

- By Dan Chirchir



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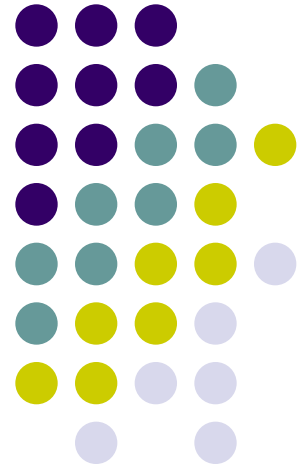
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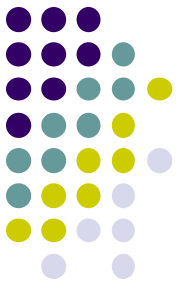
SEMIS 2015

Cost Management and Budgeting

Dan Chirchir



SEMIS



COST MANAGEMENT

SEMI-S - UON



Overview

- Cost management is one of the most important roles that management of any firm or organization has to play.
- In these times of economic downturn, cost management has gained prominence and attention of managers the world over.
- A deep grasp of the concept of cost is key since it is one of the elements that have huge impact in other facets of the organization.



Overview

- For instance, pricing of products will be informed by the cost of production.
- Ultimately, the bottom line of the any company may be affected significantly by cost of production and delivery of services.
- In the ensuing paragraphs, we discuss the basic concepts of costing and how to manage costs.



Definitions

Cost

The term cost is a frequently used word that reflects monetary measure of the resources sacrificed or foregone to achieve a specific objective, such as acquiring a good or service. (by Drury)

Cost object

It is any activity for which a separate measurement of costs is desired. Examples of costs objects include the cost of a product, the cost of rendering a service to a bank customer or hospital patient, the cost of operating a particular sales territory

Cost collection system

It is a system that typically accounts for costs in two broad stages:
It accumulates costs by classifying them into certain categories such as labour, materials, and overhead costs (or by cost behaviour such as fixed and variable)

It then assigns these costs to cost objects.



Definitions

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Classification of costs

A) Categories of manufacturing costs

Traditional cost accounting systems accumulate product cost as follows:

Direct material costs- consist of all those materials that can be identified with a specific product.

Direct labour costs- consist of those labour costs that can be specifically traced to or identified with particular product.

Manufacturing overhead- consist of all manufacturing costs other than direct labour, direct materials and direct expenses.



Classification of costs

B) Period and product costs

- **Product costs** – These are costs that are identified with goods purchased for resale.
- **Period costs**-These are costs that are not included in the inventory valuation and as a result are treated as expenses in the period in which they are incurred.

Classification of costs



C) Cost Behaviour

Analyses costs on how it varies with different levels of activity and volume. This is essential for decision-making. Activity or volume can be measured in terms of units of production or sales, hours worked, miles traveled, students enrolled etc

Examples of decisions that require information on how costs and revenue vary with different levels of activity include the following:

What should the level of activity be for next year?

Should we reduce the selling price to sell more units?

Would it be wiser to pay our sales staff by a straight commission, a straight salary, or by some combination of the two?

How do the costs and revenues of a hotel change with if a room and meals are provided for two guests for seven-day stay?



Classification of costs

C) Cost Behaviour

For each of the above decision management requires estimate of costs and revenues at different levels of activity for the alternative courses of action.

Variable costs - vary in direct proportion of to the volume of activity.

Fixed costs - remain constant over wide range of activities.

Semi variable cost-these include both a fixed and a variable component. Example is where sales representatives are paid a fixed salary plus commission on sales.



Classification of costs

D) Relevant and Irrelevant Costs and Revenues

Relevant costs - are those future costs that will be changed by a decision

Irrelevant costs - are those costs that will not be affected by a decision.

Sunk costs - are costs that have been created by a decision made in the past and that cannot be affected by any decision that will be made in the future.

Classification of costs



E) Opportunity Costs

This is a cost that measures the opportunity that is lost or sacrificed when the choice of one course of action requires that an alternative course of action be given up.



Classification of costs

F) Incremental and marginal Costs

Incremental cost-are the difference between costs and revenues for the corresponding items under each alternative being considered.

Marginal costs (an economics concept) - are the additional costs of producing one extra unit of product.



Managing costs: Overview

The first step in managing costs is to understand how cost is accumulated in the organization.

As explained earlier, proper cost analysis is prerequisite for proper pricing of products and services.

The traditional cost accumulation system allocates costs based on some pre-determined over-head absorption rates.

This system does not provide information such as what are the cost drivers of a particular product or service.

Managing costs: Overview



This limitation led to the advancement of other techniques of cost accumulation that would be useful to the decision maker.

The introduction of responsibility accounting and Activity Based Costing (ABC) system has revolutionalised cost management in many organisations.

Managing costs: Responsibility Accounting



- It involves the creation of responsibility centre. A responsibility may be defined as an organization unit for whose performance a manager is held accountable.
- A responsibility accounting system uses the concept of controllable costs to assign managers the responsibility for costs and expenses under their control.

Managing costs: Responsibility Accounting



Prior to each reporting period, a company prepares plans that identify costs and expenses under each manager's control.

These plans are called responsibility accounting budgets.

To ensure the cooperation of managers and the reasonableness of budgets, managers should be involved in preparing their budgets



ABC COSTING

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ABC Costing overview

Activity-based costing (ABC)

It attempts to better allocate costs to the proper users of overhead by focusing on activities.

Costs are traced to individual activities and then allocated to cost objects.

An example is (two-stage) activity-based cost allocation method.

First stage identifies the activities involved in processing jobs 236, 237, and 238 and then forms activity cost pools by combining these activities into sets.

The second stage involves computing predetermined overhead cost allocation rates for each cost pool and then assigning costs to jobs.



ABC Costing overview Cont'

Activity-based costing (ABC) Cont;

The first stage identifies individual activities, which are then pooled in a logical manner into homogenous groups, or cost pools.

A homogenous cost pool consists of activities that belong to the same process and/or are caused by the same cost **driver**.

A cost driver is a factor that causes the cost of an activity to go up or down. For example, preparing an invoice, checking it, and dispatching it are activities of the "invoicing" process and can therefore be grouped in a single cost pool.

Moreover, the number of invoices processed likely drives the costs of these activities.



ABC Costing overview cont'

Activity-based costing (ABC) Cont;

An **activity** cost **pool** is a temporary account accumulating the costs a company incurs to support an identified set of activities.

Costs accumulated in an activity cost pool include the variable and fixed costs of the activities included in the pool.

Variable costs pertain to resources acquired as needed (such as materials), whereas fixed costs pertain to resources acquired in advance (such as equipment).

An activity cost pool account is handled like a factory overhead account. In the second stage, after all activity costs have been accumulated in an activity cost pool account, costs are allocated to cost objects (users) based on cost drivers (allocation bases).



Illustration

ABC limited makes 4 product namely (A, B, C and D) and the following information is provided:

| | Products | | | |
|-----------------------------|----------|----|-----|-----|
| | A | B | C | D |
| Output (units) | 25 | 25 | 250 | 250 |
| No. of production runs | 3 | 4 | 7 | 10 |
| Labour hours per unit | 2 | 4 | 2 | 4 |
| Machine hours per unit | 2 | 4 | 2 | 4 |
| Material cost per unit | 30 | 75 | 30 | 75 |
| Material component per unit | 8 | 5 | 8 | 6 |



Illustration cont'

Direct labour cost is Sh. 7 per hour
The company's overheads is as follows:

| Overheads | Sh. |
|--------------------------|---------------|
| Short-term variable | 8,250 |
| Scheduling costs | 7,680 |
| Set-up costs | 3,600 |
| Material handling | 7,650 |
| Total | 27,180 |

Determine the cost per unit using (a) the conventional costing (use machine hours) and (b) Activity Based costing



Suggested Solution

A) Conventional absorption costing

| Overhead absorption rate | = Total Overhead/Base rate |
|---------------------------------|-----------------------------------|
| Total Base machine hours | 1,650 |
| Total overheads | 27,180 |
| OAR | 16.47 |



Suggested Solution cont'

A) Conventional absorption costing

| Cost summary | Products | | | |
|----------------------------|-----------|------------|-----------|------------|
| | A | B | C | D |
| Direct Material | 30 | 75 | 30 | 75 |
| Direct Labour | 14 | 28 | 14 | 28 |
| Absorbed Overhead | 33 | 66 | 33 | 66 |
| Total Cost per unit | 77 | 169 | 77 | 169 |



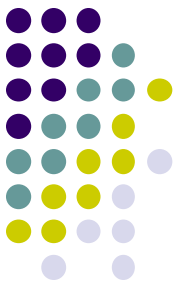
Suggested Solutions cont'

B) ABC method

Overhead absorption rates workings

| | | | | |
|------------------------|-----|---|--------------|--------------------------|
| Short-term variable OH | OAR | = | <u>8,250</u> | |
| | | = | <u>1,650</u> | Total machine hours |
| | | | 5 | Per machine hour |
| Scheduling cost | OAR | = | <u>7,680</u> | |
| | | = | 24 | Total production runs |
| | | | 320 | Per production run |
| Set-up cost | OAR | = | <u>3,600</u> | |
| | | = | 24 | Total production runs |
| | | | 150 | Per production run |
| Material handling | OAR | = | <u>7,650</u> | |
| | | = | <u>3,825</u> | Total material component |
| | | | 2 | Per material component |

Suggested Solution cont'



B) ABC method

| Cost summary | Products | | | |
|------------------------------|------------|------------|-----------|------------|
| | A | B | C | D |
| Direct Material | 30 | 75 | 30 | 75 |
| Direct Labour | 14 | 28 | 14 | 28 |
| Short-term variable overhead | 10 | 20 | 10 | 20 |
| Scheduling costs | 38 | 51 | 9 | 13 |
| Set-up costs | 18 | 24 | 4 | 6 |
| Material handling | 16 | 10 | 16 | 12 |
| Total Cost per unit | 126 | 208 | 83 | 154 |

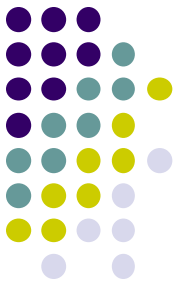


Suggested Solution cont'

B) ABC method

Conclusion

The cost of A and B is significantly understated in conventional method because they are low volume measures but high transaction measure.



EFFECTIVE COST CONTROL SYSTEM



Overview

- Producing information in management accounting form is expensive in terms of the time and effort involved.
- It will be very wasteful if the information once produced is not put into effective use.



Parts of effective cost control system

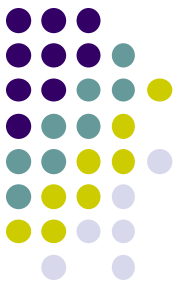
There are five parts to an effective cost control system. These are:

- a) preparation of budgets
- b) communicating and agreeing budgets with all concerned
- c) having an accounting system that will record all actual costs
- d) preparing statements that will compare actual costs with budgets, showing any variances and disclosing the reasons for them, and
- e) taking any appropriate action based on the analysis of the variances in d) above.

