

# Multidimensional Budgeting Concepts and Budget Control Modeling For Production Systems Performance Efficiency

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## ABSTRACT

The growing complexity of the society and high level of competition in the business world has imperatively made business organizations to do serious planning, accounting, implementation, and control of budget in order to survive the present day volatile business climate very efficiently. There is always the saying that “one who fails to plan, plans to fail”. Therefore, this study of budgeting and budget accounting serves as a tool for planning, execution, measuring efficiency and performance in manufacturing industries. It focuses on budget preparation, implementation and control on operations and activities in production engineering organizations. The objective of this study was to x-ray the relevance of budgeting as a tool for planning and controlling in manufacturing industry and also to ascertain the concepts associated with the efficient analytical processes of budgeting plans to the performance of business organizations. It is necessary that management of every organization should prepare budget and adhere strictly to the provisions of the budget with a regular and periodic review of the budget in order to detect variations. This work will serve as a template to managers, entrepreneurs, creditors, and employees on how to effectively allocate and manage scarce resources judiciously through budgetary planning, accounting, implementation and control to the measurements of performance and efficiency of operations.

**Keywords**— Multidimensional, Budgeting, Budget Control, Modeling, Production Systems, Efficient Performance

## I. INTRODUCTION

A full understanding of the budget planning and preparation system is essential, not yet to derive expenditure projections but to be able to advice policy makers on the feasibility and desirability of specific budget proposals, from a macroeconomic or microeconomic perspective. Budgeting is an important concept in finance that cannot be over emphasized.

The term budget refers to a plan, quantified in monetary terms, prepared and approved by appropriate authorities prior to the defined period of time usually showing planned income to be generated and/ or

expenditure to be incurred during that period and the capital to be employed to attain a given objective (Orebiyi and Ugochukwu, 2006).

Budget preparation is a process with designated organizations and individuals having defined responsibilities that must be carried out within a given timetable. This process is normally established and controlled by a legal and regulatory framework while generally sharing broadly common procedures, budget preparation and execution systems do exhibit differences depending on their historic origin. On the other hand, budget implementation is the final stage of the budgeting process before the control loop. This involves the actual usage or application of public funds in carrying out the activities and projects that have been enumerated in the budget.

The success of every organization depends largely on effective planning and control. Planning and control are preconditions for the attainment of organizational goals. The objectives of organization are realized through a careful plan of action and control.

On the other hand, performance can be defined as the outcome of a firm's activities over a given period. Thus, a firm could experience a poor as well as a good performance. The determinant or measure of performance varies across industries and companies. Measurement of performance includes: customer satisfaction, employees and/or shareholders satisfaction, sales growth, market share, return on capital invested (Amalokwu and Ngoasong, 2008). In this work, the performance indicators are: dividend per Share, earnings per share, net asset per share, and returns on investment. The inability of many organizations to adequately plan has led to various problems they are facing today. Some of these problems are low profitability, poor liquidity which of course would have negative effect on shareholders wealth. It is as a result of this, that this study is based on budgeting and firms performance of production engineering companies in Nigeria.

Yucel and Gunluk (2007) in their research on effect of budgetary control and justice perception on the relationship between budgetary participation and

performance discovered that budgetary control and justice perception affected performance positively. In addition, performance was affected negatively in an environment where rigid budgetary control was practiced. Managers consider budget participation more effective in an environment where justice perception is higher than where the justice perception is low (Yucel and Gunluk, 2007). Parker and Kyj (2006) claimed that budgetary participation affects vertical information sharing, organizational commitment, role ambiguity and performance directly and indirectly. Akintoye (2008) in his work on budgetary control and its effect on firms' performance, tested the association using turnover as one of the variables with the assumption of turnover as the budgetary control indicator and dividend per share, earning per share and net asset per share as the indicators for firms' performance. They discover that there is a significant relationship between the two categories of variables mentioned above. Wijewardena and De Zoysa (2001) argue that the impact of budget planning and budgetary control on performance may vary from firm to firm depending on the extent of its use. They assert that the greater extent of the formal budgeting process should have a positive impact on the performance of SMEs. In their study, performance is measured by two financial indicators: sales growth and returns on investment. Data were collected from 2,000 manufacturing SMEs in Australia. The results show a positive and significant relationship between budgeting planning and sales growth, and between budgetary control and sales growth. However, no significant relationship is found between budgeting planning and return on investment, nor between budgetary control and return on investment. As a result of Wijewardena and De Zoysa's research, Fonseka and Perera (2004) also studied the relationship between the budgeting process and performance in Sri Lanka's SMEs. The findings are consistent with the previous findings, which show that those firms engaged in more formal budgeting planning and control processes have achieved higher growth rate in sales, but no significant relationships are found between budgeting planning and returns on investment, nor between budgetary control and returns on investment. In the contribution of Otusanya (2004) to communication aspect of budget processes, in addition to being the managers planning tool, he asserts that budgeting is also one of the most effective tools of communication and integration. Budget communication shows how each part of the organization relates to its goal. Budgeting therefore requires that the manager in charge of the whole and each person in charge of parts discuss the budget jointly in order to arrive at a better result.

Amoako-Gyampah and Acquah (2008) classify performance under two dimensions: market share and sales growth. Where market share is the firm's portion in the entire industry and sales growth is the increase in sales in

money value. High performance will mean high market share and high sales growth. Hake and Krishnan (2005) examine the firms' performance by the interaction of budget type and environment uncertainty, they found that when the environment is highly uncertain, relative to traditional budget, rolling budget can help in coping with the uncertainty and improve the performance.

In a manufacturing industry, and other business organization, top or line managers are faced with problems of limited resources due to organization policies. Such policies may include income and expenditure policies, raw material utilization policy, purchasing policy, production policy, labor and time limit policies, it is viewed against the above mentioned background that the concept of budgeting as a tool for planning and control is pertinent. It is about making plans for future, implementation, and monitoring of activities to see whether it conforms to the plan. Budget is thus, a formal expression of managerial plan in quantitative and monetary terms encompassing different phases of operation aimed at assisting management in the realization of organization's objectives.

### **1.1 Concept of Budgeting**

According to Adeniyi (2001), "a budget, is a plan quantified in monetary terms prepared and approved prior to a defined period of time usually showing planned income to be generated and or expenditure to be incurred during that period and the capital to be employed to attain a given objective", it is the process of preparing detail short term plans for the functions, activities and department of organization, thus converting the long-term corporate plan into action. Horn (1982) defined budget as the estimate of probable future income and expenditure, especially, that made by government. To him, budget is an official statement by the government of a country's income from tax and how it will be spent.

According to Osisoma (2000), budgeting is defined as a formal expression of managerial plans in quantitative and financial terms encompassing different phases of business operation and aims at helping management towards the attainment of organizational objectives, it has the following ingredients:

- It is a plan of action.
- The plan is stated in quantitative or financial terms.
- It is prepared prior to a defined period of time for the control of performance.
- It integrates the resources and costs of an organization to plan for the anticipated level of performance.
- It is directed towards the attainment of organizational goal.

A budget is the financial translation of policy objectives, in terms of anticipated revenue and

expenditure, within a given period of time, usually a year; it could be annually, quarterly, monthly and even weekly for review and control purposes.

Budgeting is one of the parameters which ensure the actual achievements of people, departments, ministries and firms. No wonder, Akin (1990) defined budget as “a means of tabulating the projected inflow and outflows of any organization in order to map out the plans to be achieved at a specified period of time.

Budget takes a comprehensive financial plan, setting forth the expected routes for achieving the financial and cooperate goal of an organization. Budgeting is an essential step in effective financial planning. Planning is the process of deciding which objectives to pursue within a specific future time period and how to achieve those objectives. Planning at any level in an organization is primarily concerned with the future implications of current decisions rather than with decisions to be made in the future. Planning exists at all level of management, including strategic, tactical and operational level. Therefore, effective budgeting should be directed towards the various levels of management, departments and sub units to achieve goal congruency.

### **1.2 Roles Budgeting in Industries**

The survival of business organization depends on effective budgeting system. The complexity and dynamism of business environment necessitated the emergence of budgetary control. Budgeting is an economic tool designed to put organization in the proper pedestal. Therefore, the role of budgeting includes:

1. Budgeting is a formal framework of formulating the strategic corporate objectives of an organization. It is the basis for formulating the long term goal of organization. It is on this basis that budget is defined as, “the corporate compass

of an organization”, that, any organization without a formal budget is like a ship without a rudder”.

2. Budgeting enhances the evaluation of performance. The performance of various departments and sub-units can be evaluated with ease. The measurement of departmental performance can be ascertained and corrective measures made where possible. It shows the expected costs and expenses for each department as well as the expected output. It is the yardstick for measuring performance. It helps to co-ordinate and integrates the efforts of various departments in line with overall objectives of the organization, this result in goal congruency. It facilitates control by providing definite expectation in the planning phase that can be used as a term of reference for judging performance.
3. Budget improves the quality of communication. The overall objectives, goal, line of authority and responsibility and the process of plan implementation are clearly written and defined in budget. This clarifies doubt and promotes better understanding between managers and subordinates.
4. Budget is a managerial control tool that reveals weakness in organization, it fixes responsibilities in organization. It compels all members of management to participate in the Formulation of goals and objectives.
5. Budgeting reduces the likely-hood of fire-fighting approach to decision making. It helps to save management time through the use of exception principle, which is the heart of budgetary control.

