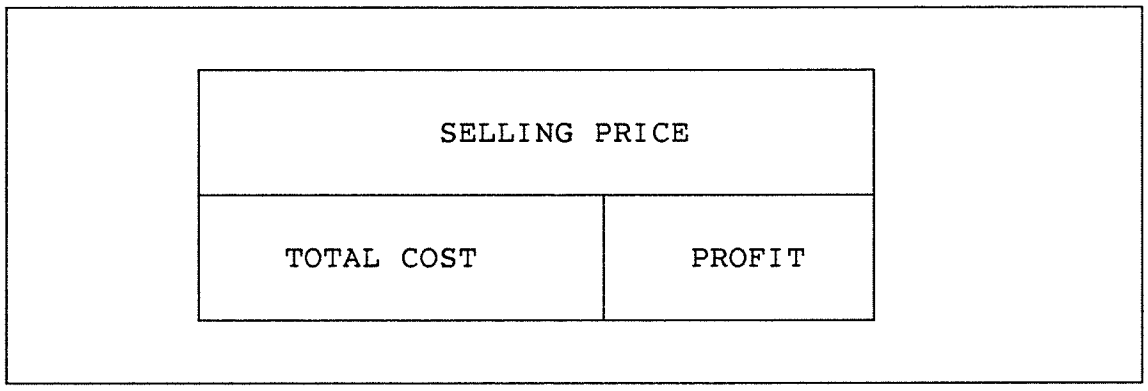

Figure 1: Profit Relation Diagram

There are two ways to make profit: either by increasing the selling price and/or decreasing the product cost. The relation between profit, selling price and total product cost is presented in the above equation. The amount by which the selling price can be increased is often limited due to market competition leaving mainly the other alternative of cost reduction. A third alternative is to reduce the manufacturing cost and raise the selling price simultaneously. However, raising the selling price may decrease the selling quantity which in turn affects the manufacturing quantity.

The maximum selling price is relatively easy to determine and often is the existing one. On the other hand, the total cost is a very difficult issue due to the complex nature of business operations.

Although the composition of the total cost is complicated, it can be briefly described as the combination of direct material expenses, direct labour expenses, factory expenses, general expenses and sales expenses. These are shown in figure 2.

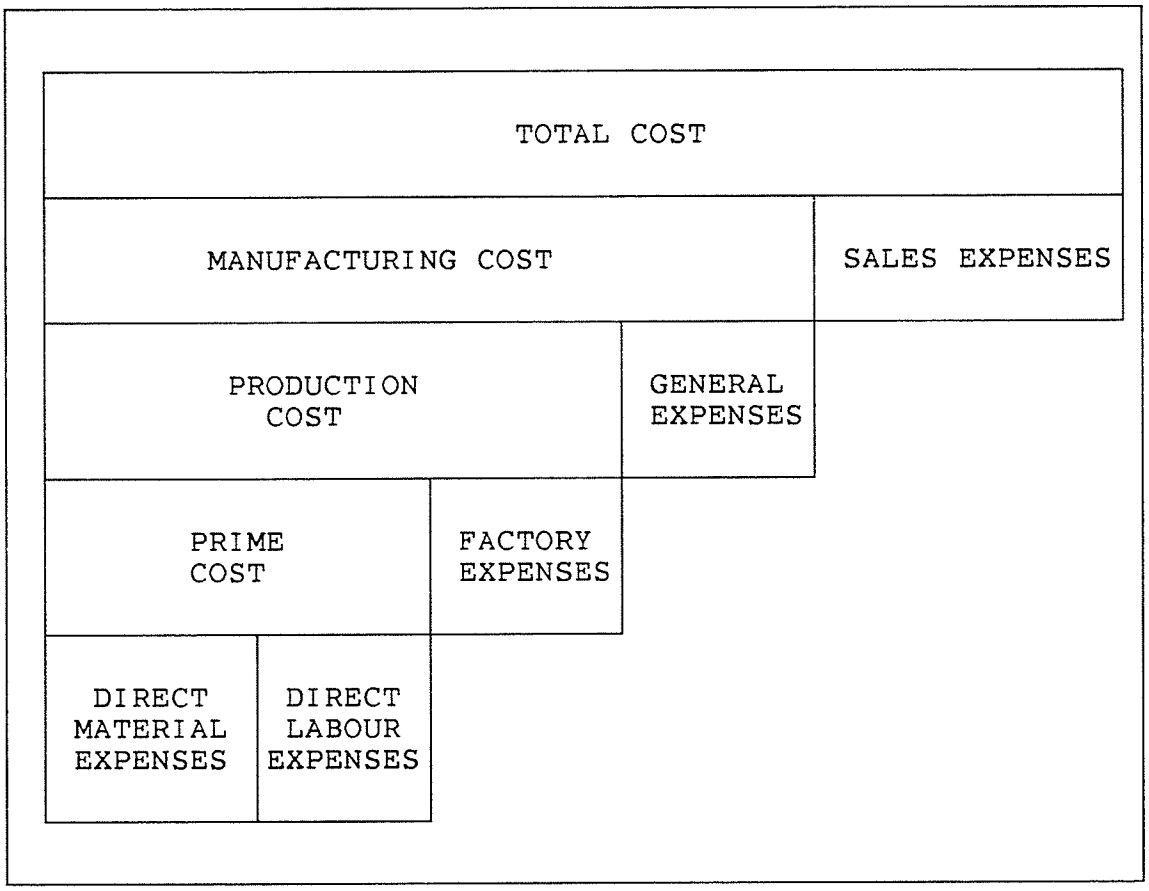

Figure 2: Components of Total Cost

An important aspect of any business operation is waste. Waste exists within every organization, including manufacturing firms. This is an undeniable fact, whether recognized or not by the management of the company. It is most fortunate when company management realizes its existence. This lead to an important aspect of company operation. It makes them sensitive to new ideas and methods to increase effectiveness and efficiency of operations and thus to increase the productivity of the business.

The improvement of productivity is the single most critical issue in today's industrial world. The fundamental idea of productivity improvement is to eliminate, as much as possible, all waste: of physical, human as well as of financial resources. One often refers to "technical wastes defined as the technical inputs of a manufacturing system. An example of technical wastes is the misuse of a skilled worker. Physical waste often refers to the physical input to the manufacturing system. This commonly refers to the raw material used. It is common for manufacturing companies to misuse these resources. Hence, to improve the productivity of a company one must reduce unnecessary use of raw material and avoid misuse, idleness or underutilization of the technical skill and knowledge of its employees or the true capabilities of the production machinery and organizational systems. The best way to identify and achieve possible waste reductions is through what is called "cost reduction".

Cost reduction is not possible without a good cost control system in place.

The common feature of available cost control techniques is control based on standards, i.e. the comparison of actual cost with a standard cost in order to determine if the company is under control. These standards are however often derived from only an estimation of actual facts. This indicates that the state of control is unclear and really

unknown. It is obvious that any standard derived from estimates only must, in general, be imprecise and often misleading. Therefore, it is important to measure the actual state of control from available information rather than using estimates. It is important to note that the business environment changes continuously. Information can be easily outdated within days. Therefore the success of any cost control method depends greatly on the quality of information supplied and used. Comparisons based on undocumented information will not provide an accurate picture of the state of control within a company.

There is of course a price associated with the degree of control attained by a company. The cost of the degree of control is usually traded against an acceptable level of risk and uncertainty in the business operation. The consequences of the lack of good information will lead to poor business operations and possibly business failure.

The relationship of input, output, and waste is present in figure 3.

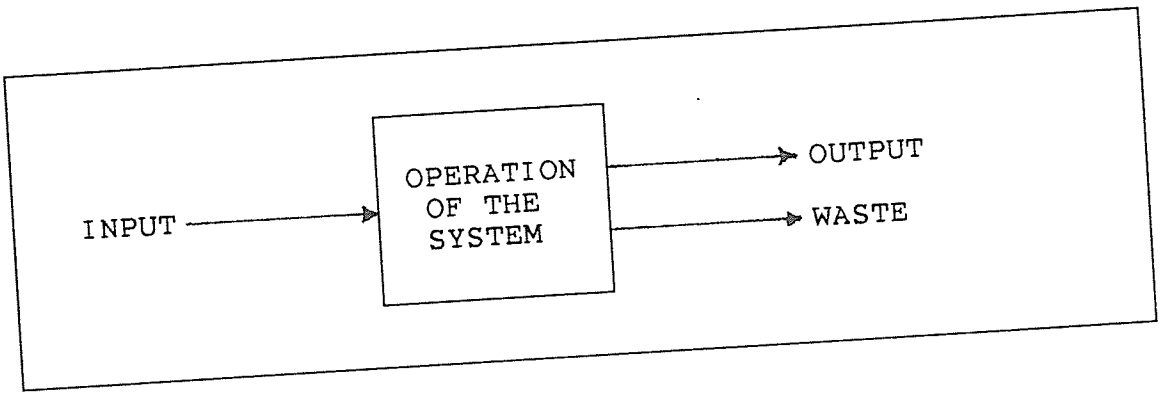

Figure 3: System Operation Diagram

1.2 HISTORICAL ROLE OF SMALL BUSINESS

Small business has played an important part in the prosperity of many ancient cultures. The Arabs, Babylonians, Chinese, Egyptians, Greeks, Indians, Jews, Phoenicians, and Romans all excelled as small business people.

In order to prevent cheating and defrauding, the King of Babylon, drafted a code of 300 laws to protect consumers and small business people in 2100 B.C.. These have been preserved on 8-foot marble columns now residing at the Louvre Museum in Paris. About 300 B.C. Fan Li a state minister of China wrote the "Ten Approaches to Opulence" to serve as an operational guide-line for businessmen.

The Arab businessmen discovered the "Silk Route". The Phoenicians merchant ships dominated the Mediterranean Sea. Both the "Silk Route" and the Mediterranean Sea served as an

important channel for cultural and commercial exchanges between east and west. Without business and trading civilization would not have grown.

Although the contribution of the businessman to human history is so significant and important, small business history has never excited the public mind. Most Greek and Roman historians virtually ignored small business. In their view, ideas and military deeds were the stuff of history. Yet it was largely through small business that civilization was spread to all four corner of the then-known world. [Ref.10,P.2]

Throughout history, small business people were often mistreated. Businessmen were often placed in lower social category (if not the lowest) by Chinese Emperors. The Roman Catholic Church also held small business people in low esteem.

Recently, the gap has been narrowed as more and more writers praise the achievements of inventive and innovative small businesses.

The foregoing comments barely scratch the surface of the history and contribution of small business. For a scholarly and well-written history of business, the reader is referred to "A History of Business" (2 volumes) by Miriam Beard and "The World of Business" (4 volumes) by Edward C. Buask, Donald T. Clark, and Ralph W. Hidy. [Ref.10,P.3-4]

1.3 HIGHLIGHTS OF THE HISTORY OF COST CONTROL

The earliest formal developments of costing systems can be dated back to the twelfth and thirteenth centuries. The accurate records and accounts of voyages kept by the Genoese ships' scribes were designed to permit fair sharing of expenses of the voyages between the proprietors and merchants.

The earliest uses of cost control can be dated back to the 13th century when Henry VII was King of England. Small central wool textiles workshops found themselves competing not only against the guilds, but also among themselves, more accurate records of costs became imperative and almost a prerequiste for survival. [Ref.13,P.3]

During the 15th century, the Fugger family kept detailed records on production and costs of operating a silver mine. This was the first evidence of the use of the concept of a cost of production.

During 1675 - 1725, dozens of volumes of accounting techniques were published in England to set rules for cost accounting. It is the Industrial Revolution that led to the cost control emphasis in factory systems.

In 1697 John Collins published a book called " The Perfect Method of Merchants Accompts" in London to conduct factory accounting.

In 1750, James Dodson published "The Accountant" or "The Method of Bookkeeping". The significant features were that he showed clearly "the processes through which the materials went and the division into different types of shoes." [Ref.13,P.36]

For unknown reasons Cost Accounting was ignored in the early 19th century

In 1817, Anseline Payen published a book in Paris, entitled "Essai sur la tenue Livres d'une Manufacturies". This is the first clear illustration of job costing and process costing system as known today.

In 1827, M. Godard wrote the "Traite' General et Sommaire de la Comptabilite' Commerciale". This is the first publication on the treatment of deferred costs.

In 1850, Whitin of U.S.A. presented the first cost philosophy. This is also the time when wages began to be calculated in terms of hours of labour.

In 1887, Accounts Separations are discussed by W. W. Cauley with regards to Selby Iron Works.

In 1920 L. W. Hawkins published the 4th edition of "Cost Accounts" in England. Similarly, many parallel efforts in this field were being done at that time in the U.S.A..

In 1956, the American Association of Cost Engineers, established in 1956 at the University of New Hampshire, has determined that the degree of accuracy of a cost analysis is dependent on the extent and quality of information available at the time of the study.

However, the work on cost control did not stop. Cost Accounting and Cost Engineering have been increasing in importance steadily due to pressures of dimimishing resources in intense competition. As new developments have been introduced, cost control has evolved from strictly record keeping to an information-oriented science. A chronological highlighting of cost control history is presented in figure 4.

12 century	Genoese Ships' Account
13 century	Woolen Worker against Guilds in England
15 century	Fugger Account
1675	Rules of Accounting Techniques developed in England.
1697	John Collins publish "The Perfect Method of Merchants Accompts"
1750	James Dodson published "The Accountant" or "The Method of Bookkeeping"
1817	Anselme Payen Published "Essai sur la tenue Livres d'une Manufacturies."
1827	M. Godard wrote "Traite' General et Sommaire de la Comptabilite Commerciale"
1850	Whitin of U.S.A. presented the first Philosophy of cost.
1887	W. W. Canley discussed the "Seperation of Account" of Shelby Iron Works.
1920	L. W. Hawkins published "Cost Accounts 4th Edition"
1956	The American Association of Cost Engineers determine the accuracy of cost analysis is based upon the accuracy of information that can be obtained.

Figure 4: Chronological Highlights of Cost Control History

1.4 DEFINITION OF SMALL BUSINESS

It is a real challenge to make a precise definition of small business. Generally, people define a business as big or small by instinct. However, this is not a meaningful explanation, if any serious work is to be attempted.

The Committee on Economic Development (CED) of the U.S.A., uses a cross-section of characteristics to define small business. A small business is one which possesses at least two of the following four characteristics:

1. Management of the firm is independent. Usually the managers are also the owners.
2. Capital is supplied and the ownership is held by an individual or a small group.
3. The area of operations is mainly local, with the workers and owners living in one community. However markets need not be local.
4. The relative size of the firm within its industry must be small when compared with biggest units in its field. This measure can be in terms of sales volume, number of employees or other significant parameters.