Parts of effective cost control system



- Action(s) that can be taken when a significant variance has been revealed will depend on the nature of the variance itself. Some variances can be identified to a specific department and it is within that department's control to take corrective action. Other variances might prove to be much more difficult, and sometimes impossible, to control.
- Variances revealed are historic. They show what happened last month or last quarter and no amount of analysis and discussion can alter that. However, they can be used to influence managerial action in future periods.



Cost reduction strategies

Management should focus their cost reduction strategies in the following key areas:

- Focus on performance improvement not cost reduction

- Focus on enabling effective management of support services

- Build performance management tools to focus on the true drivers of business performance and maintain focus on achieving and maintaining performance targets



BUDGETS

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Overview

- There are two types of control,
 - ✓ namely budgetary and
 - ✓ financial.
- This section concentrates on budgetary control.



Overview

- Budgetary control is defined by the Institute of Cost and Management Accountants (CIMA) as:
- "The establishment of budgets 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 action the objective of that policy, or to provide a basis for its revision".



Definitions

- Omolehinwa (1989) defined a budget as a plan of dominant individuals in an organization expressed in monetary terms and subject to the constraints imposed by the participants and the environments, indicating how the available resources may be utilized, to achieve whatever the dominant individuals agreed to be the organisation's priorities.
- The impressive thing about this definition is that, it recognizes the constraint imposed on budget by other participants who are to ensure that the objectives and targets enunciated in the budget are achieved.



Definitions

- Pandey (2003) defines budget as a short term financial plan. It is an action plan to guide managers in achieving the objectives of the firm.
- Lucey (2003) in his recent definition of budget defines it as “a quantitative expression of a plan of action prepared for the business as a whole for departments, for functions such as sales and production or for financial resource items such as cash, capital expenditure, manpower purchase, etc. The process of preparing and agreeing budgets is a means of translating the overall objectives of the organization into detailed, feasible plans of action”

Budget Organisation and Administration



In organising and administering a budget system the following characteristics may apply:

a) *Budget centres:* Units responsible for the preparation of budgets. A budget centre may encompass several cost centres.

b) *Budget committee:* This may consist of senior members of the organisation, e.g. departmental heads and executives (with the managing director as chairman). Every part of the organisation should be represented on the committee, so there should be a representative from sales, production, marketing and so on.

Budget Organisation and Administration



Functions of the budget committee include:

Coordination of the preparation of budgets, including the issue of a manual

Issuing of timetables for preparation of budgets

Provision of information to assist budget preparations

Comparison of actual results with budget and investigation of variances.

Budget Organisation and Administration



c) *Budget Officer:* Controls the budget administration The job involves:

- liaising between the budget committee and managers responsible for budget preparation

- dealing with budgetary control problems

- ensuring that deadlines are met

- educating people about budgetary control.

Budget Organisation and Administration



d) *Budget manual:*

This document:

charts the organization

details the budget procedures

contains account codes for items of expenditure and revenue

timetables the process

clearly defines the responsibility of persons involved in the budgeting system.



Characteristics of a budget

A good budget is characterised by the following:

Participation: involve as many people as possible in drawing up a budget.

Comprehensiveness: embrace the whole organisation.

Standards: base it on established standards of performance.

Flexibility: allow for changing circumstances.

Feedback: constantly monitor performance.

Analysis of costs and revenues: this can be done on the basis of product lines, departments or cost centres.

Types of budgets and budget preparation



a) Sales budget: this involves a realistic sales forecast. This is prepared in units of each product and also in sales value. Methods of sales forecasting include:

- sales force opinions

- market research

- statistical methods (correlation analysis and examination of trends)

- mathematical models.

Types of budgets and budget preparation



In using these techniques consider:

company's pricing policy

general economic and political conditions

changes in the population

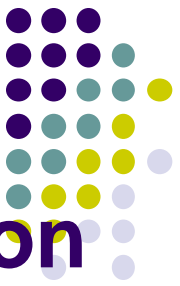
competition

consumers' income and tastes

advertising and other sales promotion techniques

after sales service

credit terms offered.



Types of budgets and budget preparation

b) Production budget: expressed in quantitative terms only and is geared to the sales budget. The production manager's duties include:

- analysis of plant utilization
- work-in-progress budgets.

If requirements exceed capacity he may:

- subcontract
- plan for overtime
- introduce shift work
- hire or buy additional machinery

The materials purchases budget's both quantitative and financial.

Types of budgets and budget preparation



c) Raw materials and purchasing budget:

The materials usage budget is in quantities.

The materials purchases budget is both quantitative and financial.

Factors influencing the above include:

production requirements

planning stock levels

storage space

trends of material prices.

Types of budgets and budget preparation



d) Labour budget: is both quantitative and financial. This is influenced by:

- production requirements

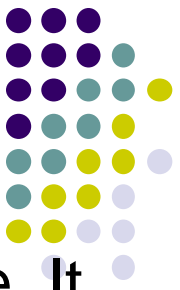
- man-hours available

- grades of labour required

- wage rates (union agreements)

- the need for incentives.

Types of budgets and budget preparation



e) Cash budget: a cash plan for a defined period of time. It summarises monthly receipts and payments. Hence, it highlights monthly surpluses and deficits of actual cash. Its main uses are:

- to maintain control over a firm's cash requirements, e.g. stock and debtors

- to enable a firm to take precautionary measures and arrange in advance for investment and loan facilities whenever cash surpluses or deficits arises

- to show the feasibility of management's plans in cash terms

- to illustrate the financial impact of changes in management policy, e.g. change of credit terms offered to customers.

Types of budgets and budget preparation



Receipts of cash may come from one of the following:

cash sales

payments by debtors

the sale of fixed assets

the issue of new shares

the receipt of interest and dividends from investments.

Types of budgets and budget preparation



Payments of cash may be for one or more of the following:

- purchase of stocks

- payments of wages or other expenses

- purchase of capital items

- payment of interest, dividends or taxation.

Types of budgets and budget preparation



- **Flexible Budgets** – budgets that take account of changing business conditions
- **Operating Budgets** – based on the daily operations of a business
- **Objectives Based Budgets** - Budgets driven by objectives set by the firm
- **Capital Budgets** – Plans of the relationship between capital spending and liquidity (cash) in the business



Illustration

- Company XYZ has the following data from which the master budget has to be prepared.

| | Year 0 | Year 1 | | | | Year 2 |
|---------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | Quarter 4 | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Quarter 1 |
| Sales (units) | 1,800 | 1,000 | 2,000 | 1,500 | 2,000 | 1,000 |

| Inputs | Requirement | unit cost |
|-----------------|----------------|------------------|
| Direct material | 2 kg per unit | Sh 5 per 1 kg |
| Direct labour | 3 hrs per unit | Sh 10 per 1 hour |



Illustration

- Beginning inventory of finished goods for each quarter must be equal to 10% of the sales of the previous quarter.
- Raw materials at the end of each quarter must be equal to the requirements to produce the units for sale in the next quarter
- Expected selling price is sh 200 per unit
- Variable manufacturing overhead are based on direct labour cost at the rate of 80% of direct labour cost
- Fixed manufacturing overhead per quarter is sh 20,000
- Selling and administration expense is Sh 96,000 per quarter



Illustration Cont'

- Sales are made on cash and credit terms in the ratio of 30:70 respectively
- Credit sales are collectable in the quarter following the quarter of sale
- Raw materials are paid in the month of purchase
- Wages, overheads and administration expenses are paid in the month they are incurred
- Equipment worth Sh. 380,000 will be bought in the 4th quarter of year 1.
- The beginning cash balance is Sh 27,000



Illustration cont'

Required

Prepare

Sales budget

Production budget

Raw material purchase budget

Direct labour cost budget

Manufacturing overhead budget

Income statement

Cash budget



Suggested Solution

a) Sales Budget

| Sales budget | Units | Selling price | Amount |
|---------------------|--------------|----------------------|------------------|
| Quarter 1 | 1,000 | 200 | 200,000 |
| Quarter 2 | 2,000 | 200 | 400,000 |
| Quarter 3 | 1,500 | 200 | 300,000 |
| Quarter 4 | 2,000 | 200 | 400,000 |
| Total | | | 1,300,000 |



Suggested Solution

b) Production Budget

| | Budgeted | Closing | Beginning | Units to |
|-----------------|-----------------|------------------|------------------|-----------------|
| Quarters | sales | inventory | inventory | produce |
| 1 | 1,000 | 100 | (180) | 920 |
| 2 | 2,000 | 200 | (100) | 2,100 |
| 3 | 1,500 | 150 | (200) | 1,450 |
| 4 | 2,000 | 200 | (150) | 2,050 |

Suggested Solution



c) Raw Material Budget

| | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 |
|------------------------|---------------|---------------|---------------|---------------|
| Units to produce | 920 | 2,100 | 1,450 | 2,050 |
| Requirement per unit | 2 | 2 | 2 | 2 |
| | 1,840 | 4,200 | 2,900 | 4,100 |
| Closing inventory | 4,000 | 3,000 | 4,000 | 2,000 |
| Less opening inventory | (2,000) | (4,000) | (3,000) | (4,000) |
| | 3,840 | 3,200 | 3,900 | 2,100 |
| Unit purchase price | 5 | 5 | 5 | 5 |
| | 19,200 | 16,000 | 19,500 | 10,500 |



Suggested Solution

d) Direct labour cost budget

| | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 |
|-----------------------------|---------------|---------------|---------------|---------------|
| Units to produce | 920 | 2,100 | 1,450 | 2,050 |
| Direct labour hour per unit | 3 | 3 | 3 | 3 |
| Total labour hours required | 2,760 | 6,300 | 4,350 | 6,150 |
| Labour cost per hour | 10 | 10 | 10 | 10 |
| Total labour cost | 27,600 | 63,000 | 43,500 | 61,500 |



Suggested Solution

e) Manufacturing overhead budget

| | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 |
|--|---------------|---------------|---------------|---------------|
| Labour cost | 27,600 | 63,000 | 43,500 | 61,500 |
| Variable Manufacturing OH (80% of labour cost) | 22,080 | 50,400 | 34,800 | 49,200 |
| Fixed Manufacturing OH | 20,000 | 20,000 | 20,000 | 20,000 |
| | 42,080 | 70,400 | 54,800 | 69,200 |



Suggested Solution

f) Income Statement

| | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 |
|-----------------------------|---------------|----------------|---------------|----------------|
| Units produced | 920 | 2,100 | 1,450 | 2,050 |
| Variable Manufacturing OH | 22,080 | 50,400 | 34,800 | 49,200 |
| Direct labour costs | 27,600 | 63,000 | 43,500 | 61,500 |
| Direct materials | 9,200 | 21,000 | 14,500 | 20,500 |
| Total variable costs | 58,880 | 134,400 | 92,800 | 131,200 |
| Cost per unit | 64 | 64 | 64 | 64 |

Suggested Solution



f) Income Statement

| | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 |
|-------------------------|----------------|----------------|----------------|----------------|
| Sales | 200,000 | 400,000 | 300,000 | 400,000 |
| Less variable costs | 64,000 | 128,000 | 96,000 | 128,000 |
| Contribution margin | 136,000 | 272,000 | 204,000 | 272,000 |
| Less | | | | |
| 'fixed manufacturing OH | (20,000) | (20,000) | (20,000) | (20,000) |
| Selling & admin exp | (96,000) | (96,000) | (96,000) | (96,000) |
| Projected income | 20,000 | 156,000 | 88,000 | 156,000 |

Suggested Solution



g) Cash budget

| | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 |
|-----------------------------|----------------|----------------|----------------|----------------|
| Cash sales | 60,000 | 120,000 | 90,000 | 120,000 |
| Credit sale collection | 252,000 | 140,000 | 280,000 | 210,000 |
| Cash from sales | 312,000 | 260,000 | 370,000 | 330,000 |
| Beginning cash balance | 27,000 | 154,120 | 168,720 | 324,920 |
| Total cash available | 339,000 | 414,120 | 538,720 | 654,920 |
| Disbursement | | | | |
| Raw materials | 19,200 | 16,000 | 19,500 | 10,500 |
| Wages | 27,600 | 63,000 | 43,500 | 61,500 |
| Overheads | 42,080 | 70,400 | 54,800 | 69,200 |
| Selling & Admin | 96,000 | 96,000 | 96,000 | 96,000 |
| Equipment | - | - | - | 380,000 |
| Total disbursement | 184,880 | 245,400 | 213,800 | 237,200 |
| Closing balance | 154,120 | 168,720 | 324,920 | 417,720 |



Zero Base Budgeting

- After a budgeting system has been in operation for some time, there is a tendency for next year's budget to be justified by reference to the actual levels being achieved at present.
- One way of breaking out of this cyclical budgeting problem is to go back to basics and develop the budget from an assumption of no existing resources (that is, a zero base).
- This means all resources will have to be justified and the chosen way of achieving any specified objectives will have to be compared with the alternatives.