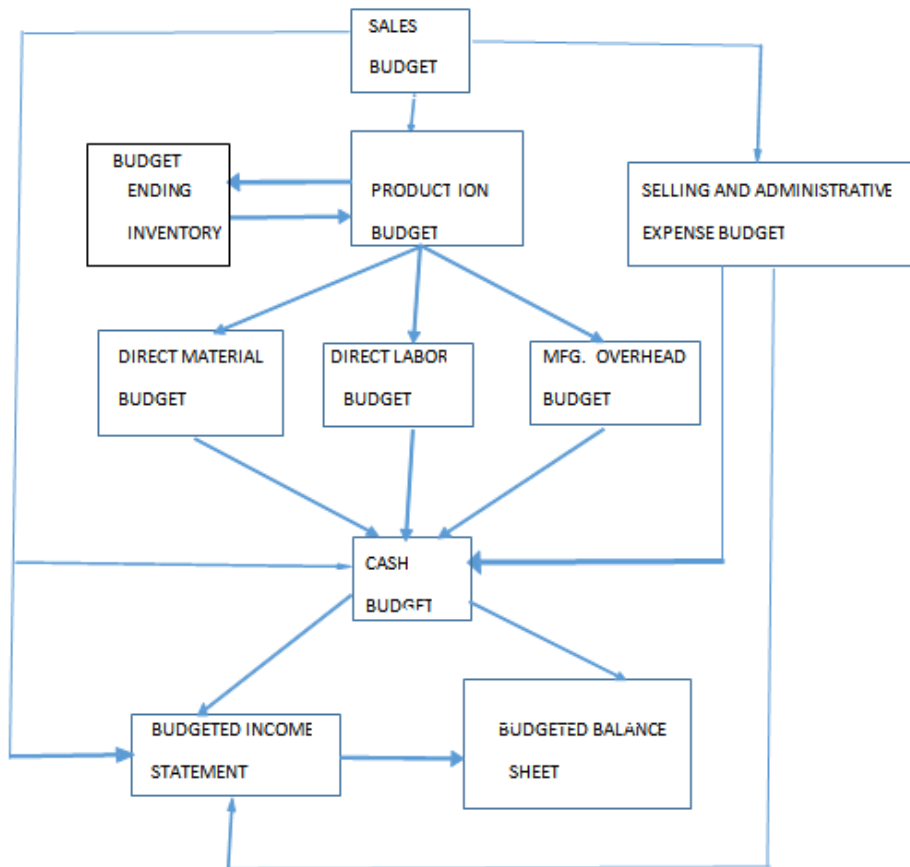


Figure 1: Budget Cycle

1.3 Types of Budget

The planning and controlling functions of organization are realized through budgeting. Basically, the classification of budgeting is a contentious issue. For the purpose of this research work, budget could be fixed, flexible, master budget as well as functional budget.

1. Fixed Budget

This type of budget relates to one level of activity on which all costs are attached. Thus, materials, labour cost and overhead costs are related to one level of activity. It is on that premise that Lucy (1988) defined fixed budget as “one which is designed to remain unchanged irrespective of the volume of output on turnover attained”. Fixed budget is a single budget that has no provision for adjustment should actual activity varies. Fixed budget is not very applicable in an unstable economy because it cannot stand the test of time.

2. Flexible Budget

Flexible budget recognizes the different behavioural pattern of costs in relation to the various output levels; it assumes that cost of labour, material and other materials used in production vary in accordance to changes in the levels of activity. Lucy (1976) defined

flexible budget as a budget designed to adjust the budgeted cost levels in line with the actual levels attained. According to him, flexible budget analyses each item of expenditure in the budget into fixed and variable elements. It thus, recognizes the different costs in relation to fluctuations in output or turnover designed to change appropriately with such fluctuation.

According to ICAN (1996), where flexibility is allocated in the overhead budget, then it is the overhead allowance for actual output which should be compared with actual overheads of the period for the purpose of variance analysis.

3. Master Budget

This budget is prepared by incorporating all the departmental summaries. In the private sector, the master budget is represented by a firm’s projected financial statement, especially the profit and loss account and the balance sheet. The master budget is usually divided into two sections as follows:

- i. **Capital Budget:** This budget is meant to take care of capital project. According to Warren and Fess (1986), capital expenditure budget summarizes future plan for acquisition of planned facilities and

equipment. Capital budgeting is a long-term planning for proposed capital outlays and their financing.

- ii. **Recurrent Budget:** Recurrent Budget is made up of recurrent revenue and recurrent expenditure. It is meant to cover estimates on yearly basis.

#### 4. Functional Budget

This type of budget is a subsidiary to the master budget, it is all the sum total of the component functional budgets that make up the master budget, it relates directly to the functional areas of organization. A typical manufacturing organization has the following:

- a. Sales budget.
- b. Production Budget.
- c. Direct Labour Budget.
- d. Direct Material Budget.
- e. Purchasing Budget.
- f. Capital Expenditure Budget.
- g. Cash Budget.
- h. Administrative Budget.

**a) Sales Budget:** This is a statement of planned sales in terms of quantity and value, and analysed by product. Lucey (1996) states that for many organizations, sales volume is the principal factor so that sales budget becomes the primary budget from which the majority of the other budgets are derived. It is necessary to make a sales forecast before sales budget can be developed.

**b) Production Overhead Budget:** Production Overhead Budget shows the quantity and cost involved in producing each product. According to Ibitoye (1995), production budget is a schedule or a "statement of output in units analyzed by products. The output can also be expressed in terms of standard cost. The Institute of cost and Management Accountants (ICMA) defined production budget as the quantity of work achievable at standard performance expressed in terms of standard unit of work in a standard period based on sales budget. This takes account of the sales and production policy so that the sales target can be forged with the production capacity of the factory.

**c) Direct Labour Budget:** The labour budget according to Brown and Howard (1992), "it represents the forecast of direct and indirect labour requirement to meet the demands of the company during the period, this budget need to be linked to the production budget. Each product specification will give a clear view of the operation involved, types of labour required and number of hours allowed to complete the finished product.

**d) Direct Material Budget:** The production department determines the quantity and type of materials to be used for the manufacturing of various company products. In

most companies, there is a standard part list and bills of material that give the detail material requirement of production.

**e) Purchasing Budget:** The purchase of direct material is a function of the level of opening inventory, and the desired closing inventories. The units of materials to be purchased are determined by the material usage budget plus desired closing inventories less opening inventories (materials) equal's purchases in units. Hence, it is these units that are budgeted for.

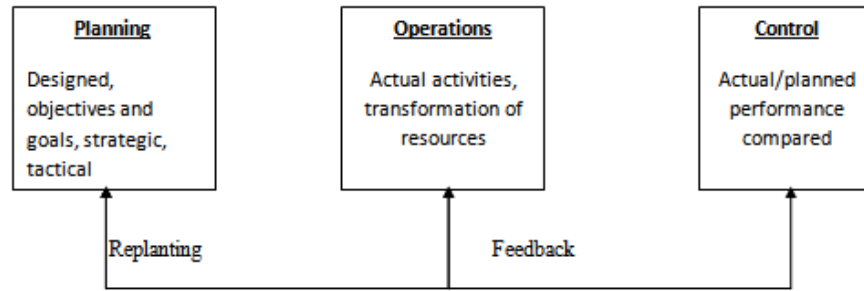
**f) Capital Expenditure Budget:** Capital Expenditure Budget refers to the estimated expenditure on fixed assets during a budget period. According to Onyia (1998), capital expenditure budget is used interchangeably with capital budgeting or investment decision. He defined capital budgeting as an investors action to commit his current funds to long term assets from which he expects returns over the projected period of investment.

**g) Cash Budget:** Cash Budget indicates the expected cash inflow and the expected cash outflow. It is a decision making tool that enable management to plan for optimum and best use of cash. Glauetr and Underdown (1987) noted that, "cash budget is a complete survey of the financial implications of expenditure plan of both current and capital nature during the year. Cash budget shows a surplus or deficit cash. But on the whole, cash surplus is an indication of improper use of cash.

**h) Administrative Budget:** This budget collects the cost of all administration expenses such as salaries, wages, supplies, dues, subscription, telephone expenses, traveling expenses, rent, postage, depreciation etc. Most of these expenses are fixed within defined limits so that when it is excessive, investigation follows.

## II. MANAGEMENT PLANNING THROUGH BUDGETING

The fundamental purpose of management planning is to provide a feed-forward process for operations and control. The concept of feed forward in planning is to give each manager guidelines for making operational decision on day to day basis. Planning is vested upon the view that the future success of an entity can be enhanced by continuous management action, it presupposes that an entity will be more successful, in terms of its broad objectives. Management planning is a continuous process because a planned projection can never be considered final and ultimate product. Plan must be revised as conditions change and new information becomes available.



**Figure 2:** Dynamism of Budgeting Mechanism

**2.1 Profit Planning Process**

Ralph Lewis in his planning and control for profit (1974) states that “No matter how busy management may be, the bulk of time should be spent on profit planning for the future. One of the most important approaches that has been developed for facilitating effective performance of management is profit planning.

According to Glueck, planning is a set of managerial activities designed to prepare the enterprise for the future and to ensure that decisions regarding the use of people and resources (means) to achieve the company’s objectives (ends) are made.

There are many steps to be taken in profit planning, viz:

1) Establishing the appropriate objectives: objectives here, cover targets of profit expected from company activities, not sales revenue or cash-flow, it is always important to take note of past trends and use it for forecast.

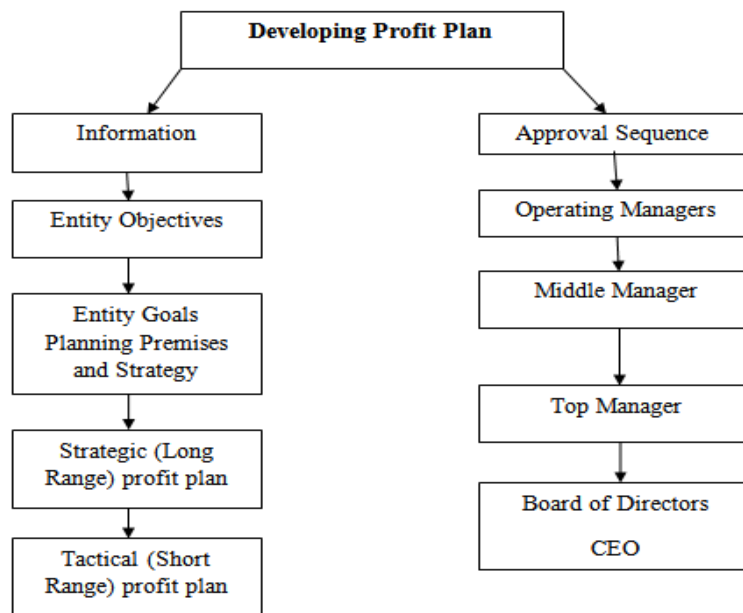
2) Establishment of job responsibilities: Jobs should be broken down in such details that managers should know the unit of their managerial decision.

3) Establishment of base data: Sometimes, the data for profit planning are not in existence or set out in a way that is not good for the purpose. There is thus, the need to have a solid data base.