[Ref.45,p.4-5]

The government of Canada define Small Business by less complicated criteria: the number of employees must not exceed fifty for service industries and one hundred for manufacturing industries, and the gross sales volume must be less than two million dollars per year.

These two different sets of definitions can be taken as the best available for the identification of small businesses.

1.4.1 Manufacturing

A manufacturing business can be seen as an integrated unit of people, money, materials and machines designed to transform raw materials into an end product. The end product may be materials or machines for other manufacturing or services businesses. Another way to distinguish manufacturing businesses as being different from other businesses is by the significantly higher level of machinery utilization.

1.5 CONTROL AND INFORMATION

Most of us think we have our own lives under reasonable control. We guide ourselves to reach our goals or objectives and try to correct our actions whenever we stray from the path to our goals. An organization of managers and workers must be similarly motivated and guided to do the things its leaders want it to do and must also be corrected when it departs from the pursuit of these corporate goals. Management must keep an organization under control so that it will do what it is supposed to do.

C. West Churchman has defined information as a " recorded experience which is useful for decision-making." In organizations, information comes in so many shapes and forms, both quantitative and qualitative, that it is frequently difficult to determine which recorded experience is useful for decisions and should be included as part of the management's control systems.

From a management control system perspective, the most useful definition of information is that it is a product that reduces uncertainty regarding which act to perform or reassures a decision-maker regarding a prior action. The businessman with the option of buying either product A or product B is given information when the management control system reveals that product A will contribute more to organization's strategic objectives.

A second characteristic of information is that it may perform an awareness function. When management control systems have a responsibility for contributing to the development of organization strategies, in addition to the primary responsibility of assuring that these strategies are carried out, a definition of information as a product that reveals possible opportunities for organizational action is very useful. This definition complements the first role of information by assuring that more alternative courses of action are considered by the decision-maker.

A third characteristic of information is that it serves the evaluation function. It is relevant to that aspect of management control systems that discloses the extent that planned actions and expected outcomes are realized.

These characteristics are not directly useful in developing management control systems, but they are background concepts useful in identifying the type of information to be used in management control system. [Ref.1,P.148-149] A schematic diagram of a typical management control system is presented in figure 5.

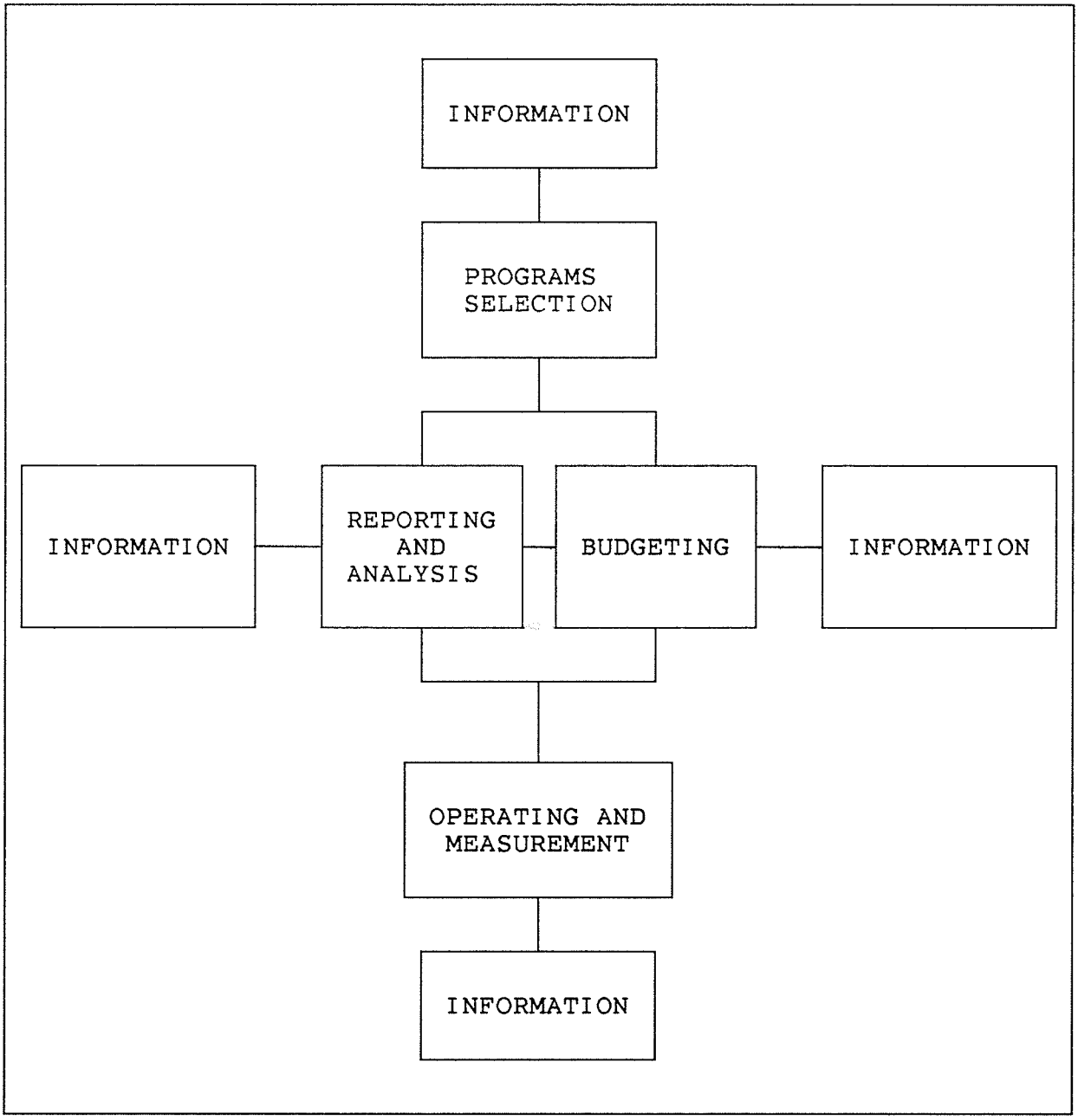

Figure 5: Management Control Cycle

1.6 DEFINITION OF COST CONTROL

Different professionals have different view-points on cost control within an organization. Therefore, various definitions of cost control have resulted. However, the definition that is most appropriate is described by Trevor J. Bentley:

" Cost control should be a continuous activity aimed at improving efficiency and quality by ensuring that the right resources are provided and efficiently used. Cost control is not concerned only with meeting anticipated levels, it is also concerned with understanding how and why costs change. It is concerned with the setting of performance standards and the monitoring of actual results against these standards; and , finally, it is concerned with people attitudes and motivation when handling money that is not their own." [Ref.4,P.7]

1.7 DEFINITION OF INTERNAL CONTROL

It is important to define the term "Internal Control". After all "Cost Control" will not be adequately carried out if internal control is not properly installed within an organization and vice versa.

"The plan of organization and all the coordinated methods and measures adopted within a business to safeguard its assets, ensure the accuracy and reliability of the accounting data, promote operational efficiency and maintain adherence to prescribed policies. The concept of internal control encompasses internal administrative control, internal accounting control, internal audit and internal check". This is a complete definition of Internal Control by the Canadian Institute of Charter Accounting (CICA) published in the book "Terminology for Accountants"

1.8 DEFINITION OF INTERNAL CHECK

"A system of allocation of responsibility, division of work and method of recording transactions whereby the work of an employee or group of employees is checked continuously by having to be in agreement with the work of others or by being dependent upon or otherwise correlated with the work of other employees. An essential feature is that no one employee or group of employees has exclusive control over any transactions of group of transactions. Internal check should not be confused with internal control of which internal check in an important element."

This definition of internal check is included in "Teminology for Accountants", 1962, P.38.

1.9 COST BEHAVIOUR

There is always a cost associated with any action taken within a company. Different actions will generate different cost patterns which require some form of distinction to avoid confusion. Generally, there are fixed costs, variable costs, direct costs, indirect costs, mixed costs, controllable costs and noncontrollable costs.

1.9.1 Fixed, Variable and Mixed Costs

Fixed costs may be defined as costs which do not rise or fall in response to variations in the volume of production within a given period, e.g. depreciation of buildings.

Variable costs may be defined as costs which change in response to variation in the volume of production, e.g. cost of electric power, or materials.

Mixed costs are costs that have a hybrid nature of variable costs and fixed costs, e.g. sales commissions.

Generally speaking fixed costs, variable costs and mixed costs are the fundamental components of total cost. Their quantitative relationship is presented by the following equation:

TOTAL COST = VARIABLE COSTS + FIXED COSTS + MIXED COSTS

Figure 6 shows the pattern of fixed and variable costs.

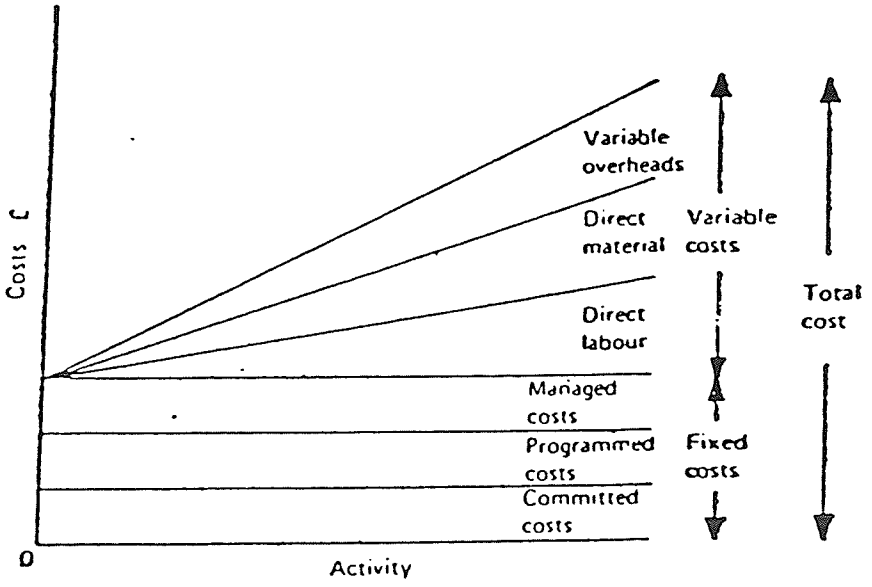

Figure 6: Cost Pattern

[Ref.54, P.9]

1.9.2 Direct and Indirect Cost

Direct costs are costs that can be charged directly to a company's operations - for example, materials and labor. Indirect costs are costs which are indirectly associated with a company's operations - for example: administrative expenses.

1.9.3 Controllable and Noncontrollable Costs

To our knowledge, controllable costs have never been properly defined in any text. Charles T. Horngren defines controllable costs as those that are definitely influenced by a given manager within a given time span. He then explains the problems encountered using this definition. In any real situation no cost is directly and solely under one person's influence, and the components of the costs can be influenced by several managers.

Controllable cost can best be defined as costs for which complete, detailed information associated with that cost is traceable and further information is obtainable. Cost such as direct material costs excluding waste or scrap are controllable costs.

Noncontrollable cost are costs for which the associated information is not traceable and further required information is not available. Costs such as waste or scrap are noncontrollable costs.

Chapter II

BUDGETING

Budgeting is a widely accepted practice in business operations. The primary purpose of a budget is to establish a monetary guide-line for business operations. Another feature of budget recognized by management is its ability to communicate and present a company's performance. Budgeting allows separating and identifying specific business activities and the allocation of their supervision to identifiable persons (eg. department budgets, such as engineering department budget, marketing department budget, etc..) Budgets such as a company's operations budget can be viewed as functional budgets. Different budgets have different purposes and are designed to serve different managers to assist in decisional control of the company. Every company will have a general budget made up of several more specific budgets, each used to review the general as well as more particular aspects of the company's operations.

A budget is usually drawn up by establishing a series of standards or goals. Therefore, the accuracy of the budget straightly is a direct function of the accuracy of the standards.

These standards are however usually established by estimation. This results in a major source of errors due to standards arrived by incorrect, inprecise or incomplete input of information.

2.1 MASTER BUDGETS

Most organizations are too large to permit the detail planning of all their activities in one budget, so it becomes necessary to use a summary approach that is contained in a master budget. Essentially the master budget is a consolidated summary of all the detailed budgets showing their outcomes in terms of their contribution to overall results.

Figure 7 shows a simplified diagram of the various parts of the master budget, the comprehensive plan. As indicated in the diagram, many subsidiary budget schedules are necessary in actual practice.

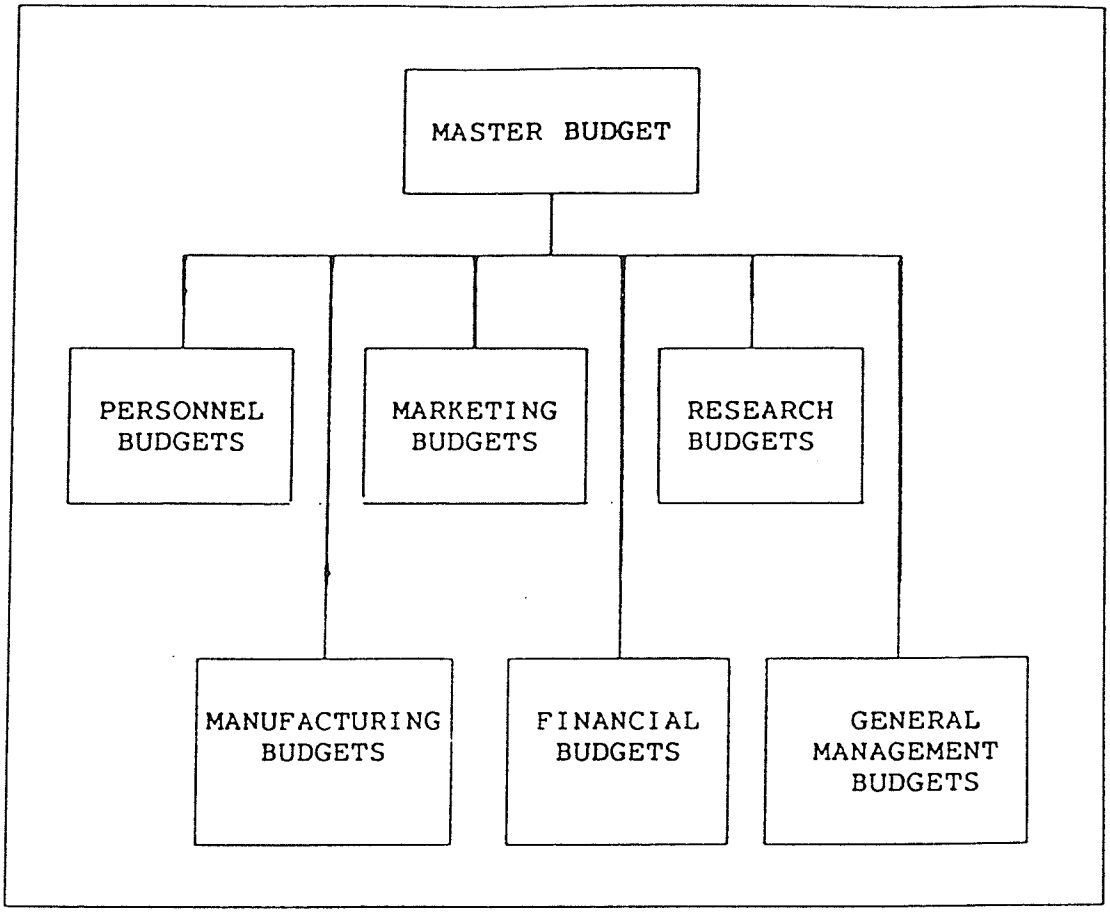

Figure 7: Master Budget

2.2 FIXED BUDGETS

A fixed budget is one that is compiled for a given set of assumed operating conditions and for a clearly specified but estimated level of activity, and which management proposes to leave unchanged during the period to which it relates - regardless of changes in the actual level of activity experienced or in the conditions facing the company during that period. [Ref.54,P.136]

Figure 8 illustrates a fixed budget for factory overhead. A fixed budget should be regularly revised, but this is costly and time consuming.