Zero Base Budgeting



- For example, in the sales area, the current existing field sales force will be ignored, and the optimum way of achieving the sales objectives in that particular market for the particular goods or services should be developed.
- This might not include any field sales force, or a different-sized team, and the company then has to plan how to implement this new strategy.



Zero Base Budgeting

- The obvious problem of this zero-base budgeting process is the massive amount of managerial time needed to carry out the exercise.
- Hence, some companies carry out the full process every five years, but in that year the business can almost grind to a halt.
- Thus, an alternative way is to look in depth at one area of the business each year on a rolling basis, so that each sector does a zero base budget every five years or so.



VARIANCE ANALYSIS

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Price and Quantity Variance

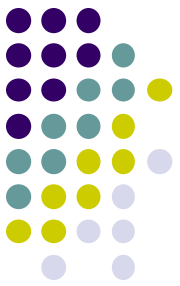
- Just to state that there is a variance on a particular item of expenditure does not really mean a lot.
- Most costs are composed of two elements - the quantity used and the price per unit.
- A variance between the actual cost of an item and its budgeted cost may be due to one or both of these factors.
- Apparent similarity between budgeted and actual costs may hide significant compensating variances between price and usage.



Price and Quantity Variance

- For example, say it is budgeted to take 300 man days at \$3.00 per man day - giving a total budgeted cost of \$900.00. The actual cost on completion was \$875.00, showing a saving of \$25.00.
- Further investigations may reveal that the job took 250 man days at a daily rate of \$3.50 - a favourable usage variance but a very unfavourable price variance.
- Management may therefore need to investigate some significant variances revealed by further analysis, which a comparison of the total costs would not have revealed. Price and usage variances for major items of expense are discussed below.

labour



- The difference between actual labour costs and budgeted or standard labour costs is known as direct wages variance. This variance may arise due to a difference in the amount of labour used or the price per unit of labour, i.e. the wage rate. The direct wages variance can be split into:
 - **i) Wage rate variance:** the wage rate was higher or lower than budgeted, e.g. using more unskilled labour, or working overtime at a higher rate.
 - **ii) Labour efficiency variance:** arises when the actual time spent on a particular job is higher or lower than the standard labour hours specified, e.g. breakdown of a machine.



Materials

- The variance for materials cost could also be split into price and usage elements:
- **i) Material price variance:** arises when the actual unit price is greater or lower than budgeted. This could be due to inflation, discounts, alternative suppliers etc.
- **ii) Material quantity variance:** arises when the actual amount of material used is greater or lower than the amount specified in the budget, e.g. a budgeted fertiliser at 350 kg per hectare may be increased or decreased when the actual fertiliser is applied, giving rise to a usage variance.

Overheads



Again, overhead variance can be split into:

- i) Overhead volume variance:** where overheads are taken into the cost centres, a production higher or lower than budgeted will cause an over-or under-absorption of overheads.
- ii) Overhead expenditure variance:** where the actual overhead expenditure is higher or lower than that budgeted for the level of output actually produced.

Calculation of price and usage variances



The price and usage variance are calculated as follows:

Price variance = (budgeted price - actual price) X actual quantity

Usage variance = (budgeted quantity - actual quantity) X budgeted price

Exercise on Computation of labour variances



Exercise on Computation of labour variances

It was budgeted that it would take 200 man days at \$10.00 per day to complete the task costing \$2,000.00 when the actual cost was \$1,875.00, being 150 man days at \$12.50 per day. Calculate:

- i) Price variance
- ii) Usage variance

Comment briefly on the results of your calculation.



Advantages of budgeting and budgetary control

- There are a number of advantages to budgeting and budgetary control:
- Compels management to think about the future, which is probably the most important feature of a budgetary planning and control system. Forces management to look ahead, to set out detailed plans for achieving the targets for each department, operation and (ideally) each manager, to anticipate and give the organisation purpose and direction.
- Promotes coordination and communication.

Advantages of budgeting and budgetary control



- Provides a basis for performance appraisal (variance analysis). A budget is basically a yardstick against which actual performance is measured and assessed. Control is provided by comparisons of actual results against budget plan. Departures from budget can then be investigated and the reasons for the differences can be divided into controllable and non-controllable factors.
- Enables remedial action to be taken as variances emerge.
- Motivates employees by participating in the setting of budgets.
- Improves the allocation of scarce resources.
- Economises management time by using the management by exception principle.



Problems of budgeting

Whilst budgets may be an essential part of any marketing activity they do have a number of disadvantages, particularly in perception terms.

Budgets can be seen as pressure devices imposed by management, thus resulting in:

- a) bad labour relations
- b) inaccurate record-keeping.

Departmental conflict arises due to:

- a) disputes over resource allocation
- b) departments blaming each other if targets are not attained.



Problems of budgeting

- It is difficult to reconcile personal/individual and corporate goals.
- Waste may arise as managers adopt the view, "we had better spend it or we will lose it". This is often coupled with "empire building" in order to enhance the prestige of a department.
- Responsibility versus controlling, i.e. some costs are under the influence of more than one person, e.g. power costs.
- Managers may overestimate costs so that they will not be blamed in the future should they overspend.



Difficulties in budgetary control

(a) Lack of dynamic structure

Present day economic environment demands that organization adapt new and practices. Given the new competitive realities, there is need for management of embrace flexible and adaptable budgetary planning and control system which has the ability to quickly respond to environmental changes and complexities.

A good budgetary planning and control system must involve not only an analysis of capital allocation requests when the project is executed, but also an analysis of all the capital needed to generate information such as market research, prior to investing in the project.



Difficulties in budgetary control

(b) Absence of connection between compensation and financial measures

Many companies adopt the NPV criterion in selecting a project but compensate managers based on product earnings or rate of returns. This misaligns their interest with those of shareholders. The reason for misalignment between compensation and budgetary allocation system is that the NPV cannot be used to determine compensation because it (NPV) is a stock/summary measure, based on projected cash flows and not on realized performance. Organisations are expected to adopt flow measures which are computed periodically, either quarterly or yearly as soon as they are realized.



Difficulties in budgetary control

(c) Lack of Integration

Most often, capital budgeting and expense budgeting are distinct processes for instance organizations that do practice capital budgeting make assumptions about future cashflows that are dependent on certain advertising and sales promotion outlays. However, these outlays are typically covered by the expense budget. Boquist noted that even in organizations in which the determination of the expense request is tied at the outset of capital request, the people approving the two requests do not necessarily try to ensure consistency between the two budgets.



Difficulties in budgetary control

(d) Finance function not a strategic partner

Financial analysts doing budgetary planning are often seen as traffic cops than strategic partners. They often get into the budgetary process near the end, merely to rubber-stamp a conclusion that a marketing or manufacturing executive realized earlier. Budgetary planning then becomes a mere exercise, rather than values that produced the desired result, consequently, the quality of information for budgetary planning and control is seriously compromised.



Difficulties in budgetary control

(e) Poorly trained financial professionals

In recent time, training outlays are typically treated as expenses rather than investments (Hope and Frazer, 2003). If the most sophisticated budgetary planning and control system is put in place, absence of the necessary investment in upgrading those involved in budgeting, will only result in expecting to win a battle by sending in people with unfamiliar guns, which all together amount to total failure of such budgeting system (Adedeji, 2004).

END



SEMIS - UoN

Q&A

SEMIS 2015

FINANCE FUNCTIONS

Dan Chirchir, CFA

Definition

- Finance is the branch of economics that deals with generation and allocation of scarce resources primarily funds or money to the most efficient user or competing projects through a market pricing system.
- It is the application of economic principles and concepts to business decision making and problem solving .

Branches of finance

- Corporate finance/Financial management
- Investment analysis and portfolio management.
- Financial institutions and markets
- Finance theory
- Public finance
- International finance

Financial Management

- Financial Management is nothing but management of the limited financial resources the organisation has, to its utmost advantage.
- Resources are always limited, compared to its demands or needs.
- Financial management deals with the study of procuring funds and its effective and judicious utilisation, in terms of the overall objectives of the firm, and expectations of the providers of funds.
- The basic objective is to maximise the value of the firm. The purpose is to achieve maximisation of share value to the owners i.e. equity shareholders.

Financial Management

The term financial management has been defined, differently, by various authors. Some of the authoritative definitions are given below:

1. “Financial Management is concerned with the efficient use of an important economic resource, namely, Capital Funds” —**Solomon**
2. “Financial Management is concerned with the managerial decisions that result in the acquisition and financing of short-term and long-term credits for the firm” —**Phillioppatus**
3. “Business finance is that business activity which is concerned with the conservation and acquisition of capital funds in meeting financial needs and overall objectives of a business enterprise” —**Wheeler**

Scope of Finance Function

- ❖ **Traditional Approach-Procurement of Funds**
- ❖ **Modern Approach-Effective Utilisation of Funds**

Traditional Approach-Procurement of Funds

- Estimation of requirements of finance,
- Arrangement of funds from financial institutions,
- Arrangement of funds through financial instruments such as shares, debentures, bonds and loans, and
- Looking after the accounting and legal work connected with the raising of funds.

Scope of Finance Function

Limitation of Traditional Approach

- ❖ **No Involvement in Application of Funds:** The finance manager had not been involved in decision-making in allocation of funds. He had been treated as an outsider. He had been ignored in internal decision making process and considered as an outsider.
- ❖ **No Involvement in day to day Management:** The focus was on providing long-term funds from a combination of sources. This process was more of one time happening. The finance manager was not involved in day to day administration of working capital management. Smooth functioning depends on working capital management, where the finance manager was not involved and allowed to play any role.
- ❖ **Not Associated in Decision-Making Allocation of Funds:** The issue of allocation of funds was kept outside his functioning. He had not been involved in decision- making for its judicious utilisation.