4) Carrying out of situation Audit: This involves an audit of all the factors (both exogenous and endogenous) that influence the company’s affairs. This includes the establishment of competent skills and the economic situation that will impinge on company performance.

5) Establishment of appropriate control system: Planners should not lose sight of the cost control in their planning. The budget should set out standard of performance so that the company’s activities will be tailored to that level.

6) Variance analysis: This is analysis of the difference between actual and budgeted. Most often problem arises in companies because the variance was not determined and analysed in good time.



**Figure 3:** Block Diagram of a Profit Plan

## 2.2 Budget Preparations: Stages in the Preparation of a Budget

Cherrington, Hubbard and Luthy (1988) and Izar (1990) share the same opinion on the process of preparing a budget. A number of stages can be identified in the preparation of a budget.

1. Communicating the details of the budget policy:
  - i. Budget preparation needs to be done considering the long term plans of the top management.
  - ii. The top management will communicate its policy effects of the long term plan (i.e. Any changes in the sales mix, expansion of certain activities, changes in industry demand, changes in productivity etc) to those who are preparing the budgets.
2. Determining the factor that restricts performance:
  - i. In any organization, there is a factor that limits or restricts the performance for a given period, in most cases this is the sales demand, but can also be production capacity for a manufacturing company. This is known as the principle budget factor and will be unique to different organizations and industries as well.
3. Preparation of the sales budget:
  - i. The volume of sales and sales mix decides the level of a company's operations, when sales demand is the factor that restricts output. For this reason, the sales budget is the most important plan in the annual budgeting process.
  - ii. This budget is also the most difficult to produce, because total sales revenue depends on the actions of the customers. In addition, sales demand may be influenced by the state of the economy or the actions of the competitors
4. Initial preparation of various budgets:
  - i. The budget holders (managers responsible for meeting the budgeted performance) can get involved in the preparation of budgets whereby they will submit the budgets relevant to their department to the top management for approval. Any changes will then be made and reconciled to meet the needs of the company. The budget will be set based on the policy of the company.

## 5. Negotiation of budgets

- i. When the budgets are set at the lower levels and submitted for approval to the top management, it is natural to have disagreements on certain costs and also budget slack will be included. Therefore negotiation will take place to bring the budget to a level agreeable to everyone.

## 6. Coordination and Review of Budgets

- i. When the budgets have been set, it will be done by an individual manager relevant to his/her own department this disregarding the organizational requirements. Also budgets set by different departments may not be compatible with each other e.g. Factory manager would include the purchase of equipment in his/her budget when there are actually, no funds available in the finance department. Therefore the budgets need to be coordinated properly and revised in order to get the best fair with each other.

### 2.4 Constitution of Budgeting Personnel

Different persons are involved in budgeting. According to Izhar (1990), the budgeters, who prepare and are responsible for their budget, are their departmental line managers. They may or may not involve the sub-ordinate depending on their style of management and relationship with their juniors. In converting their budget into money terms they may enlist the help of an accountant. The person whose function is to coordinate the many individual budgets of the line men is the appointed budget officer normally an accountant.

In large public companies budgeting for the whole organization can be very complex process indeed, coordination of which is far beyond the limit of any one person. Here a budget committee may be set up comprising of high level executives in charge of the major functional division of the business.

## III. APPROACHES (DYNAMICS) OF BUDGETING

The approach towards budget depends on the organizations phase. A new startup will have incremental budgeting or a Zero Base budgeting whereas a mature company may have Kaizen Budgeting or Base Budgeting.

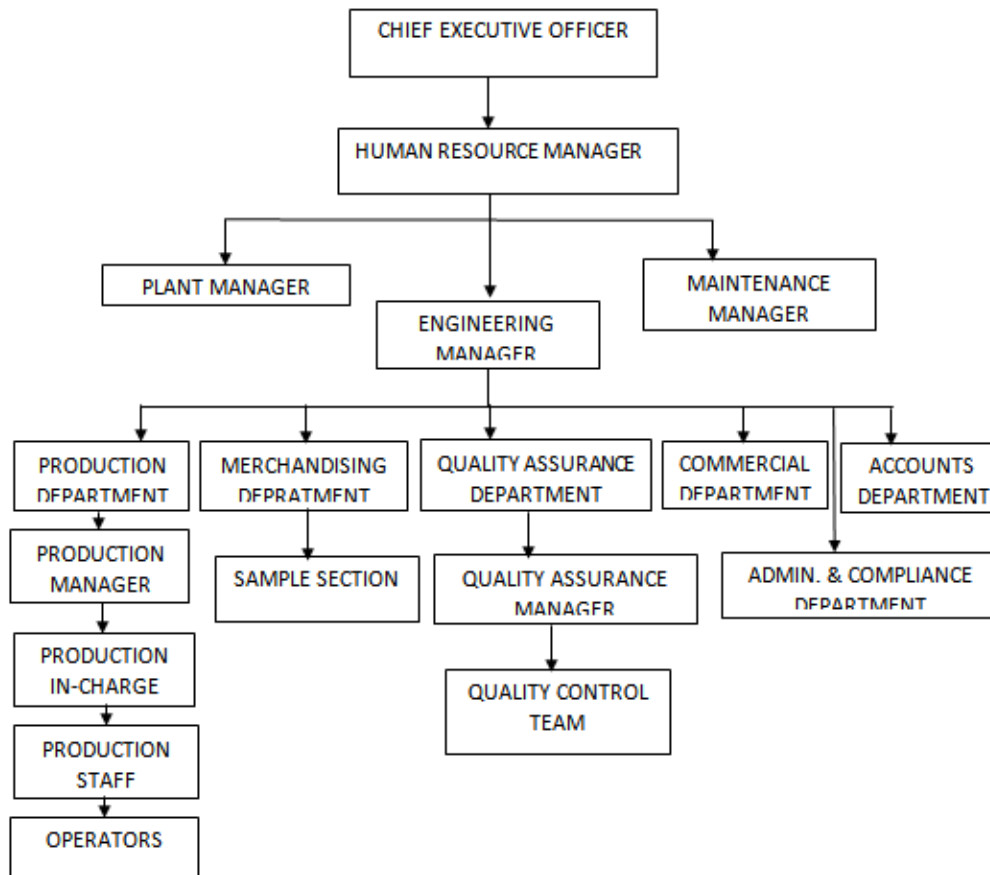


Figure 4: Organizational Structure of a Production Firm.

However, the approaches can be divided into two major points as below;

1. Top – down approach of budgeting
2. Bottom – up approach of budgeting

These two types of budgeting approach are the two crucial approaches to budgeting, although they may consist of some sub budgeting approaches.

**3.1 Top – Down Approach of Budgeting**

In top – down approach the top management prepares the budget according to the objective of the organization and passes it on to the managers for implementations. The suggestion for budget and inputs may have taken from the managers before it’s preparation but consideration to their suggestions for budget preparation is solely on management’s desecration.

Top – down budgeting begins with estimation of costs at higher level. The entire budget is divided in to first level tasks, and then below level. This type of approach consists of the following;

- a. Management from previous trends and experiences estimates the cost and revenue while keeping internal as well as external influences in mind such

as increase / decrease in salary cost, economic condition of the country etc.

- b. Past experience and current market conditions are key elements for the budget preparation. Management is expected to be in knowledge of current affairs of the market as well as past history of the organization.
- c. Management may take inputs from the managers at the initial preparation of budget. This will help the management to acknowledge the feelings of the lower staff and expectations at the organization level.
- d. Management while preparing the budget shall consider margin pressure, macroeconomic factors such as change in tax legislation, as well as internal factors such as resource allocation.
- e. Management may also take a look over the peers and their budgets and profitability to compare the same with the organization. This will help to set targets for the organization and increase the margin or profitability and outperform in the market. The comparison with the peers may be at turnover level, cost level or overall profitability



level. This exercise helps management to find out the reasons of gap between the organizations.

- f. Management post their finalization of budget may again put the budget for managers inputs. Management may consider the inputs provided by the managers in the budget and finalize the same.
- g. Post finalization, management shall deploy the resources according to the target set by the budget and if required the budget shall be intimated to every small business unit / department.

#### **Advantages of Top – Down Budgeting Approach**

1. Budget will have an overall corporate functional approach rather than divisional approach since management's concern will be overall growth of the organization.
2. Budget will be in the experienced hands and management if required can take help of outsider.
3. Budget preparation will be fast and inter departmental issues shall be ignored.
4. Budget will be aggressive towards the growth of the organization.

#### **Disadvantage of Top- Down Budgeting Approach**

1. Managers / Lower management will be de-motivated as they don't have ownership over the budget and tends to feel that management have set targets which are practically impossible.
2. Top management may not have close information about the organization and that may impact their budget.
3. Inter departmental communication will take a hit as they will have no idea how the management set targets for each of them.
4. Management's considerable time will go into this and may lose from the path of strategy.
5. Budget shall be feared less accurate as the top level management cannot have idea of unit wise expenditures.

### **3.2. Bottom – Up Approach of Budgeting**

In bottom – up approach the managers shall prepare the department wise / business unit wise budget according to the information and past experiences and present the same to the management for their inputs and approval.

Bottom – up approach begins with identifying the different operations and tasks performed by the organization. Each unit of the organization shall disclose the resources and funds required by them in their individual budgets. The finance department then consolidates the funding requirement of the entire organization and human resources (HR) department shall consolidate resources required. The combined budget shall be put up to the management for the approval. This approach consists of the following

- a. Managers from their past experiences and their involvement in the day to day business shall prepare budget for the forthcoming period. They

have been asked by the management for setting their own targets with regards to revenue as well as cost.

- b. Managers are expected to take in account market conditions and margin pressures while preparing budgets and help it to make more realistic.
- c. Managers are expected to go beyond the internal environment and prepare budget considering the external influencers as well.
- d. Managers than put the budget to the management for their review and approval. The budget shall have explanation for each and every item of the budget and if there is major variance from the previous period budget, that should be highlighted to the management with the explanation.
- e. Post their review and query resolution, the budget shall be finalized and implemented on every business unit and the summation of all departmental budget makes up the companies master budget

#### **Advantages of Bottom – Up Budgeting Approach**

1. The managers shall be motivated as the ownership of budget is in their hands.
2. The budget will be more realistic as managers will have a better knowledge of the operations of the organization.
3. Managers will be more committed towards the organization and targets set by them as they are the owners of the same.
4. Senior management will now only have to concentrate on the overall business strategy rather than a business unit wise.
5. The budget can be quite accurate for the individual task which leads to overall accuracy over the total budget.