Variable Cost	Cost per Sales Dollar	Amount
Sales commissions	$.05	$ 25,000
Clerical	.02	10,000
Supplies	.02	10,000
Travel	.03	15,000
Distribution	.06	30,000
Royalties	.03	15,000
Total variable costs		105,000
Fixed Costs		
Sales salaries		52,000
Advertising		27,000
Entertainment		12,000
Maintenance		9,000
Depreciation		8,000
Supplies		4,000
Insurance		3,500
Property taxes		2,500
Total fixed costs		118,000
Total budgeted marketing costs		$223,000

Figure 8: Fixed Budget

[Ref.25, P.331]

It is important to realize that budget levels should be set on the basis of what is likely to happen in the future, rather than on the evidence of what has happened in the past. There can be no doubt that experience from the past is extremely useful in forward planning, but past mistakes should not be propagated, and making estimates of the future on the basis of a rule of thumb such as last year's figure plus 10 percent is not to be recommended. [Ref.54,P.137]

The determination of a good fixed budget depends on how great is the control of information of the company. It is the amount of control the company experiences that determines the success of the operation. That is, the quality and quantity of information ensures the quality of the control. Without complete control the company is making budget under an out-of-control situation. It is obvious that no company can arrive at an acceptable budget under such conditions.

2.3 FLEXIBLE BUDGETS

A flexible budget is a set of alternative budget plans pertaining to different expected levels of activity. By comparing the actual results achieved during a period for a realized level of activity with the budgeted performance for

that same level of activity it is possible to evaluate performance efficiency in a meaningful way.

The flexible budget is based on the fundamental difference in the behaviour of fixed costs, variable costs, and mixed costs. Since fixed costs do not vary with short-run fluctuations in activity it can be seen that the flexible budget will really consists of two parts: the first is a fixed budget made up of fixed costs, such as rates and salaries, and the fixed component of mixed costs - such as the rental portion of telephone charges, with the portion relating to actual number of calls being a variable cost. The second part is a traceable flexible budget that consists solely of variable costs. [Ref.54,P.138]

If management is not exercising control over the company, there is no way a flexible budget can be drawn. Therefore an inaccurate flexible budget will lead to nothing but further deviation from control. The amount of control is heavily dependent on the amount of control exercised by the company's management. Fig.9 illustrates a flexible budget for factory overhead.

[Ref.25, P.338]

Cost	30,000 Meals		40,000 Meals	
	Fixed	Variable	Fixed	Variable
Administrative salaries	$ 40,000	$ 0	$ 40,000	$ 0
Clerical Wages	8,000	0	8,000	0
Kitchen employee wages	32,000	9,000	32,000	12,000
Depreciation, building	28,000	0	28,000	0
Depreciation, equipment	14,000	0	14,000	0
Utilities	6,000	4,500	6,000	6,000
Food costs	0	45,000	0	60,000
Kitchen supplies	4,000	7,500	4,000	10,000
Maintenance	16,000	1,500	16,000	2,000
Employee benefits	8,000	900	8,000	1,200
Uniform and linen cleaning	3,000	600	3,000	800
Computer services	2,000	0	2,000	0
Miscellaneous	2,000	1,200	2,000	1,600
Totals	$163,000	$70,200	$163,000	$93,600

Figure 9: Flexible Budget

2.4 GENERAL VIEW OF BUDGETS

As stated before, budgeting is a major feature of most existing control systems. It is generally believed that when a budget is drawn up properly, it will assist in (a) planning, (b) judging performance and (c) coordination of corporate activities.

2.4.1 Planning

Planning is an essential element of modern management techniques. A good plan of action will make operation more smooth and effective. For most small business, the most important benefit of budgeting is in forcing management to prepare a plan. Management is forced to look into the requirements of the company, the targets of the company, directions of the company, results of the above conditions, and the implications on future policies.

Budgets affect the formulation of overall organization strategies and help to implement such strategies. Thus strategic planning (long range planning) is often directly affected by budgets according to Business Week (February 19, 1979, page 55).

2.4.2 Judging Performance

As a basis for judging actual results, budgeted performance is generally viewed as being a better criterion than past performance. The fact that sales are better than last year's, or that direct-labor costs are lower than last year's, may be encouraging, but it is by no means conclusive

as a measure of success. A major weakness of using historical data for judging performance is that inefficiencies may be buried in the past performance. Furthermore, the usefulness of comparisons with the past may be hampered by intervening changes in technology, personnel, products, competition, and general economic conditions. [Ref.19,P.132]

2.4.3 Coordination of Activities

Coordination is the meshing and balancing of all factors of production and of all the departments and functions of the organization so that its objectives are attained , that is , the interests of the individual managers are subordinated for the benefit of the organization as a whole.

Budgeting helps management to coordinate in several ways:

The existence of a well - laid plan is the major step toward achieving coordination. Executives are forced to think of the relationships among individual operations, and the company as a whole.

Budgets help to restrain the empire-building efforts of executives. Budgets broaden individual thinking by helping to remove unconscious bias on the part of engineers, sales managers and production officers.

Budgets help to search out weaknesses in the organizational structure. The formulation and administration of budgets isolate problems of communications, of fixing responsibility, and of working relationships. [Ref.19,P.133]

2.5 DISADVANTAGES OF BUDGETING

Every method has certain weaknesses. Budgeting, although generally accepted as the best method in cost control, it has however several major disadvantages implicit in it. Therefore, it is important to identify these disadvantages in order to highlight the importance of our proposed method.

2.5.1 Weakness of Historical Data

It is often true that budgets are set up using historical data. As mentioned in an earlier section, historical data is not a good source of information, because it only justifies past performance. It is not a correct action to set guide-lines based upon past experience, because different situations may require different methods. However, if the situation is unchanged then such guide-line

may hold true. As a matter of fact, since the business world is a constantly changing environment, every budget which is based on historical data alone lacks flexibility. Although some flexible budgets try to indicate some estimation of possible changes, these are also only estimates. The real situation may be significantly different.

2.5.2 Estimation of Results

This issue has been brought out in a previous section. Estimation of results is often reflected in the flexible budget and in the company's future planning budget. Each budget only provides certain estimates of what may happen in the future. The deviation is often obvious when compared to actual results. The use of estimated values is thus a major weakness of the budgeting process.

2.5.3 Inflexibility

Another weakness of budgets is their slow response to change. Preparation of budgets is often tedious and takes a long time because of the involved process. Often data has

to be collected and separated into different accounts and then summarized before it can be integrated into the budget. It is even more tedious to prepare a master budget, because it contains several different budgets. Therefore, if any changes occur then it is often not easy to revise the budget.

2.5.4 Economics

Budgets are often costly to prepare because of the amount and effort required to sort and analyse data. If any aspect has to be modified then the whole process has to be repeated all over again. Strictly speaking, although it seems to be a necessary evil and very useful tool, it is very difficult to justify financially the preparation of budgets.

Chapter III

STANDARD COSTS

Standard costs are costs that should be obtained under efficient operations. They are predetermined costs and represent targets that are an essential feature of cost control. An important measure of performance is derived from a comparison of actual performance and standard performance.

The establishing of standards as a basis for setting standard costs is an important part of the work of the industrial engineer. Without standards, a company's management has no way of knowing if the company's overall performance, or the performance of one of its divisions, etc., was average, below average or exceptional.

The purposes for which costs standards can be used are to identify areas of inefficiency, to measure these inefficiencies, and to bring these inefficiencies to the attention of those who have authority to take corrective action. [Ref.53,P.231]

The establishing of standards as a basis for setting standard costs is an important part of the work of the industrial engineer. [Ref.53,P.232]

To use standard costs in any circumstance, there are three requirements:

1. the ability to establish a meaningful standard in physical and monetary terms.
2. a system for measuring actual quantities and costs at the same level as the standards.
3. the facilities to calculate variances on a time scale that will allow corrective action to be taken. [Ref.4,P.136]

However, most of the inadequate standards setting up in any company are due to lack of on time, accurate, precise and detailed information. The above hinderances cause numerous ineffective and inefficient company operations. Therefore, a desirable standard is very difficult to establish.

3.1 STANDARD COST THEORY

The "Standard Costs Theory" controls and reduces costs by setting a standard for every expected area of costs. These standards, recorded together, provide a basic operational budget. Actual costs are measured against the established standards. Cost and variance statements, together with the budget complete the basic paperwork required to implement the system.

Cost standards, showing actual costs, and variance statements showing the difference between established standards and actual costs, are prepared by the person responsible for the phase of work being considered. This acts as a measure of the effectiveness of individual supervison in controlling costs.

3.2 DISTINCTION BETWEEN COST STANDARDS AND COST ESTIMATES

The distinction between cost standards and cost estimates is based on the amount of study put into establishing these costs.

A "cost estimate" may be only one person's off-hand guess of what future costs will be or should be, or it may be an intelligent judgement based on the opinions of several individuals. The term "standard costs", on the other hand, usually refers to a set of preestablished costs based on the result of careful study. A thorough investigation is made of ideal and reasonable range of raw materials; time and motion studies are made of labor operations, and individual machine and total plant capacities are analyzed in detail.

3.3 DISTINCTION BETWEEN BUDGET AND STANDARD

A budget is a prediction of probable future results that has been formalized into a plan whereas a standard is a cost level that should be achieved by efficient working under prevailing conditions. Budgets are also authorizations to spend, or to limit spending, and are prepared for all departments and operations of a company. Standards are simply benchmarks that tend to be restricted to manufacturing activities.

3.4 DIFFERENT KINDS OF STANDARD COSTS

There are two major classification of standard costs: basic standard cost and current standard cost.

Basic standard costs are those which are not changed unless there are important alterations in the nature or sequence of manufacturing operations. Current standard costs are those which undergo periodic revision in order to reflect changes in methods and prices. Basic standards are, therefore, useful for long-run analysis of variances, while current standards are more suited to short-run analysis. A general agreement in practice among the cost accountants is

that, if standard costs are to be used, they must be current. After a short period of time has elapsed, basic standards are no longer realistic in view of technological and price-level changes. Thus, if financial statements are to reflect reality at all, basic standard are of no value.

3.5 VARIANCE ANALYSIS

The major importance of variance analysis is to alert management that revision of costs expenditures is necessary if the variance is significant. Variances are generally classified as direct material variance, direct labour variance, and overhead variance, attention is focused on possible causes of deviations.

Variance is merely a difference between two observations, and is a comparison of actual cost and standard cost. The major interest is to use them to explain why differences occur.

3.5.1 Direct Material Variance

Four direct material variances will be considered: price variance, quantity variance, mix variance and yield variance.

3.5.1.1 Material Price Variance

The material price variance measures the difference between the actual cost of material and the standard cost expected to be paid for the material. If the actual cost is greater than the standard cost, the variance is unfavourable. A favourable variance occure if the actual cost is less than the standard cost. The formular is present as follow.

$$MPV = (AP - SP) \times AQ$$

Where MPV = material price variance

AP = actual price per unit

SP = standard price per unit

AQ = actual quantity bought

3.5.1.2 Material Quantity Variance

If material is purchased as it is used, the actual quantity used in production is the quantity used to compute the material price variance.

$$MUV = (AQ - SQ) \times SP$$

Where MUV = direct material quantity variance

SQ = standard quantity

AQ = actual quantity used

SP = standard price per unit

3.5.1.3 Materials Mix Variance

In certain processing industries where raw materials are mixed together in standard proportions, it is sometime found that there is a temporay shortage of one type of material and so a substitute must be used. This involves varying the standard mix of materials. This also happens if the standard materials are blended in non-standard proportions. Since different materials have different costs, the cost of an actual (i.e. non-standard) mix will vary from the standard cost of the standard mix and thus give rise to a direct material mix variance.

$$MMV = \sum_{i=1}^{N} AQ\ SC - \sum_{i=1}^{N} SQ\ SC$$

Where MMV = direct material mix variance

AQ = actual quantity of material

SQ = standard quantity of material

SC = standard cost of material

N = number of material types

3.5.1.4 Material Yield Variance

As a result of some chemical reaction in chemical manufacturing processes, the non-standard materials mix may produce less than standard quantity. Output less than desired input is common in chemical processing and can be allowed for by means of a control system.

$$MYV = (AY - SY) \times SC$$

Where MYV = material yield variance

SY = standard yield

AY = actual yield

SC = standard cost of standard mix

3.5.2 Direct Labour Variance

The variances stemming from differences between actual labour costs and standard labour cost that will be discussed are direct labour rate variance, efficiency variance and mix variance.

3.5.2.1 Labour Rate Variance

It is used when a worker of higher grade than was initially intended is selected for the job.

$$LRV = (AR - SR) \times SH$$

where LRV = labour rate variance
SR = standard direct labour rate per hour
AR = actual direct labour rate per hour
SH = standard direct labour hours

3.5.2.2 Labour Efficiency Variance

If the skilled operator performed the required work in less time than originally planned then this variance will come into effect.

$$LEV = (AH - SH) \times SR$$

where LEV = direct labour efficiency variance
SH = standard hours allowed
AH = actual hours taken
SR = Standard direct labour rate per hour

3.5.2.3 Labour Mix Variance

If there is a mixed level of labour, such as skilled, semi-skilled, and non-skilled then a labour mix variance is required to analyse the actual and standard labour comparison.

$$LMV = \left(\sum_{i=1}^{N} AL - \sum_{i=1}^{N} SL\right) \times SC$$

where LMV = direct labour mix variance
AL = actual labour hours
SL = standard labour hours

SC = standard labour rate

N = number of labour type

3.5.3 Overhead Variance

There are generally three types of variances: budget variance, efficiency variance and capacity variance.