Scope of Finance Function

Modern Approach-Effective Utilisation of Funds

- ❖ The emphasis of Financial Management has been shifted from raising of funds to the effective and judicious utilisation of funds.
- ❖ The modern approach is analytical way of looking into the financial problems of the firm.

Objectives of Finance Function

- ❖ **Acquiring Sufficient and Suitable Funds:** The primary aim of finance function is to assess the needs of the enterprise, properly, and procure funds, in time.
- ❖ **Proper Utilisation of Funds:** Raising funds is important, more than that is its proper utilisation. If proper utilisation of funds were not made, there would be no revenue generation. Benefits should always exceed cost of funds so that the organisation can be profitable.

Objectives of Finance Function

- ❖ **Increasing Profitability:** Profitability is necessary for every organisation. The planning and control functions of finance aim at increasing profitability of the firm. To achieve profitability, the cost of funds should be low.
- ❖ **Maximising Firm's Value:** The ultimate aim of finance function is maximising the value of the firm, which is reflected in wealth maximisation of shareholders. The market value of the equity shares is an indicator of the wealth maximisation.

Finance Functions

- ❖ Investment Decision or Long-term Asset mix decision
- ❖ Finance Decision or Capital mix decision
- ❖ Liquidity Decision or Short-term asset mix decision
- ❖ Dividend Decision or Profit allocation decision

Finance Functions

- ❖ Investment Decision or Long-term Asset mix decision
- **Investment decisions relate to the total amount of assets to be held and their composition in the form of fixed and current assets.** Both the factors influence the risk the organisation is exposed to. The more important aspect is how the investors perceive the risk.
- The investment decisions result in purchase of assets. Assets can be classified, under two broad categories:
 - (i) Long-term investment decisions – Long-term assets
 - (ii) Short-term investment decisions – Short-term assets

Finance Functions

- ❖ Finance Decision or Capital mix decision
- **Finance decision is concerned with the mix or composition of the sources of raising the funds required by the firm.**
- **In other words, it is related to the pattern of financing.**

Impact of Leverage on Returns

| | <u>Firm U</u> | <u>Firm L</u> |
|-------------|----------------|----------------|
| EBIT | \$3,000 | \$3,000 |
| Interest | <u>0</u> | <u>1,200</u> |
| EBT | \$3,000 | \$1,800 |
| Taxes (40%) | <u>1,200</u> | <u>720</u> |
| NI | <u>\$1,800</u> | <u>\$1,080</u> |
| ROE | 9.0% | 10.8% |

Why does leveraging increase return?

- More EBIT goes to investors in Firm L.
 - Total dollars paid to investors:
 - U: NI = \$1,800.
 - L: NI + Int = \$1,080 + \$1,200 = \$2,280.
 - Taxes paid:
 - U: \$1,200; L: \$720.
- Equity \$ proportionally lower than NI.

Finance Functions

- ❖ Liquidity Decision or Short-term asset mix decision
 - Liquidity decision is concerned with the management of current assets. Basically, this is Working Capital Management.
 - Working Capital Management is concerned with the management of current assets. It is concerned with short-term survival. Short term-survival is a prerequisite for long-term survival.
 - A proper balance must be maintained between liquidity and profitability of the firm. This is the key area where finance manager has to play significant role. The strategy is in ensuring a trade-off between liquidity and profitability.

Finance Functions

- ❖ Dividend Decision or Profit allocation decision
 - Dividend decision is concerned with the amount of profits to be distributed and retained in the firm.
 - **Dividend:** The term 'dividend' relates to the portion of profit, which is distributed to shareholders of the company. It is a reward or compensation to them for their investment made in the firm. The dividend can be declared from the current profits or accumulated profits.

SEMIs TRAINING

FINANCIAL PLANNING & WORKING
CAPITAL MANAGEMENT

Dan Chirchir, CFA, CPA(K)

OUTLINE

- Introduction
- Financial planning process
- Financial forecasting
- Components of financial planning
- Steps in financial planning

FINANCIAL PLANNING

Financial Planning

Introduction

- Financial planning indicates a firm's growth, performance of investments and requirements of funds during a given period of time, usually three to five years.
- It involves the preparation of projected or proforma financial statements, that is statement of financial position, statement of comprehensive income and cash flow statement.
- Financial planning and profit planning help a firm's financial manager to regulate flows of funds which is his primary concern.

Financial Planning Cont'

- Financial planning involves the questions of a firm's long-term growth and profitability and investment and financing decisions
- It focuses on aggressive capital expenditure programmes and debt equity mix rather than the individual projects and sources of finance. Financial planning also involves an interface between the corporate policy and financial planning and the trade off between financial policy variables.

Financial planning process.

The financial planning process involves the following facets;

- Evaluating the current condition of the firm.
- Analyzing the growth prospects and options
- Appraising the investment options to achieve the stated growth objective.
- Projecting the future growth and profitability.
- Estimating funds requirements and considering alternative financial options.
- Comparing and choosing from alternative growth plans and financing options.
- Measuring actual performance with the planned performance.

Financial forecasting

- Financing forecasting is an integral part of financial planning .
- It uses past data to estimate the future financial requirements.
- A financial planning model establishes the relationship between financial variables and targets, and facilitates the financial forecasting and planning process.
- A model makes it easy for the financial managers to prepare financial forecasts. It makes financial forecasting automatic and saves the financial managers time and efforts performing a tedious activity.
- Financial planning models help in examining the consequences of alternative financial strategies.

Components of a financial planning model

- **Inputs**

The model built with the firm's current financial statements and the future growth prospects. The firm's growth prospects depend on the market growth rate, firm's market share and intensity of competition.

- **Model**

The model defines the relationship between financial variables and develops appropriate equations e.g. Relating net working capital and fixed assets investment to sales.

- **Output**

Applying the model equations to the inputs to generate output in the form of projected or proforma financial statements. The output shows the investment and funds requirement given the sales growth objective and relationship between the financial variables.

Steps in financial planning

- Financial forecasting is the basis for financial planning. Forecasts are merely estimates based on the past data. Historical performance may not occur in the future. Planning means what the company would like to happen in future ,and includes necessary action plans to realizing the predetermined intentions.
- The following steps are involved in financial planning;

Steps in financial planning Cont'

Past performance

- ❖ Analysis of the firms past performance to ascertain the relationships between financial variables, and the firms financial strengths and weaknesses.

Operating characteristics

- ❖ Analysis of the firms operating characteristics-product, market, competition, production, and marketing policies, control systems, operating risk etc to decide about its growth objective.

Corporate strategy and investment needs

- ❖ Determining the firms investment needs and choices, given its growth objective and overall strategy.

Steps in financial planning Cont'

Cash flow from operations

- ❖ Forecasting the firms revenues and expenses and need for funds based on its investment and dividend policies.

Financing alternatives

- ❖ Analyzing financial alternatives within its financial policy and deciding the appropriate means of raising funds.

Consequences of financial plans

- ❖ Analyzing the consequences of its financial plans for the long-term health and survival to the firm.

Consistency

- ❖ Evaluating the consistency of financial policies with each other and with the corporate strategy.

Outline

- Introduction
- Core Principles in a nutshell
- Basic Cash flow management
- Cash management
- Inventory Management
- Debtors Management

WORKING CAPITAL MANAGEMENT

Introduction Cont'

Introduction

- Working capital, also known as "WC", is a financial metric which represents operating liquidity available to a business. Along with fixed assets such as plant and equipment, working capital is considered a part of operating capital.
- It is calculated as current assets minus current liabilities. If current assets are less than current liabilities, an entity has a working capital deficiency, also called a working capital deficit.
- Working Capital = Current Assets – Current Liabilities

Introduction Cont'

- A company can be endowed with assets and profitability but short of liquidity if its assets cannot readily be converted into cash. Positive working capital is required to ensure that a firm is able to continue its operations and that it has sufficient funds to satisfy both maturing short-term debt and upcoming operational expenses.
- The management of working capital involves managing inventories, accounts receivable and payable and cash.
- Decisions relating to working capital and short term financing are referred to as working capital management. These involve managing the relationship between a firm's short-term assets and its short-term liabilities.
- The goal of working capital management is to ensure that the firm is able to continue its operations and that it has sufficient cash flow to satisfy both maturing short-term debt and upcoming operational expenses.

Introduction Cont'

- By definition, working capital management entails short term decisions - generally, relating to the next one year period - which is "reversible". These decisions are therefore not taken on the same basis as Capital Investment Decisions (NPV or related) rather they will be based on cash flows and / or profitability.
- One measure of cash flow is provided by the [cash conversion cycle](#) - the net number of days from the outlay of cash for [raw material](#) to receiving payment from the customer. As a management tool, this metric makes explicit the inter-relatedness of decisions relating to inventories, accounts receivable and payable, and cash.
- Because this number effectively corresponds to the time that the firm's cash is tied up in operations and unavailable for other activities, management generally aims at a low net count.

Introduction Cont'

- In this context, the most useful measure of profitability are:
- Return on capital (ROC). The result is shown as a percentage, determined by dividing relevant income for the 12 months by capital employed;
- Return on equity (ROE) shows this result for the firm's shareholders. Firm value is enhanced when, and if, the return on capital, which results from working capital management, exceeds the cost of capital, which results from capital investment decisions as above.
- ROC & ROE measures are therefore useful as a management tool, in that they link short-term policy with long-term decision making.

Introduction Cont'

- Guided by the above criteria, management will use a combination of policies and techniques for the management of working capital.
- These policies aim at managing the current assets (generally cash and cash equivalents, inventories and debtors) and the short term financing, such that cash flows and returns are acceptable.

Core Principles

In a nutshell.....

Cash Management

- Identify the cash balance which allows for the business to meet day to day expenses, but reduces cash holding costs.

Core Principles In a nutshell.....

Inventory Management

- Identify the level of inventory which allows for uninterrupted production but reduces the investment in raw materials - and minimizes reordering costs - and hence increases cash flow;
- Supply chain management;
- Just In Time (JIT);
- Economic order quantity (EOQ);
- Economic production quantity

Core Principles

In a nutshell.....

Debtors Management

- Identify the appropriate credit policy, i.e. credit terms which will attract customers, such that any impact on cash flows and the cash conversion cycle will be offset by increased revenue and hence Return on Capital (or vice versa).

Core Principles

In a nutshell.....

Short term Financing

- Identify the appropriate source of financing, given the cash conversion cycle:
 - The inventory is ideally financed by credit granted by the supplier;
 - However, it may be necessary to utilize a bank [loan](#) (or overdraft), or to "convert debtors to cash" through "[factoring](#)".

Basic Cash Flow Management Cont'

- Managing cash must take an equal stature with Net Income if not higher. In financial management, "cash is king" is a renown motto.
- So your first step in managing cash is to elevate the importance of cash.
- The basic process for managing cash is straightforward. Try to maintain an adequate level of cash to meet current obligations and invest idle cash into earning assets. Earning assets must have high liquidity; i.e. you must be able to convert investments back into cash quickly. Additionally, you want to protect your cash balance by paying obligations only as they come due.
- Managing cash also involves aggressive conversion of current assets into cash.