#### **Disadvantage of Bottom – Up Budgeting Approach**

1. Budget may not be at par with the overall objective of the organization as it was been prepared by the managers on the business unit level.
2. Budget preparation will be slow and dispute between inter department may arise.
3. Management may lose the control over the organization's forecasting.
4. Managers may set targets which are easy to achieve to reduce pressure from them.

These Two aforementioned approaches may comprise all or some of the following sub- approaches;

- I. Incremental budgeting (IB)
- II. Zero based budgeting (ZBB)
- III. Based budgeting (BB)
- IV. Activity based budgeting (ABB)
- V. Kaizen budgeting (KB)

#### **a. Incremental Budgeting (IB)**

It is also called traditional method of budgeting whereby the budget is prepared by taking the current

period's budget as a benchmark, with incremental amounts then being added for the new budget period.

In Incremental Budgeting the figures of each expenditures and income starts with previous years actual numbers and adjusted for inflation, overall market growth and other factors management deems fit.

For example in an organization total salary paid to employees in a particular year is #500,000. When the budget is prepared for the next year the management thing that they need five more new employees who will be paid #30,000 each and also an increment of 10 % to existing employees shall be given. Therefore, in incremental budgeting the budget for salary would be #700,000 (#500,000 + 10% raise to existing employees + (#30,000\*5 new employees).

#### **b. Zero Based Budgeting (ZBB)**

In ZBB, all the numbers reset to zero and given a fresh thought over all the items of budget. The new numbers of every item shall be justified with proper reasoning and shall not be ad hoc figures.

This kind of budgeting helps the management to avoid traditional expenditures which are no longer required. As the base is zero, management can actually give a new thought to each and every item of expense and reassess the requirement or possible cost saving.

#### **c. Base Budgeting (BB)**

In BB, budget prepared to know how much expenditures will be there for just to survive (going concern). However any incremental spending over and above that level shall be justified on cost vis-a-vis benefit from the same.

It's been generally prepared in companies running into cash crunch. To cut costs the management may just prepare a budget for the survival and any expenditure over and above shall be cut off. For example – rent, electricity and basic staff are essential to run the company but training, picnic and celebration expenditures are not required for survival of the company.

#### **d. Activity Based Budgeting (ABB)**

In ABB, budget prepared with the intention to identify the operations which generate cost to the business and how can be the said cost reduced from the current level. This kind of budgeting is mostly used in a matured organization.

Activity based budgeting is a long exercise to find our cost of each and every activity in a large organization and assess the value addition of the same. This exercise also includes alternative procedure to perform the same activity or reaching to the same goal while reducing the cost. In almost every organization, directly or indirectly this budgeting is been prepared and performed. However it depends on the management's focus to enlarge it or reduce to certain level.

#### **e. Kaizen Budgeting (KB)**

“Kaizen” means continuous improvement. A Kaizen Budget is designed for cost improvements and revenue maximization.

Kaizen is Japanese word which means continuous improvement of working practices, personal efficiencies etc. Kaizen budgeting is all about innovative methods to improve the organization's efficiency to deliver. Kaizen budgeting mostly uses by leading organizations, which has a long term approach and short term cash outflow is not a big deal for them.

#### **3.3 Budget (Master Budget) Preparation Process**

Budgeting is a detailed process with several intricate steps leading up to understanding it at large. To prepare a budget, a company must first decide on the unit of time (monthly, quarterly, Biannually, or Annually) to use. A budget calculated on a monthly basis usually has a good level of detail factored into it, while some companies prefer a higher-level quarterly-basis budget. Since some of the company's expenses vary with sales, the projected number of units to be sold becomes the budget's starting point. Analysts gather information to estimate the approximate variable costs per unit sold and use this to drive the monthly expense calculations for the variable cost budget. For fixed expenses, the costs are entered into the budget by month with no variation.

A step by step guide to the budgeting process is given as below:

- 1. Update budget assumptions:** budgets are always prepared on certain assumptions. Those assumptions could be related to the sales trends, cost trends or environmental conditions. Before embarking on preparing the budget, these assumptions must be thoroughly reviewed according to the recent environmental condition.
- 2. Note available funding:** limited funding can greatly hinder the growth projects of the business. Therefore, in the preparation of budgets funding as the availability of investable funds will determine the initiation of viable projects.
- 3. Step costing points:** the business is subject to dynamism. Everyday posed with challenges that can completely change its structure. Therefore, in the budgeting process certain factors that can affect the costing for the business should be closely considered. These factors should be identifying before hand in order to make the budget realistic.
- 4. Create budget package:** in budget package, previous standards related to the budgeting process are taken in order to formulate a budget for the current period. Previous standards are updated according to the recent environmental conditions budget package is a kind of outline according to which budget has to be prepared.
- 5. Obtain revenue forecast:** there is no denying the fact that sales budget is the most crucial budget of all. All the budgets are based on the sales budget. Furthermore, sales

budget determines whether the business is generating enough revenue necessary for its survival. Therefore, adequate attention must be given to the preparation of sales budget by forecasting demand accurately.

**6. Obtain department budgets:** the department budgets will help to reach a budgeted expenditure for the budgeted period. Each department will prepare its own budget and then all of them will be combined to become a part of the master budget.

**7. Validate compensation:** compensation plans are significant component of the budgeting process. As compensation is subject to an annual increase, therefore, it should be prepared with great care. The approval for compensation increase should first be taken from the top management and then it should be augmented in the budgeted compensation plans.

**8. Validate bonus plans:** in order to maintain the morale of the employees bonuses are frequently given to out motivated workers. Bonuses act as an appraisal method. Bonus announcement that are not considered in the budgeting process can create havoc in the profit of the

business. The top management should be consulted for any bonus plans.

**9. Obtain capital budget requests:** capital expenditure ensures expansion of the business. It helps the business to avail the opportunities plans should be taken in advance and they should be included in the budgeting process accordingly.

**10. Update the budget model:** any changes in the assumptions of the budget model should be updated and final budget should be prepared accordingly. A delay in this may lead to glitches later on that could cause confusion.

**11. Review the budget:** the budget should be reviewed thoroughly once it is prepared in order to correct any flaws. A little decimal placed wrongly can create quite an unbalance in the budget sheet.

**12. Obtain approval:** the budget should be presented to the top management. They will evaluate whether it has been prepared according to their requirements and finally approve it. If it does not need any changes.

**13. Issue the budget:** the budget should be formally issued after its approval. All the operations there and then will take place according to it.

**Table 1:** Master Budget Analyses Expenditure of a Production Firm

DEPARTMEN TS	OPERATING BUDGET	PAY ROLL	PURCHAS E BUDGET	INCENTIVE S	STATIC BUDGET	MAINTENANCE	DEPT MASTER BUDGET/TO TAL
HUMAN RESOURCE		1,874,000 ,000		64,800,000	5,000,000		1,943,800,000
SAFETY	3,000,000		12,000,000		3500000		19,500,000
WAREHOUS E	4000000		3,500,000		2,500,000		10,000,000
SALES	6,000,000		2,800,000		5,000,000		14,300,000
PRODUCTIO N	28,000,000		1,450,000,00 0		70,000,000		1,548,000,000
QUALITY	10000000		12,000,000		6,000,000		27,000,000
UTILITY	8,000,000		450,000,000		75,000,000	350,000,00 0	882,000,000
					<b>TOTAL = # 4,444,750,000</b>		

All amounts are expressed in Naira, (#)

**3.4. Budget Implementation**

The implementation of the budget involves two main operations: commitments and payments. As regards the commitment of expenditure, a decision is taken to use a particular sum for a specific activity. Once the corresponding legal commitments have been established and delivery has been made of the contractual service, work or supplies, the expenditure is authorized and the sum due is paid.

**3.5. The Budgetary Control Process**

Budgetary control is the whole process of monitoring actual performance and comparing same with the budget to ensure the attainment of the overall budget objectives. It involves feedback of information on performance compared with the budget. Institute of cost and management Accountant (1981) defined budgetary control as the establishment of budget relating the responsibilities of executives to the requirements of a policy, and the continuous comparison of actual with budgeted results either to secure by individual actions the objectives of that policy or provide a basis for its revision.

Budgetary control according to Lucey (1996) follows the classical control cycle whereby each period, usually monthly, the actual costs and the difference or variances are highlighted. Budgetary control is an example of management by exception where attention is directed to the few items which are not proceeding to plan. The usual method of feedback is through budgetary control report to the manager concerned.

The main aim of budgetary control is to provide a formal basis for monitoring the progress of the organization as a whole and the objective specified in the planned budget, it provides feedback information

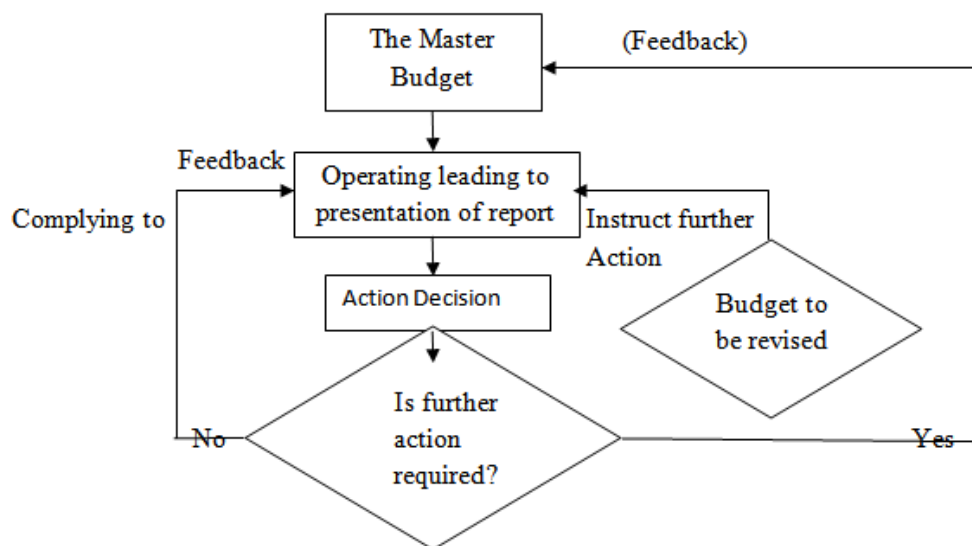
necessary to be able to make corrections to current operation and activities. Onah (1981) maintained that control budgets should be for very short periods e.g. a day, week, month or quarter, depending on the nature of the business within a budget period of say 4 years. Hence, budgetary control process revolves round three planning levels namely; Level 1: Strategic level; this level is normally concerned with the overall goals of the organization on a more or less long-term basis. Top management is usually directly involved in the formation of budget committee. Its specific functions include:

- a. Decoding on general policy objectives.
- b. Requesting, receiving and studying units and departmental budgetary estimates.
- c. Suggesting revision.
- d. Receiving and analyzing budget performance reports.
- e. Approving the budgeting(s).
- f. Recommending corrective action.