3.5.3.1 Budget Variances

The analysis of overhead variance can be performed by dealing initially with variable overhead, and then with fixed overhead. Since variable overhead is directly proportional to output, therefore, the only variance which can normally arise is a budgetary variance caused by a difference in prices, i.e. actual prices ≠ budget prices.

3.5.3.2 Variable Overhead Efficiency Variance

Variable overhead efficiency variance may be found because a larger or smaller amount of an overhead item has been consumed for a given level of output than the quantity budgeted. Similarly, when direct labour hours are used to absorb variable overheads, a difference between actual direct labour hours and standard direct labour hours will result in a variable overhead efficiency variance given by the formula:

$$VOEV = (AH - SH) \times VR$$

where VOEV = variable overhead efficiency variance
AH = actual direct labour hours
SH = standard direct labour hours
VR = variable overhead recovery rate per direct labour hour

3.5.3.3 Fixed Overhead Capacity Variance

The fixed overhead capacity variance is a measure of the spread difference between the fixed overhead costs budgeted compared to what is actually experienced.

$$FOCV = (NAH - AH) \times FOR$$

where FOCV = fixed overhead capacity variance

NAH = normal activity in hours

AH = actual direct labour hours

FOR = fixed overhead rate

3.5.4 Advantage of Standard Costs

1. Standard costs focus attention on cost elements that are out of line or different from the preestablished costs. The manager doesn't have to wade through a lot of cost information that has little value for decision making. He can concentrate on the out of line costs, which are important to him.
2. Actual costs may not be available until after actual production, but standard costs provide information when it is needed. They can be used in planning production schedules and in establishing selling prices for use in catalogs or in making bids.
3. Used in the ledger accounts, standard costs usually simplify procedures and lower the cost of record keeping.
4. The use of reasonable preestablished costs motivates employees to try to help the company reach its objectives. It encourages standardization and

coordination of activities and help to develop cost-conscious employees at all levels.

3.5.5 Limitation of Cost Standard

1. Limitation in the precision of standard setting.
2. Limited in the degree to which it is practical to analyze cost deviations.
3. Limitation in office force. In many small plants, one person carries almost the entire burden of controlling production costs.
4. Lack of useful, available past data.
5. Frequent revision of standard is required.

Chapter IV

RELATIONSHIP BETWEEN BUDGETING AND STANDARD COSTS

In this final chapter, a summary of budgeting and standard cost are presented with emphasis on their application in small business. It can be summarily stated that budgeting cannot be established without standard cost data. Similarly standard costs cannot be formed without budgeting data. Therefore, the relationship of budgeting and standard is one of mutual need and support.

4.1 SUMMARY OF BUDGETING

A budget is a comprehensive quantitative plan for the utilization of an entity's resources for some specific time period. The budgetary entity must be carefully defined to ensure that the specific activity, project, or function is represented by the budget. The amount of detail provided in the budget is determined by the information needs of the user. Budgets force periodic planning, improve coordination and communication, and require quantification of plans. A

budget provides a performance measurement framework, creates cost awareness, and promotes goal orientation.

Planning and control are the two basic functions of budgeting. Planning involves the entire budget development process. Control is exercised by comparing actual results with budgeted data. The reporting process alone does not ensure control; it merely provides performance measures. Control should involve typing budget performance to the organization's reward structure.

The total budgetary package for an organization is called the master budget. It includes the operating budget and the financial budget. The operating budget describes the expected results of future operations of the organization. For a manufacturing firm it includes budgeted sales, inventories, materials, direct labor, manufacturing overhead, cost of goods manufactured, cost of goods sold, administrative expenses, marketing expenses, and net income. The financial budget includes budgeted capital expenditures, cash flows, balance sheets, and changes in financial position. In addition, many special budgets may be prepared to suit the needs of management and provide help in preparing the operating and financial budgets.

Participative budgeting refers to the active involvement of all levels of management in the budgeting process. Budgets should not be imposed but rather should be developed

with the input of managers with budgetary responsibility. Budgets should never be used purely as pressure devices.

4.2 SUMMARY OF STANDARD COSTS

Standard costs are carefully predetermined costs. They are convenient measures of performance usually expressed in terms of cost per unit. A standard usually consists of two parts, a quantity and a cost. Standards are used for cost control, pricing decisions, performance appraisal, cost awareness, and management by objective. Ideal standards are very tight, reflecting a production utopia. Basic standards are created for use over a period of time. Currently attainable standards are the most widely used. They reflect desirable performance given normal production problems.

There are three basic activities in a standard cost system. They are standard setting, accumulating actual costs and variance analysis. Standard setting is an important and difficult task involving many variables. Standards are usually set by a standards committee with representation from all parts of the organization affected by the standards. Inputs from engineering and technological studies assist the committee in setting standards. Management's desires in setting standards are tempered by

the environment, particularly by affected employees and labour unions. Standards must be revised frequently to remain current if they are to be useful for performance evaluation.

Variance analysis is the systematic evaluation of variances to provide managers with useful information. Variance analysis is performed for all three types of manufacturing cost elements - direct materials, direct labour and manufacturing overhead. Variance analysis answers two questions: What is the amount of the variance? Why did the variance occur? The first question is answered by performing computations on data gathered in the standard cost system. The answer to the second question requires more subjective evaluations of the operations and cost data. A variance is expressed in dollar amounts and is identified as favorable or unfavorable. Favorable variances mean that actual costs or quantities are less than standard. Unfavorable variances mean that actual costs or quantities are greater than standard. Most firms incorporate their standard cost system into their formal accounting system. Costs are recorded at standard, and any difference is recorded in a variance account. Unfavorable variances have debit balances and favorable variances have credit balances.

A material price variance occurs when the actual price of materials is different from the standard price. A material quantity variance results from using more or less than the standard amount of materials. The labour rate variance

occurs because the actual labour rate was different than the standard labour rate. The labour efficiency variance occurs because the number of actual direct labour hours worked was more or less than standard.

Once computed, variances should be reported to provide management with a maximum amount of useful information. Variance reports should be tailored to the information requirements of management, and many formats are possible.

Technically, only actual costs may be reported in external financial statements. However, if variances are not material, standard costs may be used for the financial statement, because they closely approximate actual costs. Any minor variances are added to the "Cost of Goods Sold" category. If variances are large, the affected inventory accounts must be adjusted to reflect actual costs.

Standard costs are used frequently with selected historical budget data to determine the control operation of the company. The comparison of standard cost and actual experienced costs which yield variances, provides an important tool for control analysis.

4.3 CONCLUSION

Cost control can be achieved if budgeting and standard costs are custom tailored to the needs of the small business. The same holds true for the larger corporation.

Without budgeting and standard costs, no business can survive. The desirable and possible degree of application is entirely determined by the past experience and judgement of the management of the business. Although this is very subjective, fortunately, the utilization of budgeting and standard cost will automatic result in increasing degrees of cooperation. The failing of most small businesses is the lack of any form of budgeting and standard costs. The amount of budgeting and standard costs increase proportionally to the size of the business. Therefore, budgeting and standard costs are the two major criteria for successful cost control in any business.

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Appendix A

A COST CONTROL DBASE III PROGRAM FOR SMALL BUSINESS

PROGRAM CHARACTERISTICS

This program is written in the DBASE III high level software. DBASE III is well-suited for this purpose and an experienced programmer can learn it within a few days. Program extensions and modifications should not be an obstacle.

We have used an easily understood menu-driven approach for each decision with an information state "EXIT" always provided. Several identifiers have been built in at the data input level.

PROGRAM ORGANIZATION

The program is divided into six independent sections as follows:

1. Supplier File
2. Client File
3. Product and Component File
4. Accounts Payable File
5. Accounts Receivable File
6. Inventory file

In the supplier and client files, actions such as update, delete, edit, print and list can be implemented.

The product and component files present a Product Report for the informed user with the price, quantity and material requirements for each component of a product.

The Accounts Receivable and Accounts Payable sections provide: age of accounts and the history of transaction. The information organization is not "accountant" oriented. Therefore, the ordinary user is able to use it with minimum learning and difficulty.

The Inventory file provides information on product and component inventories as well as on production requirements and consumption.

CONCLUSION

This program is written in a high-level computer language which allows further development or modification to suit changing business environments. Another advantage of the program is its "nonskilled user" orientation which minimizes the difficulty and duration of the learning process.