Basic Cash Flow Management Cont'

- Inventory levels must be converted into accounts receivables and accounts receivables must be converted into cash.
- Ratios should be used to monitor the conversion of cash, such as number of days in inventory and number of days in receivables.
- Cash balances are the end result from a combination of cycles: inventory, purchasing, receivables, payables, etc. The key is to properly manage these cycles for conversion into cash.

Basic Cash Flow Management Cont'

- Once conversion cycles are identified, cash forecasts can be prepared for managing cash. Weekly cash reports are used to monitor balances.
- Since everything ultimately passes through your cash account, a strong internal control system is required.
- This involves the separation of duties in handling cash, reconciling cash accounts, adequate support for cash disbursements, and other control procedures.
- The overall objective is to protect cash just like any other asset through a system of internal controls.

CASH MANAGEMENT

Motives for holding Cash

Transaction motive

- To meet day-to-day commitments the firm needs cash to make payments for purchases ,wages and salaries ,other operating expenses, taxes ,dividends etc.
- The need to hold cash would not arise if there were perfect synchronization between cash receipts and cash payments i.e. enough cash is received when the payment has to be made. But cash receipts and cash payments are not perfectly synchronized.
- Therefore transaction motive mainly refers to holding cash to meet anticipated payments whose timing is not perfectly matched with cash receipts.

Motives for holding Cash Cont'

- **Precautionary motive**

- Holding a balance of cash as future cash flows may be uncertain for any reason.
- It provides a cushion or buffer to withstand some unexpected emergency.
- The precautionary amount depends upon the predictability of cash flows. If cash flows can be predicted with accuracy, less cash will be maintained for an emergency.

Motives for holding Cash Cont

Speculative motive

- Holding cash in order to be in a position to exploit profitable opportunities as and when they arise.
- For instance for investing in profit-making opportunities as and when they arise. The firm will hold cash, when it is expected that interest rates will rise and security prices will fall.

Optimal Cash Balance

- Another aspect of cash management is knowing the optimal cash balance.
- There are a number of methods that try to determine the magical cash balance, which should be targeted so that costs are minimized and yet adequate liquidity exists to ensure bills are paid on time (hopefully with something left over for emergency purposes).
- One of the first steps in managing the cash balance is measuring liquidity. There are numerous ways to measure this, including:
 - Cash to total assets ratio;
 - Current ratio (current assets divided by current liabilities);
 - Quick ratio (current assets less inventory, divided by current liabilities), and;
 - The net liquid balance (cash plus marketable securities less short-term notes payable, divided by total assets).

Optimal Cash Balance Cont.'

- The higher the number generated by the liquidity measure, the greater the liquidity and vice versa.
- There is a trade off, however, between liquidity and profitability that discourages firms from having excessive liquidity.

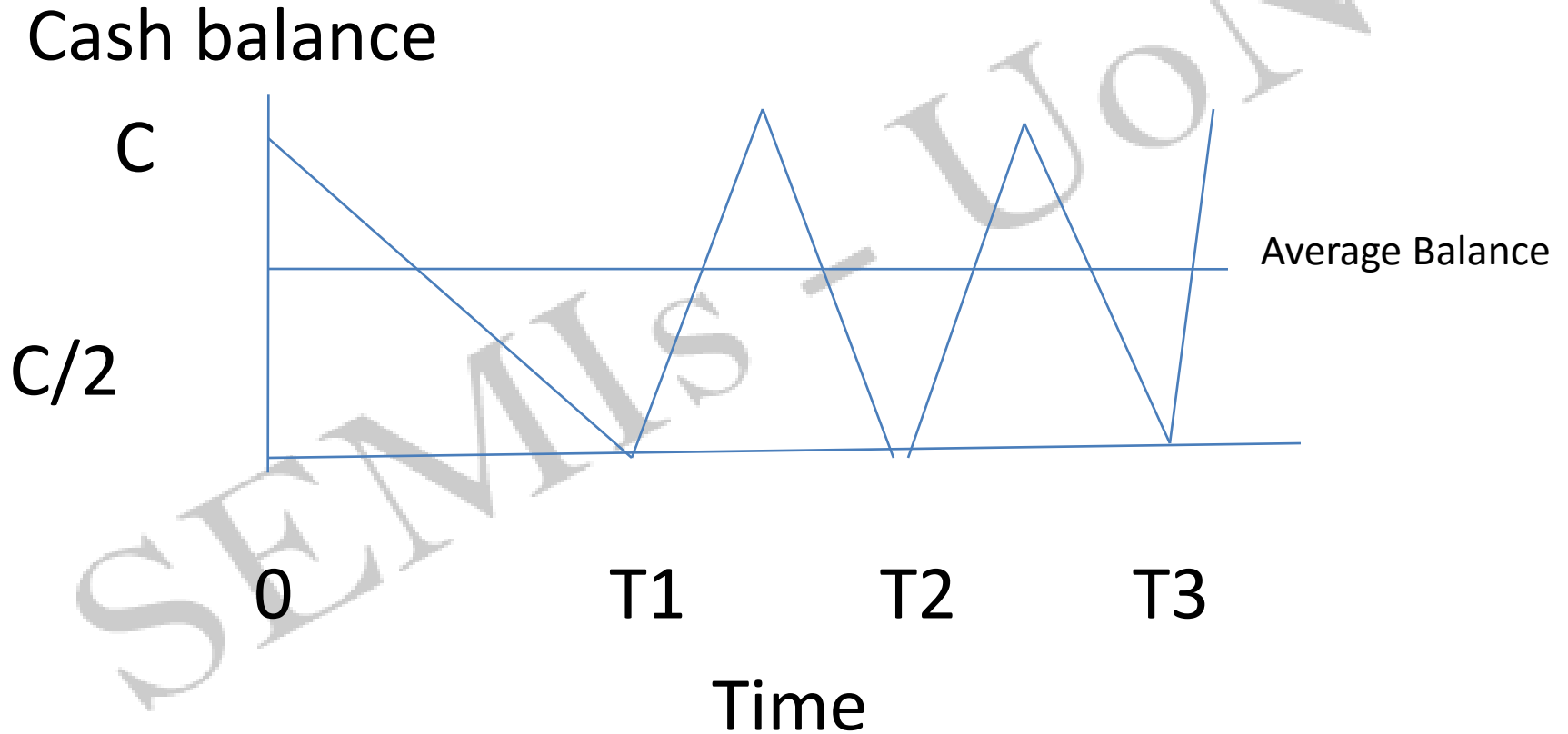
Cash Management Models

- To help manage cash on a day-to-day basis in actual dollars and cents, there are a number of cash management models.
- These include the:
 - Baumol Model,
 - Miller-Orr Model, and
 - Stone Model.

Baumol Model.

- The Baumol's model of cash management provides a formal approach for determining a firm's optimum cash balance under certainty. The firm attempts to minimize the sum of the cost of holding cash (inventory of cash) and the cost of converting marketable securities to cash.
- The model makes the following assumptions.
 - The firm is able to forecast its cash needs with certainty.
 - The firm's cash payments occur uniformly over a period of time.
 - The opportunity cost of holding cash is known and it does not change over time.
 - The firm will incur the same transaction cost whenever it translates securities to cash.

Baumol Model Cont.'

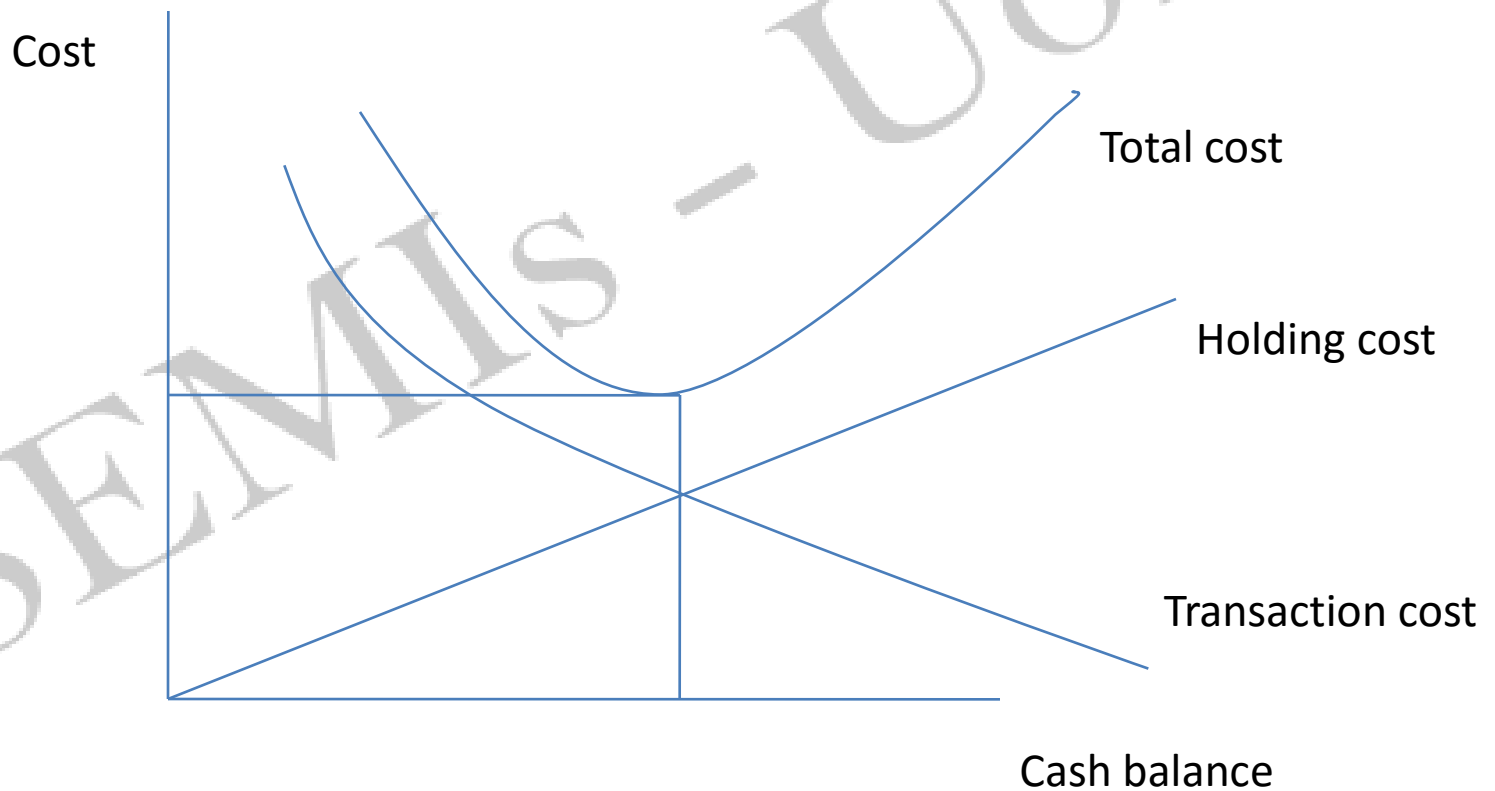


Baumols model Cont.'