**Level 1:** Strategic level: It is pertinent to point out that the budget committee is indispensable in budget control process; its primary concern is with the total or master budget.

**Level 2:** Tactical Level: This level is concerned with middle management which has to do with the efficient and effective management of resources to achieve corporate goals.

**Level 3:** Operations-Planning and control level: The level has to do with actual day to day work performed. In practice a lot of flexibility is required by supervisors in applying controls and sanction specified by management. The feature of budgetary control is illustrated in the diagram below:

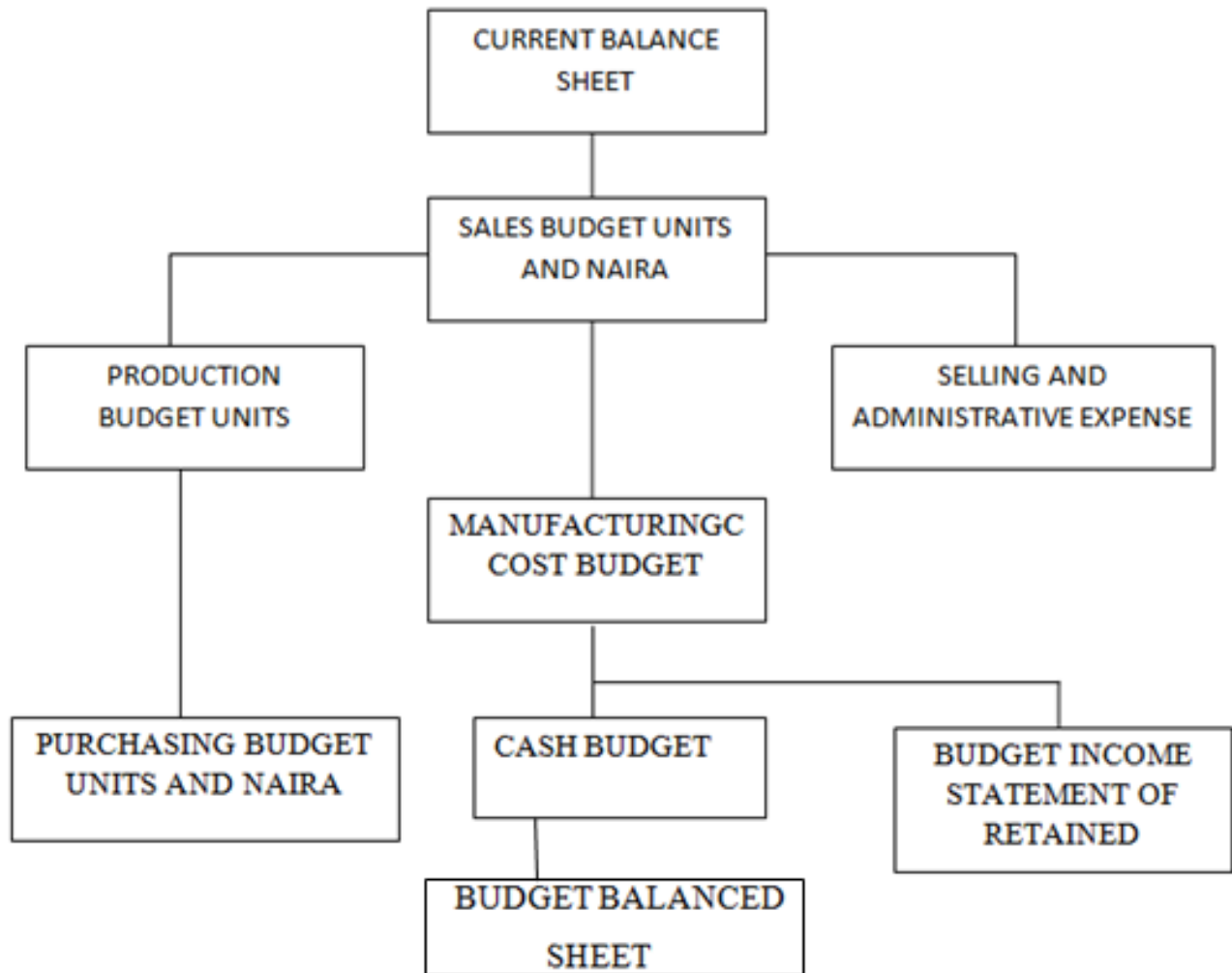


**Figure 5:** Features of Budgetary Control System

**3.6 Possible Limitations of Budgeting**

These limitations may include the following:

- No budgeting system can replace the need for supervisory executive ability in major decisions.
- Volatile environment
- Places great demand on management time.
- Lack of adequate and realistic data for proper budgeting.
- Persistent increase in the level of inflation.
- Revenue and expenses may be difficult to estimate.
- Political instability and economic depression.



**Figure 6:** Elements of Revenue Generation

**IV. HOW TO REVIEW REVENUE AND PRODUCTION BUDGETS IN COST ACCOUNTING**

In cost accounting, revenue and production budgets forecast how many units you plan to produce and you plan to sell.

Assuming you are budgeting to manufacture Aluminum cooking pots. You need to forecast how many sales you expect. Then you consider how many Aluminum

cooking pots you already have in inventory and plan how many you need to manufacture to meet the sales forecast. When you know the number of pots you need to make, you can budget for material and labor costs.

Direct costs are easily determined, and you can use the activity level to assign indirect costs. Revenue, production, inventory, direct materials, direct labor, indirect costs (overhead), and cost of goods sold all are budgeted items.

**4.1 Applying the Revenue Formula in Cost Accounting**

Assume you forecast selling 6million Aluminum cooking pots in the accounting period. Consider how many

Aluminum cooking pots you need to manufacture. Assuming a sales price of #1200 per pot, then, the revenue budget becomes:

$$\text{Revenue budget} = 6\text{million units} \times \#1200$$

$$\text{Revenue budget} = \# 7,200,000,000$$

**Again we use the inventory formula in cost accounting:**

And now for the famous inventory formula:

**Ending inventory = beginning inventory + production - sales**

Your production will change based on how many Aluminum cooking pots you already have in inventory. So if you already have 200,000 completed Aluminum cooking pots in beginning inventory, it's clear that you won't need to manufacture all of the 6million units as planned to sell. But, if then you need any Aluminum cooking pots in ending inventory, because you think you'll have orderings during

the first few months of the next year (another accounting period), you probably keep. So maybe you decide on an ending inventory of 150,000 units of Aluminum cooking pots.

Then, we use the inventory formula to calculate the Aluminum cooking pots needed to produce. Assume X is production units, and therefore we solve for X:

**Ending inventory = beginning inventory + production - sales**

$$150000 = 200000 + X - 6000000$$

$$X = 6,150,000 - 200,000 = 5,950,000 \text{ Units.}$$

This simple algebra problem shows that the production should be 5,950,000 units. This is the production budget.

**Table 2:** Aluminum Cooking Pots Production Budget:

Cost	Quantity	Unit Price	Total
Direct material (Aluminum)	1 square foot	#85 per square foot	#85
Direct labor (labor)	2 hours	# 25 per hour	#50
Indirect costs allocated	1 hour	#10 per hour	#10
<b>Cost per unit</b>			<b>#145</b>
	<b>Units</b>	<b>Unit cost</b>	<b>Total cost</b>
Production cost	5950000	#145 (above)	<b>#862750000</b>

The production budget includes direct materials, direct labor, and indirect costs (overhead). In this example, the indirect cost is allocated based on machine hours. Add the costs to get a unit cost. Then multiply units to be produced by the cost per unit. That amount is the total cost of production of **#862750000**.

**4.2 Accessing the Cost of Goods Sold in Cost Accounting**

The goods you produce for customers end up in one of two places: You either sell them (cost of goods sold), or they're still on the shelf (finished goods inventory). Beginning inventory and production don't matter.

The costs should be attached to the goods you sell? How much did they cost to produce? (If you're a retailer, how much did they cost to get?) To continue with the

Aluminum cooking Pots manufacturing example, assume that the first goods you sell are from beginning inventory. Because all 200000 units of beginning inventory are sold, use a formula to determine how many units of the year production are sold:

$$\text{Yearly production sold} = \text{total sales} - \text{beginning inventory}$$

$$\text{Yearly production sold} = 6000000 - 200000$$

$$\text{Yearly production sold} = 5800000$$

Assume also that the cost per unit of beginning inventory is #143. That cost is different from the Yearly production cost of #145. (Why the change? Because it seems like the costs of materials and labor to make a Aluminum cooking Pots go up all the time.) This table displays the cost of goods sold budget.

**Table 3:** Aluminum cooking Pots Cost of the Goods Sold Budget

		Unit Cost	Total
Beginning inventory	200000	#143	#28600000
The year production sold	5950000	#145	#862750000
Total sold	6000000		#891350000

The total cost of Aluminum cooking Pots (goods) sold is higher (#891350000) than total production cost in the previous table (#862750000). That makes sense, because that table deals only with producing 5950000 units. You sold 6 million units, but 200000 units were from inventory. Because of adjustments for beginning and desired ending inventory, you don't always need to produce in a month the number of units you sell in a year.