Cost Control Program Listings

```
********MASTER MENU
SET TALK OFF
CLEAR
STORE 0 TO CHOICE
****************PRESENT MENU
DO WHILE CHOICE < > 7
   CLEAR
   @ 7,20 SAY '        MAIN MENU'
   @ 9,20 SAY '    1. Supplier Files'
   @ 10,20 SAY '    2. Client Files'
   @ 11,20 SAY '    3. Product Report'
   @ 12,20 SAY '    4. Account Payable'
   @ 13,20 SAY '    5. Account Receivable'
   @ 14,20 SAY '    6. Inventory Record'
   @ 15,20 SAY '    7. Exit Menu'
   ?
INPUT ' Enter your choice (1-7) from above --> ' TO CHOICE

*************** PERFORM APPROPRIATE TASK BASED ON CHOICE
   DO CASE
      CASE CHOICE = 1
           DO MENU1
      CASE CHOICE = 2
           DO MENU1
      CASE CHOICE = 3
           DO MENU3
      CASE CHOICE = 4
           DO MENU4
      CASE CHOICE = 5
           DO MENU4
      CASE CHOICE = 6
           DO MENU5
      CASE CHOICE = 7
           RETURN

   ENDCASE CHOICE
ENDDO MAINMENU
```

```
**********************MENU1 , AN EDITING MENU FOR SUPPLIER
SET EXACT ON
STORE 0 TO CHOICE1
*******************PRESENT MENU
DO WHILE CHOICE1 < 5 .OR. CHOICE1 > 6
   CLEAR
   IF CHOICE = 1
     STORE 'SUPPLIER ' TO NAFILE
     USE B:SUPPLIER.DBF INDEX SUPPLIER
     SET FORMAT TO SUPPLIER
   ELSE
     STORE 'CLIENT ' TO NAFILE
     USE B:CLIENT.DBF INDEX CLIENT
     SET FORMAT TO CLIENT
   ENDIF
   @ 7,20 SAY 'FILE IN USE IS : '+ NAFILE
   @ 9,20 SAY '  1.  Append Records'
   @ 10,20 SAY '  2.  View Records'
   @ 11,20 SAY '  3.  Print Records'
   @ 12,20 SAY '  4.  Delete Records'
   @ 13,20 SAY '  5.  Edit Records'
   @ 14,20 SAY '  6.  Exit Menu'
   ?
INPUT ' Enter your choice (1-6) from above --> ' TO CHOICE1
****************PERFORM APPROPRIATE TASK BASE ON CHOICE1
DO CASE
  CASE CHOICE1 = 1
    APPEND
    REINDEX
  CASE CHOICE1 = 2
    COUNT TO MARK
    GO TOP
    DO WHILE MARK > 0
     IF CHOICE = 1
      ? '           Supplier Name and Address'
      ?
      ? '           NAME    : '+TRIM(NAME)
     ELSE
      ? '           Client Name and Address'
      ?
      ? '           NAME    : '+TRIM(NAME)
     ENDIF
     ? '           CODE    : '+TRIM(CODE)
     ? ''          ADDRESS : ''+TRIM(STREET)
     ? ''                  : ''+TRIM(CITY)+', '+TRIM(PROVINCE)+',
                              '+TRIM(POSTAL)
     ? ''          PHONE   : ''+TRIM(TELEPHONE)
     ?
     WAIT ''          [Q] TO MENU, ANY KEY TO CONTINUE '' TO YN
     IF UPPER(YN) # "Q"
        SKIP
        MARK = MARK - 1
     ELSE
        MARK = 0
```

```
     ENDIF
    ENDDO
  CASE CHOICE1 = 3
    DO B:MENU1-2.PRG
  CASE CHOICE1 = 4
** THIS IS TO DELETE RECORD THROUGH ENTER THE NAME OF THE CODE
    CLEAR
    STORE 0 TO CHOIC101
    DO WHILE CHOIC101 < 1 .OR. CHOIC101 > 2
      @ 5,10 SAY 'FILE IN USE IS : '+ NAFILE
      @ 7,10 SAY '.1.  Delete according to Code : '
      @ 9,10 SAY '.2.  Delete according to Name : '
      @ ROW()+3,20
      INPUT '           Please input 1 or 2 -> ' TO CHOIC101
    ENDDO CHOIC101
      @ ROW()+2,20
      IF CHOIC101 = 1
        ACCEPT '          Please input Code ' TO CODEREF
      ELSE
        ACCEPT '          Please input Name ' TO NAMEREF
      ENDIF
      IF CHOIC101 = 1
        GO TOP
        LOCATE FOR CODE = CODEREF
      ELSE
        GO TOP
        LOCATE FOR UPPER(NAME) = UPPER(NAMEREF)
      ENDIF
      IF .NOT. EOF()
        ?
        ? 'NAME : '+TRIM(NAME)+'    CODE : '+TRIM(CODE)
        ? 'ADDRESS : '+TRIM(STREET)+' '+TRIM(CITY)+' '+TRIM(PROVINCE)
        ?
        ?
        ACCEPT "[Y] to confirm delete, other to exit -> " TO YN
        IF UPPER(YN) = 'Y'
           DELETE
           PACK
           REINDEX
        ELSE
           EXIT
        ENDIF
      ELSE
        @ ROW()+1,10 SAY 'End of File encontered !'
        @ ROW()+1,10 SAY 'You either made a mistake in your entry,'
        @ ROW()+1,10 SAY 'or the record does not exist.'
       WAIT
      ENDIF
  CASE CHOICE1 = 5
      DO B:MENU1-4.PRG
  CASE CHOICE1 = 6
      CLOSE DATABASE
ENDCASE CHOICE1
ENDDO
```

```
**********MENU1-2
********EXTENTION FROM MENU1 FOR PRINT RECORD OF SUPPLIER OR CLIENT
SET PRINT ON
EJECT
IF CHOICE = 1
   ? "           LIST OF SUPPLIER "
   ?
ELSE
   ? "           LIST OF CLIENT "
   ?
ENDIF
GO TOP
********** START LINE FEEDCOUNTER (LF) AT ZERO.
LF = 0
DO WHILE .NOT. EOF()
   IF CHOICE = 1
      ? "           Supplier : "+TRIM(NAME)
   ELSE
      ? "           Client   : "+TRIM(NAME)
   EDNIF
   ? "          Code     : "+TRIM(CODE)
   ? "          Address  : "+TRIM(STREET)
   ? "                   : "+TRIM(CITY)+', '+TRIM(PROVINCE)+',
                              '+TRIM(POSTAL)
   ? "          Phone    : "+TRIM(TELEPHONE)
   ?
   ?
   LF = LF + 7
   IF LF >= 50
     EJECT
     LF = 0
   ENDIF  (LF >= 50)
   SKIP
ENDDO
EJECT
SET PRINT OFF
RETURN
```

```
**********MENU1-4 THIS IS A EDIT MENU EXTENTION FROM MENU1
CLEAR
STORE 0 TO CHOIC101
DO WHILE CHOIC101 < 1 .OR. CHOIC101 > 2
    @ 5,10 SAY 'File in use is : '+NAFILE
    @ 8,10 SAY ' 1. Edit according to Code : '
    @ 10,10 SAY ' 2. Edit according to Name : '
    @ ROW()+2,20
    INPUT '             Please input 1 or 2 -> ' TO CHOIC101
ENDDO CHOIC101
@ ROW()+2,20
IF CHOIC101 = 1
    ACCEPT ''           Please input Code --> '' TO CODEREF
    GO TOP
    LOCATE FOR UPPER(NAME) = UPPER(NAMEREF)
ENDIF
IF .NOT. EOF()
    EDIT
    REINDEX
ELSE
    @ ROW()+1,10 SAY 'End of File Encounter ! '
    @ ROW()+1,10 SAY 'You either made a mistake in your enter,'
    @ ROW()+1,10 SAY 'or the record does not exist.'
    WAIT
ENDIF
RETURN
ENDDO MENU1-4
```

```
**********MENU3
********** MENU FOR PRODUCT AND COMPONENT
SET TALK OFF
SET EXACT ON
SELECT A
USE B:PRODCOMP.DBF INDEX PRODCOMP
SET FORMAT TO PRODCOMP
STORE 0 TO CHOICE1
DO WHILE CHOICE1 <> 6
     CLEAR
     @ 7,15 SAY 'This is Product and Component Menu '
     @ 9,25 SAY ' 1. Append '
     @ 10,25 SAY ' 2. View '
     @ 11,25 SAY ' 3. Print '
     @ 12,25 SAY ' 4. Delete '
     @ 13,25 SAY ' 5. Edit '
     @ 14,25 SAY ' 6. Exit '
     ?
     INPUT '                  Please enter your choice -> ' TO CHOICE1
     DO CASE
          CASE CHOICE1 = 1
               APPEND
               REINDEX
          CASE CHOICE1 = 2
               DO MENU3-1.PRG
          CASE CHOICE1 = 3
               DO MENU3-2.PRG
               SET DEVICE TO SCREEN
          CASE CHOICE1 = 4
               DO MENU3-3.PRG
          CASE CHOICE1 = 5
               DO MENU3-4.PRG
          CASE CHOICE1 = 6
               CLOSE DATABASE
     ENDCASE CHOICE1
ENDDO CHOICE1
```

```
**********MENU3-1.PRG
********** MENU FOR PRODUCT AND COMPONENT TO VIEW AND PRINT
STORE 0 TO CHOICE1A
DO WHILE CHOICE1A < 1 .OR. CHOICEA1 > 2
CLEAR
@ 6,22 SAY " 1.          VIEW ALL "
@ 11,22 SAY "VIEW PRODUCT AND COMPONENT REPORT"
@ 12,28 SAY "    ACCORDING TO "
@ 15,22 SAY " 2.        PRODUCT NAME"
@ 17,0
INPUT "          Please input your choice --> " TO CHOICE1A
IF CHOICE1A < 1 .OR. CHOICE1A > 2
     EXIT
ENDIF
IF CHOICEA1 = 1
SET EXACT ON
GO TOP
STORE UPPER(PRODUCT) TO PRODNAME
*******DISPLAY CHART HEADING
DO MENU3-1A
STORE 0 TO TOTAL
DO WHILE .NOT. EOF()
IF ROW() < 21
     IF UPPER(PRODUCT) = PRODNAME
          @ ROW()+1,0 SAY COMPONENT
          @ ROW(),17 SAY COMPCODE
          @ ROW(),25 SAY MATERIAL
          @ ROW(),39 SAY QUANTITY
          @ ROW(),53 SAY UNIT_COST
          @ ROW(),62 SAY UNIT_COST*QUANTITY
          SKIP
     ELSE
          STORE RECNO() TO P
          SUM UNIT_COST*QUANTITY TO TOTAL FOR UPPER(PRODUCT) = PRODNAME
          @ ROW(),17 SAY "TOTAL : "
          @ ROW(),61 SAY TOTAL
          @ 23,15
          WAIT
          GO P
          STORE 0 TO TOTAL
          STORE UPPER(PRODUCT) TO PRODNAME
          DO MENU3-1A
     ENDIF
 ELSE
     @ 23,15
     WAIT
     CLEAR
     DO MENU3-1A
  ENDIF
  ENDDO
  SUM UNIT_COST*QUANTITY TO TOTAL FOR UPPER(PRODUCT) = PRODNAME
  @ ROW() ,17 SAY "TOTAL : "
  @ ROW() ,61 SAY TOTAL
  @ 23,15
```

```
  WAIT
ELSE
    CLEAR
    @ 7,16
    ACCEPT "Please Input Name of Product --> " TO PRODNAME
    CLEAR
    SET EXACT ON
    LOCATE FOR UPPER(PRODUCT) = UPPER(PRODNAME)
    DO MENU3-1A
    DO WHILE .NOT. EOF()
      IF UPPER(PRODUCT) = UPPER(PRODNAME)
        IF ROW() < 21
              @ ROW()+1,0 SAY COMPONENT
              @ ROW(),17 SAY COMPCODE
              @ ROW(),25 SAY MATERIAL
              @ ROW(),39 SAY QUANTITY
              @ ROW(),53 SAY UNIT_COST
              @ ROW(),62 SAY UNIT_COST*QUANTITY
        ELSE
           @ 23,15
           WAIT
           CLEAR
           DO MENU3-1A
        ENDIF
      ENDIF
      SKIP
    ENDDO
    SUM UNIT_COST*QUANTITY TO TOTAL FOR UPPER(PRODUCT) = UPPER(PRODNAME)
    @ ROW(),17 SAY "TOTAL : "
    @ ROW(),61 SAY TOTAL
    @ 23,15
    WAIT
ENDIF
```

```
****** B:MENU3-1A.PRG
CLEAR
@ 1,0 SAY "PRODUCT     :"
@ 1,14 SAY PRODUCT
@ 2,0 SAY "CODE        :"
@ 2,14 SAY PRODCODE
@ 4,0 SAY "COMPONENT"
@ 5,0 SAY "ITEM              CODE    MATERIAL        QUANTITY    UNIT COST  "
@ 5,63 SAY "       COST"
@ 6,0 SAY "                                          PER UNIT                "
@ 7,0 SAY "_____________________________________________________________"
@ 7,55 SAY "_____________________"
RETURN
```

```
**********MENU3-2
********** PROGRAM FOR PRODUCT AND COMPONENT TO PRINT
CLEAR
*********SELECT PRINT ALL OR PRINT ACCORDING TO PRODUCT NAME
DO MENU3-2A.PRG
IF CHOICE1A = 1
SET DEVICE TO PRINT
SET EXACT ON
GO TOP
STORE UPPER(PRODUCT) TO PRODNAME
********DISPLAY CHART HEADING
DO MENU3-1A
STORE 0 TO TOTAL
DO WHILE .NOT. EOF()
IF PROW() < 50
     IF UPPER(PRODUCT) = PRODNAME
          @ PROW()+1,0 SAY COMPONENT
          @ PROW(),17 SAY COMPCODE
          @ PROW(),25 SAY MATERIAL
          @ PROW(),39 SAY QUANTITY
          @ PROW(),53 SAY UNIT_COST
          @ PROW(),62 SAY UNIT_COST*QUANTITY
          SKIP
     ELSE
          STORE RECNO() TO P
          SUM UNIT_COST*QUANTITY TO TOTAL FOR UPPER(PRODUCT) = PRODNAME
          @ PROW()+2,17 SAY "TOTAL : "
          @ PROW(),61 SAY TOTAL
          GO P
          STORE 0 TO TOTAL
          STORE UPPER(PRODUCT) TO PRODNAME
          DO MENU3-1A
     ENDIF
ELSE
     DO MENU3-1A
ENDIF
ENDDO
SUM UNIT_COST*QUANTITY TO TOTAL FOR UPPER(PRODUCT) = PRODNAME
@ PROW()+2,17 SAY "TOTAL : "
@ PROW(),61 SAY TOTAL
ENDIF
SET DEVICE TO SCREEN
RETURN
```

```
***** B:MENU3-2A.PRG
******* TO SELECT PRINT TYPE
PUBLIC CHOICE1A
STORE 0 TO CHOICE1A
DO WHILE CHOICE1A < 1 .OR. CHOICE1A > 2
CLEAR
@ 6,22 SAY ".1.     PRINT ALL"
@ 11,22 SAY "PRINT PRODUCT AND COMPONENT REPORT"
@ 12,28 SAY "ACCORDING TO"
@ 16,22 SAY ".2.     PRODUCT NAME"
@ 18,0
INPUT "PLEASE INPUT YOU CHOICE --> " TO CHOICE1A"
IF CHOICE1A = @
      CLEAR
      @ 14,16
      ACCEPT "PLEASE INPUT PRODUCT NAMES --> " TO PRODNAME
      CLEAR
      SET DEVICE TO PRINT
      SET EXACT ON
      LOCATE FOR UPPER(PRODUCT) = UPPER(PRODNAME)
      DO MENU3-1A
      DO WHILE .NOT. EOF()
       IF UPPER(PRODUCT) = UPPER(PRODNAME)
          IF PROW() < 50
             @ PROW()+1,0 SAY COMPONENT
             @ PROW(),17 SAY COMPCODE
             @ PROW(),25 SAY MATERIAL
             @ PROW(),39 SAY QUANTITY
             @ PROW(),53 SAY UNIT_COST
             @ PROW(),62 SAY UNIT_COST*QUANTITY
             SKIP
          ELSE
             DO MENU3-1A
          ENDIF
       ELSE
       SKIP
       ENDIF
      ENDDO
          SUM UNIT_COST*QUANTITY TO TOTAL FOR UPPER(PRODUCT)
          = UPPER(PRODNAME)
          IF CHOICE1 = 3
               @ PROW()+2,17 SAY "TOTAL : "
               @ PROW(),61 SAY TOTAL
          ELSE
               @ ROW()+2,17 SAY "TOTAL : "
               @ ROW(),61 SAY TOTAL
          ENDIF
      RETURN
ELSE
      RETURN
ENDIF
ENDDO
```

```
*********MENU3-3.PRG
********** TO DELETE PRODUCT OR COMPONENT NAME
CLEAR
SET EXACT ON
STORE 0 TO CHOICE1A
@ 7,15 SAY ".1.          Delete a Product"
@ 9,15 SAY ".2.          Delete Component off a Product"
@ 11,15 SAY ".3.          Delete Component off Products"
@ 13,15 SAY "         (Other Number to exit)"
@ ROW()+1,15
INPUT " Please Input Choice --> " to CHOICE1A
DO CASE CHOICE1A
  CASE CHOICE1A = 1
     CLEAR
     @ 7,12
     ACCEPT "  Please Input Name of Product --> " TO PRODNAME
     @ ROW()+2,25 SAY "ARE YOU SURE?"
     WAIT :  [Y] to Confirm delete, any key to Menu " TO YN
     IF UPPER(YN) <> 'Y'
          RETURN
     ELSE
          GO TOP
          DELETE ALL FOR UPPER(PRODUCT) = UPPER(PRODNAME)