- Assuming that the firm sells securities and starts with cash balance of shs. C as the firm spends cash, its cash balance decreases steadily and reaches zero. The firm replenishes its cash balance to shs. C by selling marketable securities.
- This pattern continues over time. Since the cash balance decreases steadily, the average cash balance will be; $C/2$.

Baumols model Cont.'

- Optimal Cash Balance



Baumols model Cont.'

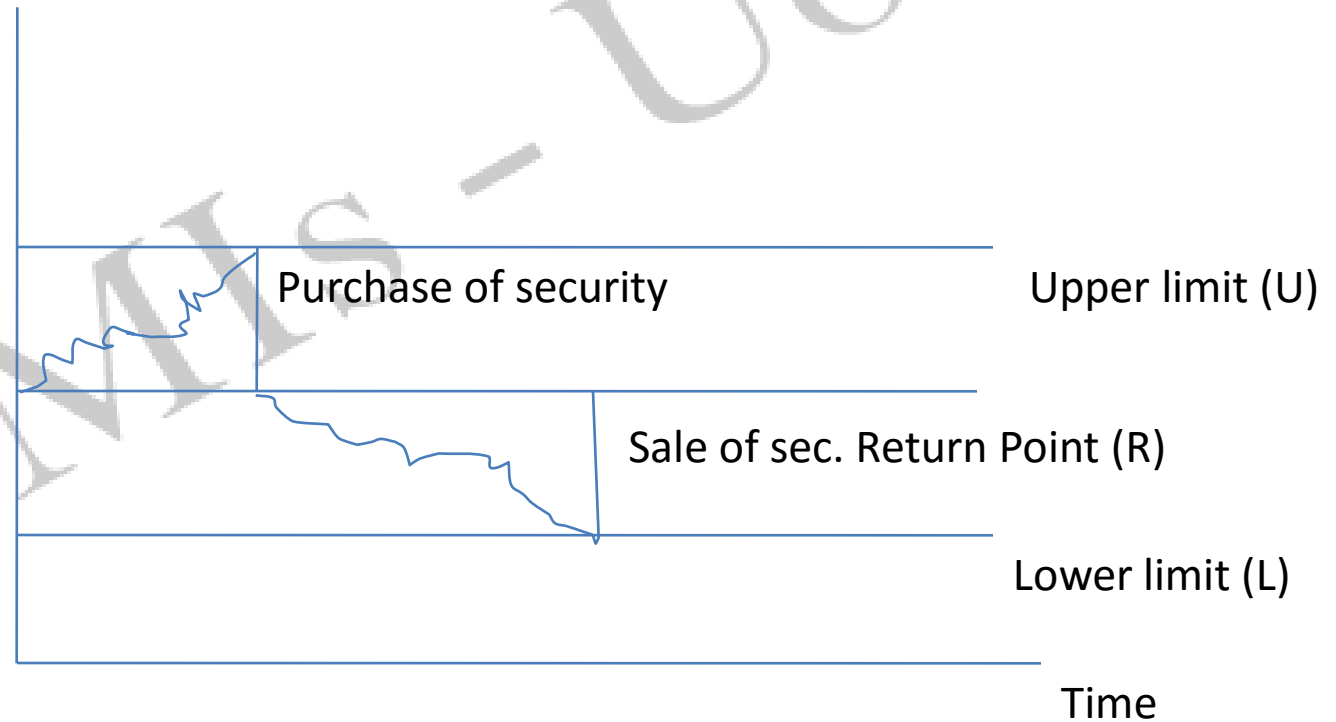
- The firm incurs a holding cost for keeping the cash balance. It is an opportunity cost; that is the return foregone on the marketable securities. Transaction cost is incurred whenever the firm converts its marketable securities to cash. Total cost comprise holding and transaction costs.
- Holding costs increase as demand for cash, C , increases. However, the transaction cost reduces because with increasing cash the number of transactions will decline.
- Therefore the optimal cash balance is obtained when the total cost is minimum.
- One shortcoming of this model is that it accommodates only a net cash outflow situation as opposed to both inflows and outflows. Also, the cash outflow is at a constant rate, with no variation.

Miller-orr Model.

- The Miller-Orr Model rectifies some of the deficiencies of the Baumol Model by accommodating a fluctuating cash flow stream that can be either inflow or outflow. The Miller-Orr Model has an upper limit U and lower limit L
- When there is too much cash and U is reached, cash is taken out (to buy short-term [securities](#) to earn interest) such that the cash balance goes to a return (R) point. Otherwise, if there is too little cash and L is reached, cash is deposited (from the short-term investments) to replenish the balance to R .

Miller-orr Model Cont.'

Cash balance



Miller-Orr model

Miller-orr Model Cont.'

- L is determined by other means, for example, compensating balance requirement, minimum balance to avoid bank service charges on checking account, or zero.

The Miller-Orr Model

- Target Cash Balance (Z)

$$Z = \sqrt[3]{\frac{3 \times TC \times V}{4 \times r}} + L$$

where: **TC** = transaction cost of buying
or selling securities

V = variance of daily cash flows

r = daily return on short-term
investments

L = minimum cash requirement

The Miller-Orr Model

- Target Cash Balance (Z)

- Example: Suppose that short-term securities yield 5% per year and it costs the organization \$50 each time it buys or sells securities (TC). The daily variance of cash flows is \$1000 (V) and your bank requires \$1,000 minimum checking account balance (L).*

$$Z = \sqrt[3]{\frac{3 \times 50 \times 1000}{4 \times .05/360}} + \$1,000$$

$$= \$3,000 + \$1,000 = \$4,000$$

The Miller-Orr Model

- Upper Limit

- The upper limit for the cash account (H) is determined by the equation:

$$H = 3Z - 2L$$

where:

Z = Target cash balance

L = Lower limit

- In the previous example:

$$H = 3 (\$4,000) - 2(\$1,000) = \$10,000$$

Stone Model

- The Stone Model is somewhat similar to the Miller-Orr Model insofar as it uses control limits. It incorporates, however, a look-ahead forecast of cash flows when an upper or lower limit is hit to take into account the possibility that the surplus or deficit of cash may naturally correct itself.
- If the upper control limit is reached, but is to be followed by cash outflow days that would bring the cash balance down to an acceptable level, then nothing is done.
- If instead the surplus cash would substantially remain that way, then cash is withdrawn to get the cash balance to a predetermined return point.
- Of course, if cash were in short supply and the lower control limit was reached, the opposite would apply. In this way the Stone Model takes into consideration the cash flow forecast.

Conclusion on the cash models

- The goals of these models are to ensure adequate amounts of cash on hand for bill payments, to minimize transaction costs in acquiring cash when deficiencies exist, and to dispose of cash when a surplus arises.
- These models assume some cash flow pattern as a given, leaving the task of cash collection, concentration, and disbursement to other methods.

Investing of surplus cash

Short-term investment decisions

- Consider:
 - Return
 - Liquidity
 - Default risk

Short term investment opportunities may include the following

- Treasury bills
- Commercial papers
- Certificates of deposits
- Inter-corporate deposits
- Money market mutual funds

INVENTORY MANAGEMENT

Introduction

Nature of inventories

- Inventories are stock of the product a company is manufacturing for sale and components that make up the product.
- The various forms in which inventories exist in a manufacturing company are

Introduction Cont.'

- **Production supply (raw materials)** – the initial inputs into the production process that are converted into finished product through the manufacturing process.
- **Work- in-process process (semi-finished goods)** items beyond the raw material stage but not yet at the completed product stage. They represent products that need more work before they become finished products for sale.
- **Finished goods** – completed goods which are ready for sale.

Motives for holding inventories

There are three general motives for holding inventories

- ***Transaction motive***

Emphasizes the need to maintain inventories to facilitate smooth production and sales operations.

- ***Precautionary motive***

Necessitates holding of inventories to guard against the risk of unpredictable changes in demand and supply forces and other factors.

- ***Speculative motive***

Influences the decision to increase or reduce inventory levels to take advantage of price fluctuations.

Objectives of inventory management

In the context of inventory management ,the firm is faced with meeting two conflicting needs :

- To maintain a large size of inventories of raw material and work in progress for efficient and smooth production and of finished goods for uninterrupted sales operations.
- To maintain a minimum investment in inventories to maximize profitability.

Note

- ❑ Both excessive and inadequate inventories are not desirable. The objective of inventory management should be to determine and maintain optimum level of inventory investment.

Major dangers of over investment

- Unnecessary tie-up of the firm's funds and loss of profit. The excessive level of inventories consumes funds of the firm, which cannot be used for any other purpose, and, thus it involves an opportunity cost.
- Excessive carrying costs. The carrying costs, such as the costs of storage, handling, insurance, recording and inspection also increase in proportion to the volume of inventory.
- Risk of liquidity. Problems of liquidity may arise due to the fact that it may not be possible to dispose excess inventory in time and at full value.

Downside of under-investment in inventories

- Production hold-ups-Inadequate raw materials and work in progress inventories will result in frequent production interruptions.
- Failure to meet delivery commitments. If finished goods inventories are not sufficient to meet the demand for customers regularly, they may shift to competitors, which will amount to permanent loss to the firm.

Basic principles of inventory Mgt.

A firm should, therefore, attempt to maintain an optimum level of inventory. For effective management of inventory, a firm should;

- Plan its production and estimate its raw materials requirement accordingly
- Not only consider production plans, but also other factors such as usage, supply delays etc in deciding upon the level of raw material inventory.
- Start control of inventories with the purchase of raw materials since after commitment to purchase has been made or raw material has been actually purchased, there can be very little control.

Basic principles of inventory Mgt.

- Decide about the level of finished goods inventory ,keeping in mind customers demand ,periods of peak demand ,costs of lost sales ,competitors polices etc
- Minimize cost of holding inventories, subject to production and sales plans
- Identify the most critical items of inventories and devote maximum attention in their control
- Achieve inventory control through concerted efforts by involving purchase, production marketing and finance executives.
- Develop a proper reporting system for inventory control. Slow moving inventories must be highlighted and immediate action initiated to redeem the situation.

Controlling Inventory

Inventory size

- Control of inventories starts with the purchase of raw materials and the quantity of raw material to be ordered and the timing of the purchase are critical for this.
- Ordering costs-include costs of requisition, placing of order, freight charges, receiving, inspecting and storing of goods, accounting administrative costs etc
- Most of these costs increase with the number of orders.
- Carrying costs or holding costs-are incurred to maintain inventories. They include costs of storing, handling insurance, deterioration in storage, administration etc
- Carrying costs vary with levels of inventory.
- A firm should order only a quantity of materials which minimizes the total of ordering and carrying costs.

Illustration.

ABC Company projects annual requirement of one item of material at 60,000 units. The purchase price per unit is kshs.55. Ordering cost per order is kshs.100 and carrying cost per unit is kshs.0.48.

Required

- How many units should the company order?