One more calculation: Now calculate your ending inventory budget:

Ending inventory budget = units  $\times$  per unit cost

Ending inventory budget = 150000  $\times$  #145

**Ending inventory budget = #21750000**

**Now you've planned revenue, production, and inventory. You need to figure out how to pay for it all. If you don't have a budget for an adequate cash amount to operate, you cannot do the business.**

#### 4.3 Nine Formulas for Cost Accounting

To reduce and eliminate costs in a business, you need to know the formulas that are most often used in cost accounting. When you understand and use these fundamental formulas, you'll be able to analyze a product's price and increase profits.

##### Breakeven Formula:

1. **Profit (#)** = Sales – Variable costs – Fixed costs

2. **Target Net Income:**

Target net income = Sales – Variable costs – Fixed costs

3. **Gross Margin:**

Gross margin = Sale price – Cost of sales (material and labor)

4. **Contribution Margin:**

Contribution margin = Sales – Variable costs

5. **Pre-Tax Naira Need for Purchase:**

$$\text{Pre-tax Naira need for purchase} = \frac{\text{Cost of items}}{(1 - \text{Tax rate})}$$

6. **Price Variance:**

Price variance = (Actual price – Budgeted price)  $\times$  (Actual units sold)

7. **Efficiency Variance:**

Efficiency variance = (Actual quantity – Budgeted quantity)  $\times$  (Standard price or rate)

#### 8. Variable Overhead Variance:

Variable overhead variance = Spending variance + Efficiency variance

#### 9. Ending Inventory:

Ending inventory = Beginning inventory + Purchases – Cost of sales

#### 4.4 How to Consider Profit Performance

A business earns profit by making sales and by keeping expenses less than sales revenue, so the best place to start in analyzing profit performance is not the bottom line but the top line: sales revenue. Here are some questions to focus on:

- How does sales revenue in the most recent year compare with the previous years?
- What is the gross margin ratio of the business?
- Based on information from a company's most recent income statement, how do gross margin and the company's bottom line (net income, or net earnings) compare with its top line (sales revenue)?

One last point to discuss is to put a company's profit performance in the context of general economic conditions.

#### 4.5 Performance Evaluation Reports for Cost, Revenue, and Profit Centers

Performance evaluation requires managers to have a benchmark to use as a guide for future periods. This benchmark is communicated to managers via a budget for their responsibility center. At the end of the year, managers are evaluated based on the actual figures generated by the responsibility center. Remember that responsibility managers are only responsible for certain numbers and therefore only those numbers should appear on the performance evaluation report. Looking at some sample performance evaluation reports for the three types of centers that use them.

##### 4.5.1. Cost Center Performance Evaluation Reports

A cost center performance evaluation report only contains expenses for the segment of the company that the manager is responsible for. Here is an example of a performance evaluation report for the human resources department of a large company.

**Table 4:** Human Resource Department Monthly Performance Report  
Human Resources Department Monthly Performance Report For the Month Ended

	Expenses #	Budget #	Actual #	Variance	% Variance
Salaries and Wages	350,000	349,500	500	F	0.14
Training	10,000	12,000	2,000	U	20.00
Depreciation	5,000	5,000	-	-	0.00
Office Supplies	1,000	750	250	F	25.00
<b>TOTAL</b>	<b>366,000</b>	<b>367,250</b>	<b>1,250</b>	<b>U</b>	<b>0.34</b>

This performance report contains the expenses for the human resources department of a company. The expenses are listed with both the budget and actual figures. The variance column is the absolute value (no negative numbers) of the difference between the budget figure and the actual figure. Because the absolute values are used, there must be a way to determine if the variance is good or bad. Next to each variance, you need to indicate if the difference is a favorable or unfavorable. For expenses, a favorable variance is one where actual cost is less than budgeted. The department saved money, which is a good thing. Unfavorable variances occur when the company spent more than planned.

When determining if a variance is favorable or unfavorable, look to see if the actual amount is larger or smaller than the budget amount. For salaries, actual is less

than budgeted. Because this is an expense, actual less than budget is favorable.

The percent variance is calculated by dividing the variance by the budgeted amount.

$$\% \text{ Variance} = \frac{\text{Variance}}{\text{Budget}} \times \frac{100}{1}$$

The percent variance gives the reader perspective. Salaries have a #500 variance but it is only 0.14% of the budget and therefore a very small percentage of the total budget. Office supplies on the other hand are off by #250, but that is a 25% variance. Use percentages to determine which line items are important to investigate further. Typically, a variance of more than 5% should be investigated.

**4.5.2. Revenue Center Performance Reports**

A revenue center performance report looks very similar to a cost center performance report.

**Table 5:** Product Sales Monthly Performance Report  
Awka Town Area Sales Monthly Performance Report

Product	Budget #	Actual #	Variance	% Variance
Standard Model	1,000,000	1,090,000	90,000	F 9.00
Deluxe Model	950,000	930,000	20,000	U 2.11
Executive Model	500,000	550,000	50,000	F 10.00
	<b>2,450,000</b>	<b>2,570,000</b>	<b>120,000</b>	<b>F 4.90</b>

Notice that the only difference is the name at the top of the report and that the word “expense” has been replaced with “product”. Make sure to look at each report carefully to determine if you are looking at a cost center report or a revenue center report.

The only difference with a revenue center performance report is the determination of favorable or unfavorable variances. Use the same methodology used in the cost center report. Look to see if the actual amount is greater or less than the budgeted amount. For the Standard Model, actual is more than budget. Here we are discussing revenue. Is higher revenue good or bad? Higher revenue is good, so the #90,000 variance is favorable. The Deluxe

Model has sales #20,000 lower than budgeted, which is bad and therefore unfavorable.

A company should not just investigate unfavorable variances. The Executive Model’s sales were 10% higher than budgeted. The national sales director might want to know how the Midwest Region was able to increase sales in order to help boost sales in other regions of the country. Favorable variances are just as important as unfavorable variances.

**4.5.3. Profit Center Performance Reports**

Because a profit center is evaluated based on revenue and expenses, the performance report will be based on a segment income statement.



**Table 6:** Standard Model Product Sale Monthly Performance Report

	Budget #	Actual #	Variance	% Variance	
Sales	6,500,000	6,650,000	150,000	F	2.31
Less: Variable Cost	3,500,000	3,575,000	75,000	U	2.14
Contribution Margin	3,000,000	3,075,000	75,000	F	2.50
Less: Direct Fixed Costs	2,000,000	1,999,000	1,000	F	0.05
Segment Margin	1,000,000	1,076,000	76,000	F	7.60

This report looks very similar to the cost center and revenue center performance reports. The only difference is the inclusion of revenue and expenses on the report. Pay careful attention to the accounts when determining if the variance is favorable or unfavorable. Remember the rules for revenue and expenses. Ask yourself if the variance is a good thing or a bad thing. For contribution margin and profit (segment margin), when actual is higher than budget that is a positive. The higher your contribution margin and profit, the better. That would be a favorable variance. When contribution margin and profit are less than budgeted, it is unfavorable.

From the above fundamental principles of determination and collection of revenues, it is now possible to consider revenue generation and collection from the productions out of budgeted expenditures. Therefore, the table below represents the various elements of revenues generation and collections out of budget expenditures presented as in the figure 6 above. These elements are calculated and values are obtained in monetary terms physical or on receipts as can be seen below:

A complete set of budget is classified broadly into two categories which are inter-related one to the other:

**1. Operational Budget** – It reflects the results of operating decisions, consists of eight elements as follows:

- Sales Budget (including a computation of “expected cash collection”)
- Production Budget
- Ending Inventory Budget
- Direct Materials Budget (including a computation of “expected cash disbursements/payment for materials)
- Direct Labor Budget
- Factory Overhead Budget
- Selling and Administrative Expenses Budget
- Pro Forma (or Budgeted) Income Statement

**2. Financial budget** – It reflects the financial decisions of the firm, consists two of:

- Cash Budget
- Pro Forma (Budgeted) Balance Sheet

The Major Steps in Preparing the Budget Are:

**Step-1.** Prepare a sales forecast (Sales Budget)

**Step-2.** Determine production volume (Production Budget)

**Step-3.** Estimate manufacturing costs and operating

expenses (Direct Material, Direct Labor and Factory Overhead Budget)

**Step-4.** Determine cash flow and other financial effects (The Cash Budget)

**Step-5.** Formulate projected financial statements (Budgeted Income Statement and Balance Sheet)

To go through the actual steps, a named company “**Olympic foundries limited.**” is chosen as case study. It is a manufacturer of a single product, as its annual budget is created for a certain year. The company develops its budget on a quarterly basis. The example will highlight the variable cost-fixed cost breakdown throughout. Beginning with the Sales Budget.

#### **a. Making the Sales Budget**

The Sales Budget (some company may call it as “Sales Forecast” Or “Sales Projection”) is the starting point in preparing the operating budget, since estimated sales volume influences almost all other items appearing throughout the annual budget. The sales budget gives the quantity of each product expected to be sold. (For the **Olympic foundries limited** Company, there is only one product. Of course, in a real company, most likely multiple products—that can be added to lines of product row-by-row).

**Basically, there are three ways of making estimates for the sales budget:**

- Make a statistical forecast on the basis of an analysis of general business conditions, market conditions, product growth curves, etc.
- Make an internal estimate by collecting the opinions of executives and sales staff.
- Analyze the various factors that affect sales revenue and then predict the future behavior of each of those factors.

After sales volume has been estimated, the sales budget is constructed by multiplying the estimated number of units by the expected unit price. Generally, the sales budget includes a computation of cash collections anticipated from credit sales, which will be used later for cash budgeting. Assume that of each quarter’s sales as follows:

- 70 percent is collected in the first quarter of the sale;
- 28 percent is collected in the following quarter; and
- 2 percent is uncollectible

So, the “Sales Budget” comes along with the “Schedule of Expected Cash Collection”:

The next step is constructing the “Production Budget”.

**b. Production Budget**

After sales are budgeted, the production budget can be determined. The number of units expected to be manufactured to meet budgeted sales and inventory is set forth. The expected volume of production is determined by subtracting the estimated inventory at the beginning of the period from the sum of units to be sold plus desired ending inventory.

Assume that ending inventory is 10 percent of the next quarter’s sales and that the ending inventory for the

$$[\text{Amount of materials to be purchased in units}] = [\text{Material needed for production in units}] + [\text{Desired ending material inventory in units}] - [\text{Beginning material inventory in units}]$$

The direct materials budget is usually accompanied by a computation of “Schedule of Expected Cash Disbursement (Payments)” for the purchased materials.