          PACK
          REINDEX
     ENDIF
  CASE CHOICE1A = 2
     CLEAR
     @ 7,12
     ACCEPT "  Please Input Product Name of Component --> " TO PRODNAME
     @ 9,12
     ACCEPT "  Please Input Name of Component --> " TO COMPNAME
     @ ROW()+2,25 SAY " ARE YOU SURE?"
     WAIT "  [Y] to Confirm delete, any key to Menu " TO YN
     IF UPPER(YN) = 'Y'
         GO TOP
         DELETE ALL FOR UPPER(PRODUCT) = UPPER(PRODNAME)  .AND.
                                         UPPER(COMPNAME)
         PACK
         REINDEX
     ELSE
         RETURN
     ENDIF
  CASE CHOICE1A = 3
     CLEAR
     @ 7,12
     ACCEPT "  Please Input Name of Component --> " TO CN
     @ ROW()+2,25 SAY "ARE YOU SURE?"
     WAIT "  [Y] to Confirm delete, any key to exit. " TO YN
     IF UPPER(YN) = "Y"
        GO TOP
        DELETE ALL FOR UPPER(COMPONENT) = UPPER(CN)
        PACK
        REINDEX
```

```
      ELSE
      RETURN
      ENDIF
ENDCASE CHOICE1A
```

```
****MENU3-4.PRG
****EDIT PRODUCT OR COMPONENT RECORD
STORE 0 TO CHOICE1A
DO WHILE CHOICE1A # 5
CLEAR
@ 7,20 SAY ".1.        Change Product Name"
@ 8,20 SAY ".2.        Change Product Code"
@ 9,20 SAY ".3.        Edit a Component of a Product " ~
@ 10,20 SAY ".4.        Edit Component "
@ 11,20 SAY ".5.        Exit "
@ 13,13
INPUT "  Please Input Choice --> " TO CHOICE1A
   CLEAR
DO CASE CHOICE1A
   CASE CHOICE1A = 1
      @ 7,20
      ACCEPT " Enter OUTDATED Name of Product --> " TO PN
      @ ROW()+1,20
      ACCEPT "Enter NEW Name of Product --> " TO PN1
      @ ROW()+2,20 SAY "ARE YOU SURE?"
      STORE "N" TO YN
      ACCEPT "  [Y] to confirm change, other to exit " TO YN
      IF UPPER(YN) = "Y"
        REPLACE ALL PRODUCT WITH PN1 FOR UPPER(PRODUCT) = UPPER(PN)
        REINDEX
      ELSE
        EXIT
      ENDIF
   CASE CHOICE1A = 2
      @ 7,20
      ACCEPT " Enter OUTDATED Code of Product --> " TO PC
      @ ROW()+1,20
      ACCEPT " Enter NEW Code of Product --> " TO PC1
      @ ROW()+2,20 SAY "ARE YOU SURE?"
      STORE "N" TO YN
      ACCEPT "  [Y] to confirm change, other to exit " TO YN
      IF UPPER(YN) = "Y"
        REPLACE ALL PRODCODE WITH PC1 FOR UPPER(PRODCODE) = UPPER(PC)
        REINDEX
      ELSE
        EXIT
      ENDIF
   CASE CHOICE1A = 3
      @ 7,20
      ACCEPT " Please enter Name of Product --> " TO PN
      @ 9,20
      ACCEPT " Please enter Name of Component --> " TO CN
      GO TOP
      LOCATE FOR UPPER(PRODUCT) = UPPER(PN) .AND. UPPER(COMPONENT)
                                = UPPER(CN)
      IF EOF()
        CLEAR
        @ 7,20 SAY " File does not exist"
        @ 9,20 SAY " or entry mistake.  "
```

```
      WAIT "  Any key to exit."
      RETURN
   ENDIF
   DO WHILE .NOT. EOF()
      EDIT
      CONTINUE
   ENDDO
   REINDEX
CASE CHOICE1A = 4
   CLEAR
   @ 7,20
   ACCEPT "  Please enter target Component Name --> " TO TG
   @ ROW()+2,20 SAY "ARE YOU SURE?"
   STORE "N" TO YN
   ACCEPT " [Y] to confirm edit, other to exit." TO YN
   IF UPPER(YN) = "Y"
      GO TOP
      LOCATE FOR UPPER(COMPONENT) = UPPER(TG)
      CLEAR
      IF EOF()
        @ 7,20 SAY "End of File Encounter!"
        @ 8,20 SAY "or error in entry."
        WAIT "  Any key to exit."
        EXIT
      ENDIF
      STORE COMPONENT TO CN
      STORE COMPCODE TO CC
      STORE MATERIAL TO M
      STORE UNIT_COST TO U
      CLEAR
      CLOSE FORMAT
      STORE "C" TO YN
      DO WHILE UPPER(YN) # "Y"
        @ 5,5 SAY "Name of Component: " GET CN
        @ 7,5 SAY "Code of Componnt: " GET CC
        @ 9,5 SAY "Material: " GET M
        @ 13,5 SAY "Cost per unit of Component: " GET U
        READ
        @ 16,20
        ACCEPT "[Y] to confirm, [N] to exit, any key to continue." TO YN
        IF UPPER(YN) = "N"
           EXIT
        ENDIF
      ENDDO
      IF UPPER(YN) = "Y"
         GO TOP
         REPLACE ALL COMPONENT WITH CN, COMPCODE WITH CC,
                     MATERIAL WITH M, UNIT_COST WITH U
                     FOR UPPER(COMPONENT) = UPPER(TG)
         REINDEX
      ELSE
         SET FORMAT TO PRODCOMP.FMT
         EXIT
      ENDIF
```

```
         SET FORMAT TO PRODCOMP.FMT
   CASE CHOICE1A = 5
      EXIT
ENDCASE CHOICE1A
ENDDO
```

```
******MENU4
*******ACCOUNT PAYABLE AND RECEIVABLE
SET TALK OFF
SET EXACT ON
PUBLIC PAYREC
IF CHOICE = 4
   STORE 'ACCOUNT PAYABLE' TO PAYREC
   STORE 'PAYMENT' TO PAYCOL
   SELECT A
   USE B:ACCT_PAY.DBF INDEX ACCT1PAY
   SET FORMAT TO ACCT_PAY
   SELECT B
   USE B:PAY_UPDT.DBF INDEX PAY1UPDT
   SET FORMAT TO PAY_UPDT
ELSE
   STORE 'ACCOUNT RECEIVABLE' TO PAYREC
   STORE 'COLLECTION' TO PAYCOL
   SELECT A
   USE :ACCT_REC.DBF INDEX ACCT1REC
   SET FORMAT TO ACCT_REC
   SELECT B
   USE B:REC_UPDT.DBF INDEX REC1UPDT
   SET FORMAT TO REC_UPDT
ENDIF
STORE 0 TO CHOICE1
DO WHILE CHOICE1 <> 7
   CLEAR
   @ 6,19 SAY 'This is '+PAYREC+' Menu: '
    @ 9,25 SAY '.1.   Append '
   @ 10,25 SAY '.2.   View Report '
   @ 11,25 SAY '.3.   Print Report '
   @ 12,25 SAY '.4.   '+PAYCOL+' Update '
   @ 13,25 SAY '.5.   Edit '
   @ 14,25 SAY '.6.   Delete '
   @ 15,25 SAY '.7.   Exit '
   ?
   INPUT '  Please enter your choice --> ' TO CHOICE1
   DO CASE CHOICE1
      CASE CHOICE1 = 1
         SELECT A
         APPEND
         REINDEX
      CASE CHOICE1 = 2
****VIEW REPORTS OF ACCOUNT RECEIVABLE AND PAYABLE
         DO MENU4-1
      CASE CHOICE1 = 3
****PRINT REPORTS OF ACCOUNT RECEIVABLE AND PAYABLE
         DO MENU4-1
      CASE CHOICE1 = 4
         SELECT B
         APPEND
         REINDEX
      CASE CHOICE1 = 5
         SELECT A
```

```
   CLEAR
   @ 6,15 SAY PAYREC
   ACCEPT '  Please enter INVOICE CODE --> ' TO IVCODE
   GO TOP
   LOCATE FOR INVOICE = IVCODE
   IF EOF()
      CLEAR
      @ 10,15 SAY "FILE DOES NOT EXIST
      @ 14,16 SAY "OR MISTAKE IN ENTRY"
      @ 15,16
      WAIT
      RETURN
   ENDIF
   DO WHILE .NOT. EOF()
      EDIT
      CONTINUE
   ENDDO
   REINDEX
CASE CHOICE1 =6
   STORE 0 TO CHOICE1A
   DO WHILE CHOICE1A < 1 .OR. CHOICE1A > 2
      CLEAR
      @ 7,20 SAY " .1   Delete "+PAYREC+" Record"
      @ 9,20 SAY " .2   Delete "+PAYCOL+" Record"
      @ 11,20 SAY "      (Any Number to Exit)"
      @ ROW()+1,3
      INPUT '  Please input choice --> ' TO CHOICE1A
      IF CHOICE1A < 1 .OR. CHOICE1A > 2
         EXIT
      ENDIF
      CLEAR
      @ 7,20
      ACCEPT "  Please enter Invoice Number: " TO INV
      STORE "REPEAT" TO DD
      DO WHILE DD = "REPEAT"
         @ ROW()+1,1 CLEAR
         ACCEPT "  Please enter Date (MM/DD/YY): " TO DD
         IF LEN(DD) # 8
            @ ROW()+2,15 SAY "Please make sure [/] and [0]
                              is included "
            WAIT "  press any key to continue "
            STORE "REPEAT" TO DD
            @ ROW()-5,70
         ENDIF
      ENDDO
      @ ROW()+1,20 CLEAR
      IF CHOICE1A = 2
         ACCEPT "  Please enter Check Number: " TO CH
      ENDIF
      IF CHOICE1A = 1
         SELECT A
         GO TOP
         LOCATE FOR INV = INVOICE.AND. CTOD(DD) = DATE
      ELSE
```

```
            SELECT B
            GO TOP
            LOCATE FOR INV=INVOICE .AND. CTOD(DD) = DATE
                                   .AND. CH=CHECK
         ENDIF
         IF EOF()
            CLEAR
            @ 7,20 SAY "End of File encountered!"
            @ 8,20 SAY "Records did not exist,"
            @ 9,20 SAY "or error in entry!"
            WAIT "  Any key to exit."
            EXIT
         ENDIF
         DO WHILE .NOT. EOF()
            @ 6,1 CLEAR
            IF CHOICE1A = 1
               DISPLAY INVOICE,DATE,CODE,AMOUNT
            ELSE
               DISPLAY INVOICE,DATE,CHECK
            ENDIF
            STORE "N" TO YN
            @ ROW()+3,20
            ACCEPT "[Y] to confirm, other to exit -->" TO YN
            IF UPPER(YN) = "Y"
               DELETE
               CONTINUE
               YN = "N"
            ELSE
               EXIT
            ENDIF
         ENDDO
         PACK
         REINDEX
      ENDDO
   CASE CHOICE1 = 7
      CLOSE DATABASE
ENDCASE CHOICE1
ENDDO CHOICE1
```

```
*****MENU4-1 (A CONTINUE OF MENU4)
*****PROGRAM TO PRINT ACCOUNT PAYABLE REPORTS
STORE 0 TO CHOICE1A
DO WHILE CHOICE1A <> 4
CLEAR
@ 7,20 SAY ".1.  Age of Account Report"
IF CHOICE = 4
   @ 8,20 SAY ".2.  Account Payable Summary "
   @ 9,20 SAY ".3.  Payment Summary"
ELSE
   @ 8,20 SAY ".2.  Account Receivable Summary"
   @ 9,20 SAY ".3.  Collection Summary"
ENDIF
@ 10,20 SAY ".4.  Exit"
@ ROW()+2,20
INPUT "  Please enter choice --> " TO CHOICE1A
IF CHOICE1A # 4
   CLEAR
   @ 6,20 SAY ".1   All "
   @ 7,20 SAY ".2   Range of Date"
   @ ROW()+2,20 SAY "  (Any number to exit)"
   INPUT "  Please enter choice --> " TO R
   IF R=1 .OR. R=2
      CLEAR
      IF R=2
         STORE "REPEAT" TO D1
         DO WHILE D1 = "REPEAT"
            STORE "00/00/00" TO D1
            STORE "00/00/00" TO D2
            @ 5,20 SAY "  Date format is MM/DD/YY"
            @ 8,42 SAY "           "
            @ 9,42 SAY "           "
            @ ROW()-2,20
            ACCEPT "  Date started at --> " TO D1
            ACCEPT "  Date ended at  ---> " TO D2
            IF LEN(D1) # 8 .OR. LEN(D2) # 8
               @ ROW()+3,20 SAY "Please make sure [/] and [0] is included"
               WAIT "   Any key to continue "
               STORE " REPEAT " TO D1
            ENDIF
         ENDDO D1
      ENDIF
   ELSE
      CHOICE1A = 4
   ENDIF
DO CASE CHOICE1A
   CASE CHOICE1A = 1
      SELECT A
      GO TOP
      TOTAL ON INVOICE TO AAA.DBF
      SELECT B
      GO TOP
      TOTAL ON INVOICE TO BBB.DBF
      SELECT C
```

```
       USE BBB.DBF
       REPLACE ALL AMOUNT WITH AMOUNT * (-1)
       USE
       USE AAA.DBF
       APPEND FROM BBB.DBF
       INDEX ON INVOICE TO AAA.NDX
       DELETE FILE BBB.DBF
       TOTAL ON INVOICE TO BBB.DBF
       USE
       DELETE FILE AAA.DBF
       DELETE FILE AAA.NDX
       USE BBB.DBF
       SORT TO AAA.DBF ON DATE/D FOR AMOUNT * 0
       USE
       DELETE FILE BBB.DBF
       USE AAA.DBF
       GO TOP
       IF CHOICE1 = 3
*******PRINT REPORT OF ACCOUNT PAYABLE OR RECEIVABLE
         IF R = 1
            IF CHOICE = 4
               REPORT FORM AGEPAY.FRM TO PRINT
            ELSE
               REPORT FORM AGEREC.FRM TO PRINT
            ENDIF
         ELSE
            IF CHOICE = 4
               REPORT FORM AGEPAY.FRM FOR DATE >= CTOD(D1)
                      .AND. DATE <= CTOD(D2) TO PRINT
            ELSE
               REPORT FORM AGEREC.FRM FOR DATE >= CTOD(D1)
                      .AND. DATE <= CTOD(D2) TO PRINT
            ENDIF
         ENDIF
       ELSE
*******VIEW REPORT OF ACCOUNT PAYABLE OR RECEIVABLE ON SCREEN
         IF R = 1
            IF CHOICE = 4
               REPORT FORM AGEPAY.FRM
               WAIT
            ELSE
               REPORT FORM AGEREC.FRM
               WAIT
            ENDIF
         ELSE
            IF CHOICE = 4
               CLEAR
               REPORT FORM AGEPAY.FRM FOR DATE >= CTOD(D1)
                      .AND. DATE <= CTOD(D2)
               WAIT
            ELSE
               CLEAR
               REPORT FORM AGEREC.FRM FOR DATE >= CTOD(D1)
                      .AND. DATE <= CTOD(D2)
```

```
            WAIT
         ENDIF
      ENDIF
   ENDIF
   USE
   DELETE FILE AAA.DBF
CASE CHOICE1A = 2
   SELECT A
   IF CHOICE1 = 3
      IF R = 1
         IF CHOICE = 4
            REPORT FORM ACCPAYS.FRM TO PRINT
         ELSE
            REPORT FORM ACCRECS.FRM TO PRINT
         ENDIF
      ELSE
         IF CHOICE = 4
            REPORT FORM ACCPAYS.FRM FOR DATE >= CTOD(D1)
                   .AND. DATE <= CTOD(D2) TO PTINT
         ELSE
            REPORT FORM ACCRECS.FRM FOR DATE >= CTOD(D1)
                   .AND. DATE <= CTOD(D2) TO PTINT
         ENDIF
      ENDIF
   ELSE
      IF R = 1
         IF CHOICE = 4
            REPORT FORM ACCPAYS.FRM
            WAIT
         ELSE
            REPORT FORM ACCRECS.FRM
            WAIT
         ENDIF
      ELSE
         IF CHOICE = 4
            CLEAR
            REPORT FORM ACCPAYS.FRM FOR DATE >= CTOD(D1)
                   .AND. DATE <= CTOD(D2)
            WAIT
         ELSE
            CLEAR
            REPORT FORM ACCRECS.FRM FOR DATE >= CTOD(D1)
                   .AND. DATE <= CTOD(D2)
            WAIT
         ENDIF
      ENDIF
   ENDIF
CASE CHOICE1A = 3
   SELECT B
   IF CHOICE1 = 3
      IF R = 1
         IF CHOICE = 4
            REPORT FORM PAYSUMM.FRM TO PRINT