Solution

- Let us calculate total ordering and carrying costs for different numbers of orders, say, 1, 4, 5, 6, 12, 15, and 20

| No. of orders | 1 | 4 | 5 | 6 | 12 | 15 | 20 |
|----------------|--------|--------|--------|--------|-------|-------|-------|
| Order Size | 60,000 | 15,000 | 12,000 | 10,000 | 5,000 | 4,000 | 3,000 |
| Avg. Inventory | 30,000 | 7,500 | 6,000 | 5,000 | 2,500 | 2,000 | 1,500 |
| Carrying Costs | 14,400 | 3,600 | 2,880 | 2,400 | 1,200 | 960 | 720 |
| Ordering costs | 100 | 400 | 500 | 600 | 1,200 | 1,500 | 2,000 |
| Total Costs | 14,500 | 4,000 | 3,380 | 3,000 | 2,400 | 2,460 | 2,720 |

Solution, Cont.'

- The total costs are minimum when the company places orders in the lots of 5,000 each i.e 12 orders in a year.
- Average inventory is calculated as half of the inventory acquired in the beginning on the assumption that inventories will be evenly used up during the period.

Economic Order Quantity (EOQ)

- EOQ: It is the order size at which total carrying and ordering costs are minimum.
- The economic order quantity can readily be calculated by using the following formula:

$$EOQ = \sqrt{\frac{2 \cdot A \cdot O}{C}}$$

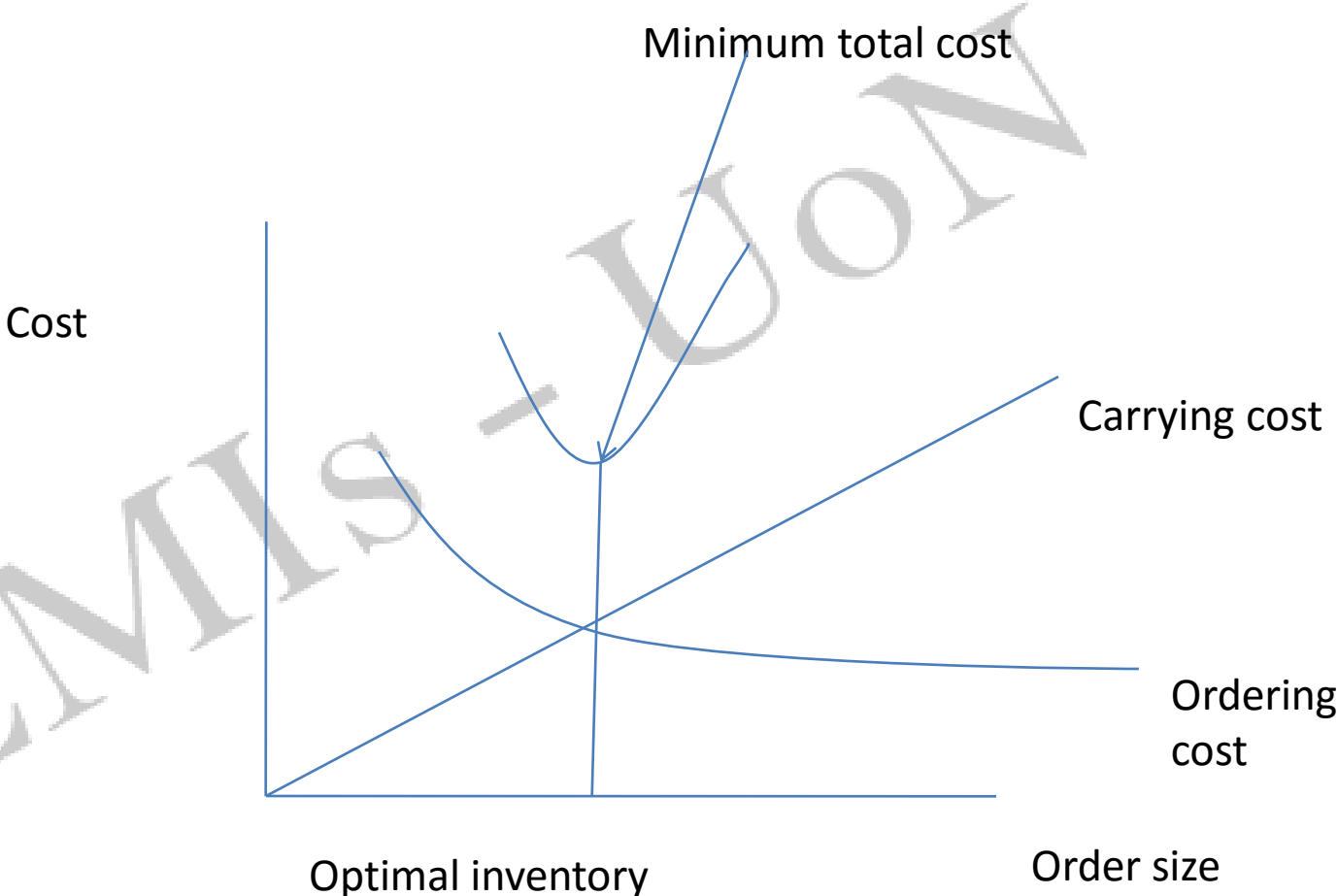
- Where;
 - O-is the ordering cost
 - A-total annual requirements and
 - C-is the carrying cost.

EOQ: Illustration

- Suppose the estimated production requirement is 1200 units, ordering cost per order is kshs.37.5 and carrying cost per unit is shs.1.
- The economic order quantity will be:

$$\text{EOQ} = \sqrt{\frac{2 \times 1200 \times 37.5}{1}} \\ = 300 \text{ units}$$

Optimal Inventory



The Cost of Financing Inventories

- Inventory financing can be used where inventories are highly marketable and no threat of obsolescence exists. The inventory serves as collateral within the financing arrangement. Financing can occur up to 70% of inventory values provided that inventory prices are relatively stable. The costs of financing inventory can be very high; such as 6% over the prime lending rate.
- Three types of financing arrangements for inventory are available. They are floating liens, warehouse receipts, and trust receipts. Floating liens place a lien on the overall inventory stock. Warehouse receipts give the lender an interest in your inventory.
- And trust receipts represent a loan which is released as you sell your inventory.

Illustration

- You would like to finance kshs. 100,000 of your inventory. You need the funds for 3 months. You will use a warehouse receipt arrangement. This arrangement requires that you setup a separate area for the lender's inventory. You estimate an additional kshs. 2,000 in costs for storing and maintaining the inventory. The lender will advance you 80% at 16%.
- The cost of financing inventory is kshs. 5,200 as calculated below:
 - $0.16 \times 0.80 \times \text{shs } 100,000 \times 3/12 = \text{shs } 3,200 + \text{shs } 2,000$
or Sh. 5,200.

RECEIVABLES MANAGEMENT

Introduction

- In literature also referred to as credit management, management of debtors.
- Cash flow is greatly affected by the policies established by a company with regard to:
 - The choice of customers,
 - The way in which sales are made,
 - The sales invoicing system,
 - The speedy correction of errors and resolution of disputes,
 - The means of settlement,
 - The monitoring of customer settlement performance,
 - The overdue accounts collection system.

Why do firms grant credit?

Companies in practice feel the necessity of granting credit for several reasons ;

- **Competition**

Generally the degree of competition, the more the credit granted by a firm

- **Company's bargaining power**

If a company has a higher bargaining power vis-à-vis its buyers, it may grant no or less credit.

- **Buyers requirements**

In a number of business sectors buyers /dealers are not able to operate without extended credit.

- **Buyers status**

Large buyers demand easy credit terms because of bulk purchases and higher bargaining power.

Why do firms grant credit? Cont.'

- ***Relationship with dealers***

Companies sometimes grant credit to dealers to build long-term relationships with them or to reward them for their loyalty.

- ***Marketing tool***

Credit is used as a marketing tool, particularly when a new product is launched or when a company wants to push its weak product.

- ***Industry practice***

Small companies have been found to be guided by industry practice norm more than the large companies.

- ***Transit delays***

This is a forced reason for the case of extended credit in the case of a number of firms. This is done to minimize delays.

Credit policy

- The term credit policy is used to refer to three decision variables
 - Credit standards
 - Credit terms
 - Collection policy and procedures.
- The credit manager may administer the credit policy of the firm. It should however be appreciated that credit policy has important implications for the firms production, marketing, and finance functions. Therefore it is advisable that a committee that consists of the executives of production, marketing and finance departments formulates the firm's credit policy.

Credit policy Cont.'

- Under this, the financial or credit manager should ensure that the firm's value of the share is maximized. He does by answering the following questions.
- What will be the change in sales when a decision variable is altered?
- What will be the cost of altering the decision variable?
- How would the level of the receivable be affected by changing the decision variable?
- How are expected rate of return and cost of funds related?

Credit standards.

- Credit standards are the criteria which a firm follows in selecting customers for credit extension.
- The firm may have tight credit standards, that is, it may sale mostly on cash basis, and may extend credit only to the most reliable and financially strong customers.
- Such standards will result in no bad debt losses, and; less cost of credit administration. But the firm may not be able to expand sales.
- The profit sacrificed on lost sales may be more than the costs saved by the firm.
- On the contrary if credit standards are loose the firm may have larger sales .but the firm will have to carry a larger receivable.

Credit analysis

Credit standards influence the quality of the firms customers .there are two aspects of the quality of the customers;

- The time taken by customers to repay credit obligation. The average collection period determines the speed of payments by customers. it measures the number of days credit sales remain outstanding.
- The default rate-can be measured in terms of bad debt-losses ratio. The proportion of uncollected receivable. Bad debts ratio indicates default risk.

Credit evaluation

Proper assessment of credit risks is an important element of credit management. It helps in establishing credit limits. In assessing credit risks, two types of errors occur;

- Type I error- a good customer is classified as a poor credit risk
- Type II error –a bad customer is misclassified as a good credit risk.
- Both the errors are costly. Type I error leads to loss of profits on sales to good customers who are denied credit. Type II error results in bad debt losses on credit sales made to risky customers.
- While misclassification errors cannot be eliminated fully, the firm can mitigate their occurrence by doing proper credit evaluation, through:
 - Traditional credit analysis;
 - Numerical credit scoring.

Traditional credit analysis

- The traditional approach to credit analysis calls for assessing the customer in terms of the “five Cs of credit”
- **Character**
The willingness of the customer to honor his obligations. It reflects integrity, a moral attribute that is considered very important by credit managers.
- **Capacity**
The ability of the customer to meet his obligations from the operating cash flows.
- **Capital**
The financial reserves of the customer. If the customer has problems in meeting credit obligations from operating cash flow, the focus shifts to its capital.
- **Collateral**
The security offered by the customer in the form of pledged assets
- **Conditions**-Macroeconomic environment

The general economic conditions that affect the customer

- To get the information on the five Cs a firm may rely on the following;
- Financial statements
A searching analysis of the customers' financial statements can provide useful insights into the credit worthiness of the customer.
- Bank references
The banker of the prospective customer may be another source of information. To ensure a higher degree of candor, the customer's banker may be approached indirectly through the firm granting credit.
Credit Reference Bureaus

The general economic conditions that affect the customer Cont.'

- Experience of the firm
- Consulting ones own experience is very important .if the firm had previous dealings with the customer, then it is worth asking; how prompt has the customer been in making payments?
- Prices and yields on securities
- For listed companies, valuable references can be derived from market data. Higher the price –earning s multiple and lower the yield on bonds, other things being equal, lower will be the credit risk.