Assume that ending inventory is 10 percent of the next quarter’s production needs; the ending materials inventory for the fourth quarter is 250 units; and 50 percent of each quarter’s purchases are paid in that quarter, with the remainder being paid in the following quarter. Also, 3 Kg of materials are needed per unit of product at a cost of #2 per Kg.

Using the “Production Budget”, there are the “Direct Material Budget” and “Schedule of cash Disbursement (Payment)” looks alike:

**d. Direct Labor Budget**

The production budget also provides the starting point for the preparation of the “Direct Labor Cost Budget”. The direct labor hours necessary to meet “Production Requirements” multiplied by the estimated hourly rate yields the total direct labor cost.

Assume that 5 hours of labor are required per unit of product and that the hourly rate is \$5, this is the **Direct Labor Cost Budget**. After this, you can continue to create the “Factory Overhead Budget.”

**e. Factory Overhead Budget**

The factory overhead budget is a schedule of all manufacturing costs other than direct materials and direct labor. Using the contribution approach to budgeting

fourth quarter is 100 units. Using data from the “Sales Budget”, here is the “Production Budget”:

With the “Production Budget”, you can carry on the next process; constructing the “Direct Materials Budget”.

**c. Direct Materials Budget**

When the level of production has been computed, a direct materials budget is constructed to show how much material will be required and how much of it must be purchased to meet production requirements. The purchase will depend on both expected usage of materials and inventory levels.

The formula for computing the “Purchase” is as follow:

requires the development of a “Predetermined Overhead Rate” for the variable portion of the factory overhead. Later, in developing the “Cash Budget”, note that the “Depreciation” does not entails a cash outlay and therefore must be deducted from the “Total Factory Overhead” in computing cash disbursements for factory overhead.

**For the following factory overhead budget, assume that:**

- I. Total factory overhead is budgeted at #6,000 per quarter plus #2 per hour of direct labor.
- II. Depreciation expenses are #3,250 per quarter.
- III. All overhead costs involving cash outlays are paid in the quarter in which they are incurred.

**The Factory Overhead Budget figure becomes as shown below:**

**Determine Your Total Manufacturing Factory Overhead Costs**

To determine your Total Manufacturing Factory Overhead Costs for each forecasted business year, you are required to estimate all the costs that are expected to arise in your manufacturing facility only. In other words, what costs will arise as a direct result of producing the products in which you plan to sell. Let’s assume, the XYZ Company is planning to produce (make) 10,000 products in 200X. Also assume, the XYZ Company predicts the following factory overhead costs for 200X.

**Table 7:** Manufacturing Factory Overhead Analysis

Forecast of Cost Or Expenses	200X
Utilities of the Production Facility	#6,000
Electricity of the Production Facility	#5,500

Maintenance to the Production Facility	#9,500
Repairs to the Production Facility	#9,500
Insurance on Production Facility	#3,500
Worker Compensation Insurance on Factory Workers	#4,500
Insurance on Raw Materials	#5,000
Payroll Taxes on Factory Worker's Wages	#9,000
General Factory Supplies	#7,500
<b>Total Factory Overhead Budget</b>	<b>#60,000</b>

As you can see, the XYZ Company is forecasting its Total Factory Overhead at #60,000 in year 200X. In other words, to produce 10,000 units in 200X, the XYZ Company expects its Manufacturing Plant Expenses will be #60,000.

**f. Ending Inventory Budget**

The ending inventory budget provides the information required for constructing budgeted financial statements with 2 main functions:

- a) It is useful for computing the cost of goods sold on the budgeted income statement.
- b) It gives the dollar value of the ending materials and finished goods inventory that will appear on the budgeted balance sheet.

For the ending inventory budget, we first need to compute the unit variable cost for finished goods, as follows:

**Table 8:** Determination of the Unit Variable Cost for Finished Goods

	Units Cost	Qty.	Amount
Direct materials	#2	3 Kg	#6
Direct labor	#5	5 hrs.	#25
Variable overhead	#2	5 hrs.	#10
Total variable manufacturing cost			#41

**Ending Inventory Budget** is as shown below:

**Table 9:** Ending Inventory Budget

	Qty.	Unit Costs	Total
Direct materials	250 Kg	#2	#500
Finished goods	100 units	#41	#4100

To be able to construct the Cash Budget and the Pro forma Financial Statements, you need to construct the “**Selling and Administrative Expense Budget**” first.

The selling and administrative expense budget makes up part of a company's pro forma, or budgeted, profit and loss statement. This portion of the budget includes the planned operating expenses for the business, excluding its direct costs of manufacturing. The company's manufacturing costs get classified as "Cost of Goods Sold" and have their own category on the budgeted profit and loss statement.

Selling and administrative costs, also known as selling, general, and administrative (SG&A) costs, including expenses associated with running the overall business, such as the costs for clerical labor, rent, office supplies, and other overhead.

A company's master budget profit and loss statement include these expenses along with sales revenue, cost of goods sold, and other expenses, such as interest and depreciation.

**What Types of Expenses Are Qualified**

Selling and administrative expenses appear on a company's income statement, right under the cost of goods sold. Typical company expenses from accounting, legal, sales, marketing, facilities, and other corporate activities fall into this category. These costs may be fixed or variable; for example, sales commissions are a variable selling expense dependent on the level of sales the sales staff achieves. However, the sales force also receives fixed base salaries, which stay the same regardless of any changes in the sales level. The office building or warehouse rent is a fixed administrative expense, while the cost of office

supplies and utility expenses count as variable administrative expenses.

For expense items that stay unchanged over time, budgeting simply requires determining the annual amount, determined from the prior year and adjusted for any projected changes and then divided into quarters or months to populate the new budget.

When constructing a budget for variable expenses, it's important to use a process that addresses costs that could increase or decrease depending upon the level of sales in a given time period.

For example, sales commission expense varies each month based on the number of units sold. The company may also have more salespeople and sell more units during a certain season. Employee travel expenses, advertising, and marketing may also change from one month to the next due to seasonality, new product launches, increased employee travel, and other events.

To prepare a budget, a company must first decide on the unit of time to use. A budget calculated on a monthly basis usually has a good level of detail factored into it, while some companies prefer a higher-level quarterly-basis budget. Since some of the company's expenses vary with sales, the projected number of units to be sold becomes the budget's starting point. Analysts gather information to estimate the approximate variable costs per unit sold and use this to drive the monthly expense calculations for the variable cost budget. For fixed expenses, the costs are entered into the budget by month with no variation.

Assuming the company knows, from the previous history, that its variable S&A expenses average out to #0.10 per unit sold. Fixed salaries cost about #1,400 per quarter. The company estimates advertising costs for quarters 1 through 4 as #100, #200, #800, and #500, respectively, based on the previous year's spending.

**Table 10:** Items Considered in Selling and Administrative Expense Budget

Aluminum Cooking Pots Selling and Administrative Expense Budget					
Quarter	1	2	3	4	Year
Units to Be Sold	1,000	1,200	1,500	2,000	5,700
Variable S&A Expenses per Unit	x0.10	x0.10	x0.10	x0.10	x0.10
Total Variable Expenses	#100	#120	#150	#200	#570
Fixed Selling and Administrative Expenses:					
Salaries	#1,400	#1,400	#1,400	#1,400	#5,680
Utilities	#50	#50	#50	#50	#200
Advertising	#100	#200	#800	#500	#1,600
Depreciation	#150	#150	#150	#150	#600
Total Fixed Expenses	#1,720	#1,820	#2,420	#2,120	#8,080
<b>Total S&amp;A Expenses</b>	<b>#1,820</b>	<b>#1,940</b>	<b>#2,570</b>	<b>#2,320</b>	<b>#8,650</b>

The selling and administrative expense budget lists the operating expenses involved in selling the products and in managing the business.

Let's say the variable selling and administrative expenses amount of #4 per unit of sale, including commissions, shipping, and supplies; expenses are paid in the same quarter in which they are incurred, with the exception of #1,200 in income tax, which is paid in the third quarter.

Referring to the Sales Budget, the "**Selling and Administrative Expense Budget**" become as shown above.

To this stage, now we have enough data to construct the 3 most essential set of a company's budget:

"**Cash Budget**", "**Pro forma (Budgeted) Income Statement**," and the "**Budgeted Balance Sheet**."

**g. Cash Budget**

The cash budget is prepared in order to forecast the firm's future financial needs. It is also a tool for cash planning and control.

Because the cash budget details the expected cash receipts and disbursements for a designated time period, it helps avoid the problem of either having idle cash on hand or suffering a cash shortage. However, if a cash shortage is experienced, the cash budget indicates whether the shortage is temporary or permanent, that is, whether short-term or long-term borrowing is needed.

The Cash budget typically consists of four major sections:

1. The receipts section, which gives the beginning cash balance, cash collections from customers, and other receipts
2. The disbursements section, which shows all cash payments made, listed by purpose
3. The cash surplus or deficit section, which simply shows the difference between the cash receipts section and the cash disbursements section
4. The financing section, which provides a detailed account of the borrowings and repayments expected during the budget period

Assuming the following:

- a. The company desires to maintain a #5,000 minimum cash balance at the end of each quarter.
  - b. All borrowing and repayment must be in multiples of #500 at an interest rate of 10 percent per annum.
  - c. Interest is computed and paid as the principal is repaid. Borrowing takes place at the beginning and repayments at the end of each quarter.
  - d. The cash balance at the beginning of the first quarter is #10,000.
  - e. A sum of #24,300 is to be paid in the second quarter for machinery purchases.
  - f. Income tax of #4,000 is paid in the first quarter.
- With these assumptions combined with the previous budgets that we have generated, the **Cash Budget** becomes as follows:

**Table 11:** Summary Combination of Budgets That generated Cash Budget

<u>Cash Budget</u>	Quarter				Total
	1	2	3	4	
	#	#	#	#	#
Cash Balance Beginning	10,000	9,401	5,461	9,106	10,000
Add Receipt Collection					
From Customers	54,300	57,120	66,080	64,900	242,400
Total Cash Available	64,300	66,521	71,541	74,066	252,460
<b>Less disbursements</b>					
Direct Materials	4,549	4,560	4,860	5,113	19,082
Direct Labour	19,750	18,000	22,250	20,500	80,500
Factory Overhead	10,650	9,950	11,650	10,950	43,200
S & Administrative	15,950	12,750	14,750	13,150	56,600
Machinery Purchase		24,300			24,300
Income Tax	4,000				4,000
Total Disbursement	54,899	69,560	53,510	49,713	222,682
Cash Surplus (deficit)	9,401	3,039	18,031	24,353	24,778
Financing					
Borrowing		8,500			8,500
Repayment			8,500		(8,500)
Interest			(425)		(425)
Total Financing		8,500	8,925		(425)
Cash Balance, ending	9,401	5,461	9,106	24,353	24,353

**Note:**

- a. Collection from customer – from the “Schedule of Expected Cash Collections“
- b. Direct Materials – from the “Direct Material Budget“
- c. Direct labor – from the “Direct Labor Budget“
- d. Factory Overhead – from the “Factory Overhead Budget“

- e. Selling and Administrative – from the “Selling and Admin Expenses Budget“

The next to construct is the “Pro forma (Budgeted) Income Statement“.