         ELSE
```

```
                REPORT FORM CLOSUMM.FRM TO PRINT
             ENDIF
          ELSE
             IF CHOICE = 4
                REPORT FORM PAYSUMM.FRM FOR DATE >= CTOD(D1)
                       .AND. DATE <= CTOD(D2) TO PRINT
             ELSE
                REPORT FORM CLOSUMM.FRM FOR DATE >= CTOD(D1)
                       .AND. DATE <= CTOD(D2) TO PRINT
             ENDIF
          ENDIF
       ELSE
          IF R = 1
             IF CHOICE = 4
                REPORT FORM PAYSUMM.FRM
                WAIT
             ELSE
                REPORT FORM CLOSUMM.FRM
                WAIT
             ENDIF
          ELSE
             IF CHOICE = 4
                CLEAR
                REPORT FORM PAYSUMM.FRM FOR DATE >= CTOD(D1)
                       .AND. DATE <= CTOD(D2)
                WAIT
             ELSE
                CLEAR
                REPORT FORM CLOSUMM.FRM FOR DATE >= CTOD(D1D)
                       .AND. DATE <= CTOD(D2)
                WAIT
             ENDIF
          ENDIF
       ENDIF
    CASE CHOICE1A = 4
    ENDCASE CHOICE1A
ENDDO
```

```
**********MENU5
********** INVENTORY RECORD
STORE 0 TO CHOICE1
DO WHILE CHOICE1 <> 3
   CLEAR
   @ 10,20 SAY ".1.   Inventory of Component"
   @ 12,20 SAY ".2.   Inventory of Product"
   @ 14,20 SAY ".3.   Exit"
   @ ROW()+2,20
   INPUT "  Please enter choice --> " TO CHOICE1
   DO CASE CHOICE1
      CASE CHOICE1 = 1
         DO MENU5-1
      CASE CHOICE1 = 2
         DO MENU5-1
      CASE CHOICE1 = 3
         CLOSE DATEBASE
   ENDDO
ENDDO
```

```
*******MENU5-1
******* INVENTORY OF COMPONENT
CLEAR
STORE 0 TO CHOICE1A
DO WHILE CHOICE1A <> 4
   IF CHOICE1 = 1
      SELECT A
      USE NEWSTOCK INDEX NEWSTOCK
      SET FORMAT TO NEWSTOCK
      SELECT B
      USE PRODREQ INDEX PRODREQ
      SET FORMAT TO PRODREQ
      DO MENU5-1A
   ELSE
      SELECT A
      USE SALE INDEX SALE
      SET FORMAT TO SALE
      SELECT B
      USE PRODFIN INDEX PRODFIN
      SET FORMAT TO PRODFIN
      DO MENU5-2A
   ENDIF
   STORE 0 TO CHOICE1B
   DO CASE CHOICE1A
      CASE CHOICE1A = 1
         DO WHILE CHOICE1B <> 3
            CLEAR
            @ 8,20 SAY ".1.    View Summary Report "
            @ 9,20 SAY ".2.    Print Summary Report "
            @ 10,20 SAY ".3.    Exit "
            IF CHOICE1 = 1
               @ 6,20 SAY "Master Inventory of Component"
            ELSE
               @ 6,20 SAY "Master Inventory of Product"
            ENDIF
               @ 12,20
               INPUT "  Please enter choice --> "
               DO CASE CHOICE1B
                  CASE CHOICE1B = 1
                     DO MENU5-1A1
                     IF CHOICE1 = 1
                        REPORT FORM B:MASCOMP.FRM
                        WAIT
                     ELSE
                        REPORT FORM B:MASPROD.FRM
                        WAIT
                     ENDIF
                     USE
                     DELETE FILE BBB.DBF
                     DELETE FILE BBB.NDX
                  CASE CHOICE1B = 2
                     DO MENU5-1A1
                     IF CHOICE1 = 1
                        REPORT FORM B:MASCOMP.FRM NOEJECT TO PRINT
```

```
                    ELSE
                       REPORT FORM B:MASPROD.FRM NOEJECT TO PRINT
                    ENDIF
                    USE
                    DELETE FILE BBB.DBF
                    DELETE FILE BBB.NDX
                 CASE CHOICE1B = 3
                    RETURN
                 ENDCASE CHOICE1B
           ENDDO
        CASE CHOICE1A = 2
           SELECT A
           DO WHILE CHOICE1B <> 6
              CLEAR
              @ 8,20 SAY ".1.      Append"
              @ 9,20 SAY ".2.      Exit "
              @ 10,20 SAY ".3.      Print "
              @ 11,20 SAY ".4.      View "
              @ 12,20 SAY ".5.      Delete "
              @ 13,20 SAY ".6.      Exit "
              IF CHOICE1 = 1
                 @ 6,20 SAY "  NEWSTOCK"
              ELSE
                 @ 6,20 SAY "  SALE "
              ENDIF
              @ 15,20
              INPUT "  Please enter choice --> "
              DO MENU5-1A2
           ENDDO
        CASE CHOICE1A = 3
           SELECT B
           DO WHILE CHOICE1B <> 5
              CLEAR
              @ 8,25 SAY ".1.     Append "
              @ 9,25 SAY ".2.     Delete "
              @ 10,25 SAY ".3.     Print "
              @ 11,25 SAY ".4.     View "
              @ 12,25 SAY ".5.     Exit "
              IF CHOICE1 = 1
                 @ 6,20 SAY "  PRODUCTION REQUIREMENT "
              ELSE
                 @ 6,20 SAY "   FINISHED PRODUCT "
              ENDIF
              @ 14,20
              INPUT "  Please enter choice --> "
              DO MENU5-1A3
           ENDDO
        CASE CHOICE1A = 4
           CLOSE DATABASE
     ENDCASE
  ENDDO
```

```
****B:MENU5-1A.PRG
*****MENU OF MASTER INVENTORY OF COMPONENT
CLEAR
@ 2,21 SAY "1.      Master Inventory of Component"
@ 3,29 SAY "_____"
@ 5,29 SAY "print and view summary report"
@ 9,7 SAY "2.   Newstock                    3.   Production Requirement"
@ 10,7 SAY "    _______                          _____________________"
@ 12,13 SAY "append                              append"
@ 13,14 SAY "edit                               delete"
@ 14,11 SAY "  delete                           view report"
@ 15,11 SAY "view report                        print report"
@ 16,11 SAY "print report"
@ 19,30 SAY "4.      EXIT "
@ ROW()+2,2
INPUT "  Please enter choice --> " TO CHOICE1A
```

```
****B:MENE5-2A.PRG
*****MENU OF MASTER INVENTORY OF PRODUCT
CLEAR
@ 2,21 SAY "1.    Master inventory of Product"
@ 3,29 SAY "_____"
@ 5,29 SAY "print and view summary report"
@ 9,8 SAY "2.    SALE                                    3.   Finished product"
@ 10,8 SAY "     ____                                         ____________"
@ 12,11 SAY "  append                                          append"
@ 13,11 SAY "   edit                                           delete"
@ 14.11 SAY "  delete                                        view report"
@ 15,11 SAY "view report                                     print report"
@ 16,11 SAY "print report"
@ 19,30 SAY "4.       EXIT "
@ ROW()+2,2
INPUT "  Please enter choice --> " TO CHOICE1A
```

```
*******MENU5-1A1
****PROGRAM TO EXECUTE FUNCTION CALL BY CHOICE1B AND CHOICE1A = 2
CLEAR
@ 7,10 SAY " Date entry Format is --> MM/DD/YY "
ACCEPT "  Please input Target Start Date of Inventory --> " TO D
ACCEPT "  Please input Target End Date of Inventory --> " TO D1
DO WHILE LEN(D) # 8 .OR. LEN(D1) # 8
   CLEAR
   @ 7,10 SAY "DATE INPUT IS INCORRECT"
   @ 8,10 SAY "Please make sure [/] is typed. "
   @ 9,10 SAY "Please make sure [0] is typed. "
   ?
   ACCEPT "Please input Target Start Date of Inventory --> " TO D
   ACCEPT "Please input Target End Date of Inventory --> " TO D1
ENDDO
STORE CTOD(D) TO D
STORE CTOD(D1) TO D1
SELECT A
TOTAL ON CODE TO AAA.DBF FOR DATE >= D .AND. DATE <= D1
SELECT B
TOTAL ON CODE TO BBB.DBF FOR DATE >= D .AND. DATE <= D1
SELECT C
USE BBB.DBF
REPLACE ALL QTY WITH QTY * (-1)
USE AAA.DBF
REPLACE ALL PRICE WITH PRICE/QTY
INDEX ON CODE TO AAA.NDX
APPEND FROM BBB.DBF
DELETE FILE BBB.DBF
TOTAL ON CODE TO BBB.DBF
USE BBB.DBF
IF CHOICE1 = 2
   REPLACE ALL QTY WITH QTY * (-1)
ENDIF
INDEX ON CODE TO BBB.NDX
DELETE FILE AAA.DBF
DELETE FILE AAA.NDX
```

```
******MENU5-1A2
******PROGRAM TO EXECUTE FUNCTION CALL BY CHOICE1B AND CHOICE1A = 2
DO CASE CHOICE1B
   CASE CHOICE1B = 1
      APPEND
      REINDEX
   CASE CHOICE1B = 2
      CLEAR
      @ 7,10
      ACCEPT "  Please enter Invoice number --> " TO INVNUM
      ACCEPT "  Please enter DATE --> " TO D
      @ ROW()+2,10
      IF CHOICE1 = 1
         ACCEPT "  Please enter Component Code --> " TO CCODE
      ELSE
         ACCEPT "  Please enter Product Code --> " TO CCODE
      ENDIF
      GO TOP
      LOCATE FOR INVOICE = INVNUM .AND. CODE = CCODE .AND. DATE = CTOD(D)
      IF EOF()
         @ ROW()+3,25 SAY "File does not exist! "
         @ ROW()+1,25 SAY "or a entry mistake! "
         WAIT
      ELSE
         EDIT
         REINDEX
      ENDIF
   CASE CHOICE1B = 3
      CLEAR
      @ 7,20 SAY " Format of date is (MM/DD/YY) "
      ACCEPT "  Please input start date --> " TO D
      ACCEPT "  Please input end date --> " TO D1
      DO WHILE LEN(D) # 8 .OR. LEN(D1) # 8
         CLEAR
         @ 7,20 SAY "[/] and [0] must typed "
         ACCEPT " Please input start date --> " TO D
         ACCEPT " Please input end date --> " TO D1
      ENDDO
      STORE CTOD(D) TO D
      STORE CTOD(D1) TO D1
      IF CHOICE1 = 1
         REPORT FORM NEWSTOCK.FRM FOR DATE >= D .AND.
                DATE <= D1 NOEJECT TO PRINT
      ELSE
         REPORT FORM SALE.FRM FOR DATE >= D .AND.
                DATE <= D1 NOEJECT TO PRINT
      ENDIF
   CASE CHOICE1B = 4
      CLEAR
      @ 7,20 SAY "  Format of date is (MM/DD/YY) "
      ACCEPT "  Please input start date --> " TO D
      ACCEPT "  Please input end date --> " TO D1
      DO WHILE LEN(D) # 8 .OR. LEN(D1) # 8
         CLEAR
```

```
         @ 7,20 SAY " [/] and [0] must typed "
         ACCEPT "  Please input start date --> " TO D
         ACCEPT "  Please input end date --> " TO D1
      ENDDO
      STORE CTOD(D) TO D
      STORE CTOD(D1) TO D1
      IF CHOICE1 = 1
         REPORT FORM NEWSTOCK.FRM FOR DATE >= D .AND. DATE <= D1
      ELSE
         REPORT FORM SALE.FRM FOR DATE >= D .AND. DATE <= D1
      ENDIF
   CASE CHOICE1B = 5
      CLEAR
      @ 7,10
      ACCEPT "  Please enter Invoice number --> " TO INVNUM
      ACCEPT "  Please enter Date --> " TO D
      @ ROW()+2,10
      IF CHOICE1 = 1
         ACCEPT "  Please enter Component Code --> " TO CCODE
      ELSE
         ACCEPT "  Please enter Product Code --> " TO CCODE
      ENDIF
      ACCEPT "  [Y] to confirm, others to exit. " TO YN
      IF UPPER(YN) = "Y"
         GO TOP
         LOCATE FOR INVOICE = INVNUM .AND. DATE = CTOD(D)
                .AND. CODE = CCODE
         IF EOF()
            @ ROW()+3,25 SAY "FILE DOES NOT EXIST! "
            @ ROW()+1,24 SAY "OR A ENTRY MISTAKE! "
            WAIT
         ELSE
            DELETE
            PACK
            REINDEX
         ENDIF
      ENDIF
   CASE CHOICE1B = 6
      RETURN
ENDCASE CHOICE1B
```

```
*******MENU5-1A3.PRG
*******PROGRAM TO EXECUTE FUNCTION CALL BY CHOICE1B AND CHOICE1A = 3
DO CASE CHOICE1B
   CASE CHOICE1B = 1
      APPEND
      REINDEX
   CASE CHOICE1B = 2
      CLEAR
      @ 7,10
      ACCEPT "  Please enter Date --> " TO D
      @ ROW()+2,10
      IF CHOICE1 = 1
         ACCEPT "  Please enter Component Code --> " TO CCODE
      ELSE
         ACCEPT "  Please enter Product Code --> " TO CCODE
      ENDIF
      @ ROW()+2,10
      INPUT "  Please enter Quantity --> " TO Q
      @ ROW()+1,20
      ACCEPT "  [Y] to confirm, others to exit " TO YN
      IF UPPER(YN) = "Y"
         GO TOP
         LOCATE FOR DATE = CTOD(D) .AND. CODE = CCODE .AND. QTY = Q
         IF EOF()
            @ ROW()+3,25 SAY "FILE DOES NOT EXIST! "
            @ ROW()+1,25 SAY "OR A ENTRY MISTAKE! "
            WAIT
         ELSE
            DELETE
            PACK
            REINDEX
         ENDIF
      ENDIF
   CASE CHOICE1B = 3
      CLEAR
      @ 7,20 SAY " Format of date is (MM/DD/YY) "
      ACCEPT "  Please input start date --> " TO D
      ACCEPT "  Please input end date --> " TO D1
      DO WHILE LEN(D) # 8 .OR. LEN(D1) # 8
         CLEAR
         @ 7,20 SAY "[/] and [0] must typed "
         @ 8,20 SAY "Date format is (MM/DD/YY) "
         ACCEPT "  Please input start date --> " TO D
         ACCEPT "  Please input end date --> " TO D1
      ENDDO
      STORE CTOD(D) TO D
      STORE CTOD(D1) TO D1
      IF CHOICE1 = 1
         REPORT FORM PRODREQ.FRM FOR DATE >= D .AND.
                DATE <= D1 NOEJECT TO PRINT
      ELSE
         REPORT FORM PRODCPL.FRM FOR DATE >= D .AND.
                DATE <= D1 NOEJECT TO PRINT
      ENDIF
```

```
   CASE CHOICE1B = 4
      CLEAR
      @ 7,20 SAY "Format of date is (MM/DD/YY) "
      ACCEPT "  Please input start date --> " TO D
      ACCEPT "  Please input end date --> " TO D1
      DO WHILE LEN(D) # 8 .OR. LEN(D1) # 8
         CLEAR
         @ 7,20 SAY "[/] and [0] must typed "
         @ 8,20 SAY "Date format is (MM/DD/YY) "
         ACCEPT "  Please input start date --> " TO D