Numerical credit scoring

The system involves the following steps

- Identify the factors relevant for credit evaluation
- Assign weights to these factors that reflect their relative importance
- Rate the customer on various factors ,using a suitable rating scale (usually a 5-point scale or a 7-point scale is used)
- For each factor ,multiply the factor rating with the factor weight to get the factor score
- Add all the factor scores to get the customer rating index
- Based on the rating index, classify the customer

Construction of a credit rating index.

(Based on a 5-point rating scale)

Illustration

| <i>Factor</i> | <i>Weight</i> | <u><i>Rating</i></u> | | | | | <i>Factor score</i> |
|-------------------|---------------|----------------------|---|---|---|---------------------|---------------------|
| | | 5 | 4 | 3 | 2 | 1 | |
| Past payment | 0.30 | | x | | | | 1.2 |
| Net profit margin | 0.20 | | | x | | | 0.8 |
| Current ratio | 0.20 | | | | x | | 0.6 |
| Debt-equity ratio | 0.10 | | | x | | | 0.4 |
| Return on equity | 0.20 | x | | | | | <u>1.0</u> |
| | | | | | | Rating index | 4.00 |

Control of accounts receivable

- Methods used
 - Days sales outstanding
 - Ageing schedule

Day's sales outstanding

- The days sales outstanding (DSO) at a given time t , may be defined as the ratio of accounts receivable outstanding at that time to average daily sales figure during the preceding 30 days, 60 days, 90 days or some other relevant period.
- $DSO_t = \frac{\text{accounts receivable at time } t}{\text{Average daily sales}}$

Illustration

Consider the monthly sales and month-end accounts receivable for ABC Company for the two quarters of the year

| Month | sales (shs) | receivables (shs) |
|----------|-------------|-------------------|
| January | 150 | 400 |
| February | 156 | 360 |
| March | 158 | 320 |
| April | 190 | 310 |
| May | 170 | 300 |
| June | 180 | 320 |

Required

DSO for each quarter

Solution

$$\begin{array}{l} \text{Quarter 1} \quad \underline{\hspace{10em} 320 \hspace{10em}} \\ \text{DSO} \\ \text{days} \end{array} \quad \frac{(150 + 156 + 158) / 90}{\hspace{10em}} = 62$$

Ageing schedule

The ageing schedule classifies outstanding accounts receivables at a given point of time into different age brackets

Illustration

| <u>Age group (in days)</u> | <u>percent receivables</u> |
|----------------------------|----------------------------|
| 0-30 | 35 |
| 31-60 | 40 |
| 61-90 | 20 |
| >90 | 5 |

Policies of trade credit

When offering to sell on credit, the business must have policies concerning:

- Which customers should receive credit?
- How much credit should be offered,
- What length of credit it is prepared to offer,
- Whether discounts will be offered for prompt payment,
- What collection policies should be adopted,
- How the risk of non-payment can be reduced.

Policies of trade credit Cont.'

Phases of decision-making in management of receivables

- Decision on offering trade credit

Initial phase of management of receivables (who to grant credit to, how much, for how long) –establishing credit policy containing general guidelines then used by various managers

- Management and monitoring the receivables balance

Phase containing methods, procedures, steps to ensure that amounts owing are collected as quickly as possible

Policies of trade credit Cont.'

Steps to ensure that amounts owing are collected as quickly as possible

- Publicize credit terms
- Issue invoices promptly
- Monitor outstanding debts
- Produce an ageing schedule of debtors
- Identify the pattern of receipts
- Answer queries quickly
- Deal with slow payers
- Reducing the risk of non-payment
- Advance payments,
 - Offset amounts owed against amounts due,
 - Requiring a third-party guarantee

Policies of trade credit Cont.'

- legal title of the goods is not passed to the customer until they are paid for,
- Insurance to cover the costs of any legal expenses incurred in recovering debt,
- Insurance against the risk of non-payment

Conclusion

COST OF HIGH LEVEL WORKING CAPITAL

- **Debtors/receivables**

- Ties cash in debtors-the firm may be forced to borrow to continue operating
- Credit/default risk
- High collection costs

- **Cash**

- Opportunity cost of not investing excess cash
- Risk of fraud and theft

Conclusion

COST OF HIGH LEVEL WORKING CAPITAL

- **Inventory**

- Unnecessary tie-up of the firm's funds and loss of profit. The excessive level of inventories consumes funds of the firm, which cannot be used for any other purpose, and, thus it involves an opportunity cost.
- Excessive carrying costs. The carrying costs, such as the costs of storage, handling, insurance, recording and inspection also increase in proportion to the volume of inventory.
- Risk of liquidity. Problems of liquidity may arise due to the fact that it may not be possible to dispose excess inventory in time and at full value.
- Obsolescence risk

Conclusion

COST OF LOW LEVEL WORKING CAPITAL

- **Debtors/Receivables**

- Loss of customers hence reduced revenue
- Loss of competitiveness

- **Cash**

- Low liquidity
- Inability to deal with emergency cases

Conclusion

COST OF LOW LEVEL WORKING CAPITAL

- **Inventory**

- ❑ Production hold-ups-Inadequate raw materials and work in progress inventories will result in frequent production interruptions.
- ❑ Failure to meet delivery commitments. If finished goods inventories are not sufficient to meet the demand for customers regularly, they may shift to competitors, which will amount to permanent loss to the firm.

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SEMIS

**Investment Decisions/Capital
Budgeting**

Dan Chirchir, CFA, CPA(K)

Introduction

Definition

- ❖ Capital Budgeting is the process of identifying and evaluating capital projects, that is projects where the cash flow to the firm will be received over a period longer than a year.
- ❖ Decisions about whether to buy a new machine, expand business in a another geographic area, replace delivery truck etc can be examined using capital budgeting analysis

Steps in capital budgeting

Administrative steps..

- ❖ Idea generation
- ❖ Analysing project proposal
- ❖ Create firm-wide capital budget-through prioritising projects
- ❖ Monitoring decisions and conducting post-audit

Categories of capital budgeting projects

- ❖ Replacement projects to maintain the business
- ❖ Replacement projects for cost reductions
- ❖ Expansion projects
- ❖ New product or market development
- ❖ Mandatory projects- eg safety related or environmental projects
- ❖ Other projects

Principles of capital budgeting

- ❖ Decisions are based on cash flows, not accounting income: Relevant cash flows include incremental cash flows
- ❖ Cash flows are based on opportunity costs
- ❖ The timing of cash flows is important
- ❖ Cash flows are analysed on an after-tax basis
- ❖ Financing costs are reflected in the project's required rate of return

Key terminologies

- ❖ Independent vs Mutually exclusive projects
- ❖ Unlimited Funds vs. Capital Rationing

Techniques

- ❖ Pay back period
- ❖ Discounted Pay back period
- ❖ Net Present Value (NPV)
- ❖ Profitability Index
- ❖ Internal Rate of return (IRR)
- ❖ Modified Internal Rate of Return (MIRR)

Pay Back Period (PBP)

Pay back period:

Is the number of years it takes to recover the initial cost of investment.

Decision Rule:

Independent project

Accept Project: If the PBP is less than the one set by the firm.

Reject Project: If the PBP is greater than the one set by the firm.

Pay Back Period (PBP)

Decision Rule:

Mutually exclusive project

Accept Project: With the Shortest PBP

Reject Project: All other projects

Advantages:

- ✓ Simple
- ✓ Good measure of project liquidity
- ✓ Cost effective

Disadvantages

- ✓ Does not consider time value of money
- ✓ Does not consider cash flows beyond the pay back period
- ✓ The target PBP of the firm is arbitrarily set

Discounted Pay Back Period (DPBP)

Discounted Pay back period:

Uses present values of the project's estimated cash flows. It is the number of years it takes a project to recover its initial investment in present value terms

Decision Rule:

Independent project

Accept Project: If the PBP is less than the one set by the firm.

Reject Project: If the PBP is greater than the one set by the firm.

Discounted Pay Back Period (PBP)

Decision Rule:

Mutually exclusive project

Accept Project: With the Shortest PBP

Reject Project: All other projects

Advantages:

- ✓ Simple
- ✓ Good measure of project liquidity
- ✓ Cost effective
- ✓ It considers time value of money

Disadvantages

- ✓ Does not consider cash flows beyond the pay back period
- ✓ The target PBP of the firm is arbitrarily set

Net present Value (NPV)

NPV:

It is the sum of the present values of all the expected incremental cash flows if a project is undertaken. The discount rate is the firm's cost of capital, adjusted for the risk level of the project.

Decision Rule:

Independent project

Accept Project: If NPV is greater than zero

Reject Project: If NPV is less than zero

NPV

Decision Rule:

Mutually exclusive project

Accept Project: The highest NPV

Reject Project: All other projects

Advantages:

- ✓ True measure of profitability
- ✓ Considers all cash flows
- ✓ It considers time value of money

Disadvantages

- ✓ It is difficult to accurately estimate the cost of capital

Profitability Index (PI)

PI:

It is the Present value of a project's future cash flows divided by the initial cash outlay.

Decision Rule:

Independent project

Accept Project: If PI is greater than one

Reject Project: If PI is less than one

PI

Decision Rule:

Mutually exclusive project

Accept Project: The highest PI

Reject Project: All other projects

Advantages:

- ✓ True measure of profitability
- ✓ Considers all cash flows
- ✓ It considers time value of money
- ✓ Can be used to rank projects under capital rationing environment

Disadvantages

- ✓ It is difficult to accurately estimate the cost of capital

IRR

IRR:

It is the discount rate that makes the present value of the expected incremental cash flows just equal to the initial cost of the project.

It is the discount rate that makes the present value of the project's estimated cash inflows equal to the present value of the project's estimated cash flows .

Decision Rule:

Independent project

Accept Project: If IRR is greater than cost of capital

Reject Project: If IRR is less than cost of capital

IRR

Decision Rule:

Mutually exclusive project

Accept Project: The highest IRR

Reject Project: All other projects

Advantages:

- ✓ True measure of profitability
- ✓ Considers all cash flows
- ✓ It considers time value of money

Disadvantages

- ✓ No IRR
- ✓ Multiple IRR

Example

The following tables shows the cash flows of two projects. The cost of capital is 10%.

| Year | Project A | Project B |
|------|-----------|-----------|
| 0 | (750) | (750) |
| 1 | 500 | 100 |
| 2 | 400 | (300) |
| 3 | (300) | 400 |
| 4 | 200 | 675 |
| 5 | 200 | 200 |
| 6 | 200 | 100 |

Example Cont'

Required

Compute:

- ❖ Pay back period
- ❖ Discounted Pay back period
- ❖ Net Present Value (NPV)
- ❖ Profitability Index
- ❖ Internal Rate of return (IRR)
- ❖ Modified Internal Rate of Return (MIRR)

Advise on which project to select if (i) Projects are Independent projects (ii) Mutually exclusive

Example Cont'

$$\text{IRR} = \text{Lr} + \frac{\text{Positive NPV}}{\text{Positive NPV} - \text{Negative NPV}} * (\text{Hr} - \text{Lr})$$