**Pro forma (Budgeted) Income Statement**

The budgeted income statement summarizes the various component projections of revenue (sales), costs and expenses that have been figured on the previous budgets for the budgeting period. For control purposes, the budget can

be divided into quarters, for example, depending on the need. This is the “**Budgeted (Pro forma) Income Statement**”

**Note:**

- I. Sales – from the “Sales Budget”
- II. Variable Cost of Goods Sold – from the “Ending Inventory Budget” Variables

**Table 12:** Pro- forma Income Statement

Company, XYZ, Inc.  
For 2006 through 2009  
(All numbers in # 000)

<b>Revenue</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Gross Sales	500	650	720	850
Less Sales returns and allowance	200	230	280	320
Net Sales	300	420	440	530
<b>COST OF SALES</b>				
Beginning inventory	350	360	420	435
Plus goods purchased/manuf'd	120	165	185	190
Total Goods Available	470	525	605	625
Less ending Inventory	360	420	435	440
Total Cost of Goods Sold	110	105	170	185
Gross profit (Loss)	190	315	270	345
<b>OPERATING EXPENSES</b>				
<b>Selling</b>				
Salaries and wages	35	41	46	52
Commissions	12	14	16	18
Advertising	10	12	14	20
Depreciations	14	15	16	18
Other	5	6	6	7
Total Selling Expenses	76	88	98	113
<b>General/ Administrative</b>				
Salaries and wages	12	14	16	18
Employee benefits	4	5	5	6
Payroll Taxes	2	3	3	4
Insurance	6	6	7	7
Rent	8	8	9	9
Utilities	2	2	2	3
Depreciation & amortization	3	4	4	5

III. **Selling and Administrative** – from the “**Selling and Admin Expense Budget**”

IV. **Factory Overhead** – from the “**Factory Overhead Budget**”

V. **Selling and Administrative** – from the “**Selling and Admin Expense Budget**”

VI. **Interest Expense** – from the “**Cash Budget**”

The next but the final budget is the “Pro forma (Budgeted) Balance Sheet”.

**i. Pro Forma (Budgeted) Balance Sheet**

The budgeted balance sheet is developed by beginning with the balance sheet for the year just ended (“**Previous Year’s Balance Sheet**”), in this example is for the year ended December 31, 2010, and adjusting it, using

all the activities that are expected to take place during the budget period.

Here is the “**Previous Year’s Balance Sheet**”:

**Some of the reasons why the budgeted balance sheet must be prepared are:**

- a. To disclose any potentially unfavorable financial conditions
- b. To serve as a final check on the mathematical accuracy of all the other budgets
- c. To help management perform a variety of ratio calculations
- d. To highlight future resources and obligations

Here is the Budgeted Balance Sheet as below:

**Table 13:** Budgeted Balance Sheet  
Company, XYZ  
Budgeted Balance Sheet  
March 31, 2015

<b>Assets</b>		
Cash		# 25,435
Account Receivable		# 63,755
Inventory		#48,990
Equipment	#142, 250	
Less accumulated Depreciation	# 64, 150	#76,100
<b>Total Assets</b>		<b>#216,280</b>
<b>Liabilities and Equity</b>		
<b>Liabilities</b>		
Account payable	#42,850	
Income taxes payable	# 3, 500	
Bank loan payable	#26, 450	
<b>Total liabilities</b>		<b>#72, 800</b>
<b>Stockholder equity</b>		
Common stock	#122,560	
Retained earnings	#20,920	
<b>Total stockholder's equity</b>		<b>#143, 480</b>
<b>Total liability and equity</b>		<b>#216, 280</b>

**Table 14:** General Government Sector Balance Sheet

<u>Estimates</u>	<u>Projections</u>				
	2010-11	2011-12	2012-13	2013-14	2014-15
	# Bil	# Bil	# Bil	# Bil	# Bil
<b>Assets</b>					
<b>Financial assets</b>					
Cash and deposits	1,998	2,000	1,936	1,965	1996
Advances paid	27,184	20,501	31,885	34,401	36,894
Investment, loan & placements	99,661	110,443	110,878	110,049	111,151
Other Receivables	34,404	34,847	35, 705	36,615	38,423
<b>Equity Investments</b>					
Invest. in other public sector entities	23,551	26,277	30,819	37,434	41,523
Equity accounted investment	278	279	280	281	283
Investment – shares	27,573	28,746	29,496	31,372	33,586
<b>Total financial assets</b>	<b>214,649</b>	<b>232,092</b>	<b>240,998</b>	<b>252,208</b>	<b>263,856</b>
<b>Non-financial assets</b>					
Land	8,471	8,438	8,399	8,369	8,396
Buildings	22,182	23,127	24,335	25,097	25,184
Plant, equipment & infrastructure	50,730	53,379	54,772	56,483	58,728
Inventories	6,900	6,978	7,146	7,283	7,355
Intangibles	4,630	5,330	5,642	5,568	5,878
Investment property	507	349	349	349	349
Biological assets	120	35	35	35	35
Heritage & cultural assets	9,423	9,435	9,447	9,458	9,471
Assets held for sale	97	91	91	91	91
Other non- financial assets	5,319	5,920	4,865	2,667	1,942
<b>Total non- financial assets</b>	<b>108,378</b>	<b>113,080</b>	<b>115,091</b>	<b>115,400</b>	<b>117,428</b>
<b>Total assets</b>	<b>323,027</b>	<b>345,173</b>	<b>356,079</b>	<b>367,608</b>	<b>381,284</b>

<b>Liabilities</b>					
<b>Interest bearing liabilities</b>					
Deposits Held	232	232	232	232	232
Govt. securities	200,569	234,885	236,515	239,147	238,351
Loan	9,633	12,694	11,926	11,879	11,934
Other borrowing	791	780	667	561	431
<b>Total interest bearing liabilities</b>	<b>211,224</b>	<b>248,590</b>	<b>249,340</b>	<b>251,819</b>	<b>250,948</b>
<b>Provisions and payables</b>					
Superannuation liabilities	129,491	133,965	138,512	143,104	147,760
Other employee liabilities	10,959	11,209	11,512	11,829	12,027
Supplier's payables	4,229	4,352	4,308	4,344	4,343
Personal benefits provision & payables	12,317	12,420	13,714	14,127	14,769
Subsidies provision & payables	2,307	2,385	2,518	2,653	2,734
Grants provision & payables	8,218	8,063	8,263	8,644	8,572
Other provision & payables	12,551	11,722	11,282	11,061	11,163
<b>Total provision &amp; payables</b>	<b>180,012</b>	<b>184,115</b>	<b>190,110</b>	<b>195,764</b>	<b>201,367</b>
<b>Total Liabilities</b>	<b>391,297</b>	<b>432,705</b>	<b>439,450</b>	<b>447,583</b>	<b>452,315</b>
Net worth (a)	-68,270	-87,372	-83,372	-79,975	-71,031
Net financial worth (b)	-176,648	-200,613	-198,452	-195,375	-189,459
Net financial liabilities (c)	200,199	226,889	229,271	232,809	229,982
Net debt (d)	82,381	106,646	104,642	105,313	100,907

(a) Net worth is calculated as total assets minus total liabilities

(b) Net financial worth equal total financial assets minus total liabilities

(c) Net financial liabilities equals total liabilities less financial assets other than investments in other public sector entities

(d) Net debt equals the sum of deposit held, government securities, loan and other borrowing minus the sum of cash and deposits, advances paid, and investments, loans and placements.

**Note: Cash** – From the “Cash Budget”

**1. Accounts Receivable** – From the “Sales Budget” and “Schedule of Expected Cash Collections”.

Accounts receivable = Beginning balance + sales – receipts

**2. Material Inventory** – From the “Ending Inventory Budget”.

**3. Land** – From the “Previous Year’s Balance Sheet” (Unchanged).

**4. Building and Equipment** – From “Previous Year’s Balance Sheet + “Cash Budget

**5. Accumulated Depreciation** – From “Previous Year’s Balance Sheet + Factory Overhead Budget

**6. Accounts Payable** – From:  
Beginning Balance + Purchase Cost – Disbursements For Materials

(see Schedule Expected Cash Disbursement) – (see Schedule of Expected Cash Disbursement) = or 50% of 4th-quarter purchase =

**7. Income Tax Payable** – From “Budgeted Income Statement”.

**8. Common Stock** – From “Previous Year’s Balance Sheet (Unchanged)”.

**9. Retained Earnings** – From “Previous Year’s Balance Sheet + “Budgeted Income Statement – Net Income

## V. CONCLUSION

Having circumvented on the concepts of budgeting, budget implementation and control, and accounting for efficient budget performance of manufacturing operation of firms, wherein that the concept of budgeting here provides the necessary information to understand the basic considerations in developing budget processes. The work was configured in figures and tables to illustrate and promote budget developments and accountabilities for profit making and the process efficiency of an organization. A company without an element of budgeting will indeed run into confusions, losses and inefficiency in the management processes of its operations. Accountability is a major budget design process for ensuring profitability in business target to be achieved. It is in accounting process that all the elements to be considered in developing a budget are shown and represented in the figures and tables above.

It is now possible that a young chief executive officer (CEO) in charge of a firm can easily interpret a budget brought to him. It is expected that CEO interprets a



budget process, implementation, control processes and accounting.

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