         ACCEPT "  Please input end date --> " TO D1
      ENDDO
      STORE CTOD(D) TO D
      STORE CTOD(D1) TO D1
      IF CHOICE1 = 1
         REPORT FORM PRODREQ.FRM FOR DATE >= D .AND. DATE <= D1
      ELSE
         REPORT FORM PRODCPL.FRM FOR DATE >= D .AND. DATE <= D1
      ENDIF
      WAIT
   CASE CHOICE1B = 5
      RETURN
ENDCASE CHOICE1B
```

```
**********SUPPLIER.FMT
**********  SUPPLIER REPORT FORMAT
@ 1,1 SAY "Record Number: "
@ 1,16 SAY RECNO()
@ 2,1 SAY "Enter [Ctrl-W] to SAVE and QUIT. [Esc] to QUIT without save"
@ 5,1 SAY "Supplier Code " GET CODE
@ 7,1 SAY "Supplier Name " GET NAME
@ 9,1 SAY "Address " GET STREET
@ 11,1 SAY "City " GET CITY
@ 11,29 SAY "Province" GET PROVINCE
@ 13,1 SAY "Postal code " GET POSTAL
@ 13,22 SAY "Telephone " GET TELEPHONE PICTURE "(999)999-9999"
```

```
**********CUSTOMER .FMT
**********  CUSTOMER REPORT FORMAT
@1,1 SAY "Record Number: "
@1,16 SAY RECNO()
@2,1 SAY " Enter [Ctrl-W] to quit. [Esc] to abort."
@5,1 SAY "Customer Code " GET CODE
@7,1 SAY "Customer Name " GET NAME
@9,1 SAY "Address " GET STREET
@11,1 SAY "City " GET CITY
@11,29 SAY "Province " GET PROVINCE
@13,1 SAY "Postal Code " GET POSTAL
@13,22 SAY "Telephone " GET TELEPHONE PICTURE "(999)999-9999"
```

```
* B:ACCT_PAY.FMT
@ 3,5 SAY "Record Number :"
@ 3,22 SAY RECNO()
@ 5,5 SAY "[Ctrl-W] to save entry."
@ 5,30 SAY "[Esc] to exist without save."
@ 7,5 SAY "Supplier Code :"
@ 7,21 GET CODE
@ 9,5 SAY "Payable Date :"
@ 9,20 GET DATE
@ 11,5 SAY "Invoice number :"
@ 11,23 GET INVOICE
@ 11,45 SAY "Amount :"
@ 11,55 GET AMOUNT
@ 13,5 SAY "Description :"
@ 13,20 GET DESCRIPT
```

```
* B:ACCT_REC.FMT
@ 3,5 SAY "Record Number :"
@ 3,22 SAY RECNO()
@ 5,5 SAY "[Ctrl-W] to save entry,"
@ 5,30 SAY "[Esc] to exist without save."
@ 7,5 SAY "Client Code :"
@ 7,20 GET CODE
@ 9,5 SAY "Receivable Date :"
@ 9,24 GET DATE
@ 11,5 SAY "Invoice number :"
@ 11,23 GET INVOICE
@ 11,45 SAY "Amount :"
@ 11,55 GET AMOUNT
@ 13,5 SAY "Description :"
@ 13,20 GET DESCRIPT
```

```
* B:REC_UPDT.FMT
@ 2,4 SAY "[Ctrl-W] to save entry, [Esc] for exist without save"
@ 4,4 SAY "Record Number :"
@ 4,21 SAY RECNO()
@ 6,4 SAY "Account Receivable Invoice Number :"
@ 6,40 GET INVOICE
@ 8,4 SAY "Date Received :"
@ 8,19 GET DATE
@ 10,4 SAY "Check Number :"
@ 10,20 GET CHECK
@ 10,40 SAY "Amount : $"
@ 10,51 GET AMOUNT
```

```
* B:PAY_UPDT.FMT
@ 2,4 SAY "[Ctrl-W] to save entry, [Esc] for exist without save"
@ 4,4 SAY "Record Number :"
@ 4,21 SAY RECNO()
@ 6,4 SAY "Account Payable Invoice Number :"
@ 6,38 GET INVOICE
@ 8,4 SAY "Date Issue :"
@ 8,18 GET DATE
@ 10,4 SAY "Check Number :"
@ 10,20 GET CHECK
@ 10,40 SAY "Amount : $"
@ 10,51 GET AMOUNT
```

```
* B:PRODCOMP.FMT
@ 2,2 SAY "Record Number : "
@ 2,18 SAY RECNO()
@ 3,2 SAY "[Ctrl-W] to Save, [Esc] to abort. "
@ 5,2 SAY "Name of product : " GET PRODUCT
@ 7,2 SAY "Code of Product : " GET PRODCODE
@ 9,2 SAY "Name of Component : " GET COMPONENT
@ 11,2 SAY "Code of Component : " GET COMPCODE
@ 13,2 SAY "Material of Component : " GET MATERIAL
@ 15,2 SAY "Quantity of Component per Product Unit : " GET QUANTITY
@ 17,2 SAY "Unit Cost of Component : " GET UNIT_COST
```

```
* b:newstock.FMT
@ 4,2 SAY "Record Number :"
@ 4,19 SAY RECNO()
@ 5,2 SAY "[Ctrl-W] to save entry, [Esc] to exit without save."
@ 7,2 SAY "Invoice Number :"
@ 7,20 GET INVOICE
@ 9,2 SAY "Component Name :"
@ 9,20 GET NAME
@ 9,43 SAY "Component Code :"
@ 9,61 GET CODE
@ 11,2 SAY "Quantity :"
@ 11,14 GET QTY
@ 11,28 SAY "Total Price : $"
@ 11,44 GET PRICE
@ 11,58 SAY "Date :"
@ 11,66 GET DATE
@ 13,2 SAY "Supplier Code  :"
@ 13,20 GET SUPCODE
```

```
* B:SALE.FMT
@ 5,0 SAY "Record Number :"
@ 5,17 SAY RECNO()
@ 6,0 SAY "[Ctrl-W] to save entry, [Esc] to exit without save."
@ 8,0 SAY "Invoice Number :"
@ 8,18 GET INVOICE
@ 10,0 SAY "Product Name   :"
@ 10,18 GET NAME
@ 10,44 SAY "Product Code :"
@ 10,60 GET CODE
@ 12,0 SAY "Quantity :"
@ 12,12 GET QTY
@ 12,29 SAY "Total Price : $"
@ 12,45 GET PRICE
@ 12,59 SAY "Date :"
@ 12,67 GET DATE
@ 14,0 SAY "Client Code :"
@ 14,15 GET CLICODE
```

```
* B:PRODFIN.FMT
@ 5,11 SAY "Record Number :"
@ 5,28 SAY RECNO()
@ 6,11 SAY "[Ctr-W] to save entry, [Esc] to exit with out save."
@ 9,11 SAY "Product Name :"
@ 9,27 GET NAME
@ 9,48 SAY "Product Code :"
@ 9,64 GET CODE
@ 11,11 SAY "Quantity   :"
@ 11,25 GET QTY
@ 11,48 SAY "Date :"
@ 11,56 GET DATE
```

```
* B:PRODREQ.FMT
@ 4,7 SAY "Record Number :"
@ 4,24 SAY RECNO()
@ 5,7 SAY "[Ctrl-W] to save entry , [Esc] to exit without save."
@ 8,7 SAY "Component Name :"
@ 8,25 GET NAME
@ 8,43 SAY "Component Code :"
@ 8,61 GET CODE
@ 10,7 SAY "Quantity :"
@ 10,19 GET QTY
@ 10,43 SAY "Date :"
@ 10,51 GET DATE
```

```
. DIR
Database files     # records     last update      size
SUPPLIER.DBF          11         11/22/85         2184
CLIENT.DBF            17         11/22/85         3234
ACCT_REC.DBF           9         11/22/85         2103
ACCT_PAY.DBF           9         11/22/85         2103
NEWSTOCK.DBF           8         11/22/85          835
SALE.DBF               6         11/22/85          707
PRODFIN.DBF            7         11/22/85          436
PRODREQ.DBF            8         11/22/85          475
PRODCOMP.DBF          11         11/22/85         1007
PAY_UPDT.DBF           6         11/22/85          373
REC_UPDT.DBF           6         11/22/85          373

  13830 bytes in     11 files.
 123904 bytes remaining on drive.
.
```

```
. display structure
Structure for database : B:SUPPLIER.dbf
Number of data records :       11
Date of last update    : 11/22/85
Field  Field name  Type        Width     Dec
    1  NAME        Character      50
    2  CODE        Character       5
    3  STREET      Character      50
    4  CITY        Character      20
    5  PROVINCE    Character      25
    6  POSTAL      Character       7
    7  TELEPHONE   Character      17
** Total **                      175

. display status

Currently selected database:
Select area -  1, Database in use: B:SUPPLIER.dbf    Alias - SUPPLIER
    Index file: B:SUPPLIER.ndx   key - CODE

Press any key to continue...
```

```
. display structure
Structure for database : B:CLIENT.dbf
Number of data records :       17
Date of last update    : 11/22/85
Field  Field name  Type        Width     Dec
    1  NAME        Character      50
    2  CODE        Character       5
    3  STREET      Character      50
    4  CITY        Character      20
    5  PROVINCE    Character      25
    6  POSTAL      Character       7
    7  TELEPHONE   Character      17
** Total **                     175

. display status

Currently selected database:
Select area -  1, Database in use: B:CLIENT.dbf    Alias - CLIENT
    Index file: B:CLIENT.ndx  key - CODE

Press any key to continue...
```

```
. display structure
Structure for database : B:PRODCOMP.dbf
Number of data records :       11
Date of last update    : 11/22/85
Field  Field name  Type        Width     Dec
    1  PRODUCT     Character      15
    2  PRODCODE    Character       4
    3  COMPONENT   Character      15
    4  COMPCODE    Character       4
    5  MATERIAL    Character      15
    6  QUANTITY    Numeric         7       2
    7  UNIT_COST   Numeric         7       2
** Total **                      68

. display status

Currently selected database:
Select area -  1, Database in use: B:PRODCOMP.dbf    Alias - PRODCOMP
    Index file: B:PRODCOMP.ndx   key - PRODCODE+COMPCODE

Press any key to continue...
```

```
. display structure
Structure for database : B:ACCT_REC.dbf
Number of data records :        9
Date of last update    : 11/22/85
Field  Field name  Type        Width     Dec
    1  CODE        Character       5
    2  INVOICE     Character      10
    3  AMOUNT      Numeric         8       2
    4  DATE        Date            8
    5  DESCRIPT    Character     180
** Total **                     212

. display status

Currently selected database:
Select area -  1, Database in use: B:ACCT_REC.dbf    Alias - ACCT_REC
    Index file: B:ACCT1REC.ndx   key - DTOC(DATE)+INVOICE+CODE

Press any key to continue...
```

```
. display structure
Structure for database : B:REC_UPDT.dbf
Number of data records :        6
Date of last update    : 11/22/85
Field  Field name  Type        Width     Dec
    1  INVOICE     Character       8
    2  DATE        Date            8
    3  CHECK       Character       8
    4  AMOUNT      Numeric        10       2
** Total **                      35

. display status

Currently selected database:
Select area -  1, Database in use: B:REC_UPDT.dbf    Alias - REC_UPDT
    Index file: B:REC1UPDT.ndx  key - DTOC(DATE)+INVOICE+CHECK

Press any key to continue...
```

```
. display structure
Structure for database : B:ACCT_PAY.dbf
Number of data records :        9
Date of last update    : 11/22/85
Field  Field name  Type        Width     Dec
    1  CODE        Character       5
    2  INVOICE     Character      10
    3  AMOUNT      Numeric         8       2
    4  DATE        Date            8
    5  DESCRIPT    Character     180
** Total **                     212

. display status

Currently selected database:
Select area -  1, Database in use: B:ACCT_PAY.dbf    Alias - ACCT_PAY
    Index file: B:ACCT1PAY.ndx   key - DTOC(DATE)+INVOICE+CODE

Press any key to continue...
```

```
. display structure
Structure for database : B:PAY_UPDT.dbf
Number of data records :        6
Date of last update    : 11/22/85
Field  Field name  Type        Width     Dec
    1  INVOICE     Character       8
    2  DATE        Date            8
    3  AMOUNT      Numeric        10       2
    4  CHECK       Character       8
** Total **                      35

. display status

Currently selected database:
Select area -  1, Database in use: B:PAY_UPDT.dbf    Alias - PAY_UPDT
    Index file: B:PAY1UPDT.ndx   key - DTOC(DATE)+INVOICE+CHECK

Press any key to continue...
```

```
. display structure
Structure for database : B:NEWSTOCK.dbf
Number of data records :        8
Date of last update    : 11/22/85
Field  Field name  Type        Width     Dec
    1  NAME        Character      15
    2  CODE        Character       5
    3  SUPCODE     Character       5
    4  QTY         Numeric        10       2
    5  PRICE       Numeric        10       2
    6  DATE        Date            8
    7  INVOICE     Character      10
** Total **                      64

. display status

Currently selected database:
Select area -  1, Database in use: B:NEWSTOCK.dbf    Alias - NEWSTOCK
    Index file: B:NEWSTOCK.ndx   key - CODE+DTOC(DATE)

Press any key to continue...
```

```
. display structure
Structure for database : B:SALE.dbf
Number of data records :        6
Date of last update    : 11/22/85
Field  Field name  Type        Width     Dec
    1  NAME        Character      15
    2  CODE        Character       5
    3  CLICODE     Character       5
    4  QTY         Numeric        10       2
    5  PRICE       Numeric        10       2
    6  DATE        Date            8
    7  INVOICE     Character      10
** Total **                      64

. display status

Currently selected database:
Select area -  1, Database in use: B:SALE.dbf    Alias - SALE
    Index file: B:SALE.ndx  key - CODE+DTOC(DATE)

Press any key to continue...
```

```
. display structure
Structure for database : B:PRODFIN.dbf
Number of data records :        7
Date of last update    : 11/22/85
Field  Field name  Type        Width     Dec
    1  NAME        Character      15
    2  CODE        Character       5
    3  QTY         Numeric        10       2
    4  DATE        Date            8
** Total **                      39

. display status

Currently selected database:
Select area -  1, Database in use: B:PRODFIN.dbf    Alias - PRODFIN
    Index file: B:PRODFIN.ndx   key - DTOC(DATE)+CODE
```

```
. display structure
Structure for database : B:PRODREQ.dbf
Number of data records :        8
Date of last update    : 11/22/85
Field  Field name  Type        Width     Dec
    1  NAME        Character      15
    2  CODE        Character       5
    3  QTY         Numeric        10       2
    4  DATE        Date            8
** Total **                      39

. display status

Currently selected database:
Select area -  1, Database in use: B:PRODREQ.dbf    Alias - PRODREQ
    Index file: B:PRODREQ.ndx   key - DTOC(DATE)+CODE
```