NATIONAL OPEN UNIVERSITY OF NIGERIA

SCHOOL OF MANAGEMENT SCIENCES

COURSE CODE: BHM 745

COURSE TITLE: WORKING CAPITAL MANAGEMENT

COURSE GUIDE

BHM 745
WORKING CAPITAL MANAGEMENT

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Introduction

Working capital management is a first semester course. It is a year one, three (3) credit unit course. It is a 600 level core-course available to all postgraduate students offering Business Administration.

The course will expose you to the approaches, techniques, financing working capital needs and managing components of working capital. It will also assist you to be able to apply these knowledge of working capital management to actual business situation so as to get the best and most out of your cash managers or finance managers or officers.

The course consist of 24 units which consist of: course guide, theories and approaches, ratio analysis I, II and III, fund flow analysis, cash flow analysis, forecasting and cash flow budgeting, money market, bank credit – the framework I and II receivables management I and II, cash management I and II, inventory management I and II and payable management.

This course guide tells you briefly what the course is about, what course materials you will be using and how you can work your way through these materials. In addition, it suggests some general guidelines for the amount of time you are likely to spend on each unit of the course in order to complete it successfully.

It gives you guidance in respect of your tutor-marked assignments which will be made available in the assignment file. There will be regular tutorial classes that are related to the course. It is advisable for you to attend these tutorial sessions.

What you will Learn in this Course

The main aim of working capital management is to acquaint you with important theories, techniques of financing working capital needs and managing components of working capital.

The basic concepts, theories, approaches and tools and techniques of financial analysis relevant to the field of working capital management will be discussed. The financing of working capital needs through the money market, bank credit and non-finance will be explained. The managing components of working capital, i.e. receivables, cash inventory and payables will be discussed in full detail.

Course Aim

The aim of the course can be summarized as follows:

To build in you a capacity to understand and apply the knowledge gained in any business organization. This aim will be attained by aiming to:

- introduce you to the meaning and definition of working capital management;
- describe the nature, functions, dimensions and concept of working capital management;
- highlight the importance of managing components of working capital.

Course Objectives

In order to achieve the aims set out, the course has set of objectives. Each unit has specific objectives which are usually at the beginning of a unit. You should read these objectives before your study of the Unit. You may wish to refer to them during your study of the Unit to check on your progress. You should always look at the Unit objectives after completing a Unit. By doing so, you will be sure that you have followed the instructions in the Unit. The comprehensive objective of the course as a whole are stated below. By meeting these objectives, you should have achieved the aims of the course as a whole.

On the successful completion of the course, you should be able to:

1. Provide an overview of the field of working capital management.
2. Identify and explain the dimensions of working capital management.
3. Introduce and illustrate basic decision criteria, principles and approaches applicable in the field of working capital management.
4. Explain and illustrate the nature and role of ratio analysis as an analytical tool in the context of working capital management.
5. Describe alternative approaches to ratio analysis.
6. Explain and illustrate the construction and interpretation of various ratios used for evaluating efficiency, liquidity and structure of working capital.
7. Describe the concepts of fund flow and cash flow and their relevance to management of working capital.
8. Explain and illustrate the process of fund/cash flow analysis.
9. Highlight the managerial uses of fund flow/cash flow analysis.
10. Distinguish between cash flow forecasting and cash budget.

11. Prepare cash flow forecast and cash budgeting.
12. Use cash budget for effective management of working capital and business liquidity.
13. Explain the nature and function of money, market as the source of working capital funds.
14. Contrast capital market and money market.
15. Explain the regulatory framework of bank credit.
16. Discuss the principles of bank lending.
17. Pinpoint the types of security accepted by banks and the forms of credit extended by banks to meet working capital needs.
18. Explain the process by which commercial banks assess working capital needs of industry.
19. Discuss the process followed by banks for appraisal of industrial borrower's applications.
20. Describe credit monitoring arrangement and multiple banking finance for working capital.
21. Discuss sources of short-term funds other than bank credit.
22. Trade credit to finance working capital needs.
23. Highlight the framework of rules and regulations financed by the concerned authorities regarding non-bank sources of working capital finance.
24. Highlight the importance of account receivable in the operation of business enterprise.
25. Discuss credit standards, credit analysis, credit terms and collection policies.
26. Explain and illustrate the concept of cost of marginal investment in the accounts receivable.
27. Analyze the role of each discount in determining the sales, average collection period and debt expenses and profit.
28. Analyze the role of cash discounts in determining the sales average collection period and debt expenses and profits.
29. Discuss methods used in monitoring accounts receivable.
30. List out the motives of holding cash.
31. Point out sources of uncertainty affecting cash balance of a firm.
32. Prepare cash flow forecast under conditions of uncertainty by using techniques like simulation approach.
33. Use quantitative models viz: Miller-orr model and Stone model to decide temporary investment of cash balances of the firm.
34. Discuss the nature and importance of inventory management as a segment of working capital management.
35. List out various motives for holding inventories.
36. Pinpoint inventory related cost.
37. Design deterministic EOQ models.
38. Explain how once can approach an uncertain situation.
39. Determine buffer stocks and reorder point.
40. Use selective inventory management techniques.

41. Explain the significance of payables as a source of finance.
42. Identify the factors that influence the payables quantum and duration.
43. Highlight the advantage of payable and provide hints for effective management of payables.

Working through this Course

To complete this course, you are required to read each study Unit, read the set books and read other materials which may be provided by the National Open University of Nigeria (NOUN). Each Unit contains Activity. At the end of the course, there is a final examination. The course would take you 22 weeks in total to complete. Below you will find listed all the components of the course, what you have to do and how you should allocate your time to each Unit in order to complete the course on time and successfully.

Course Materials

The main components of the course are:

(1) Course Guide
(2) Study Units
(3) Reference
(4) Tutor-Market Assignment (TMA)
(5) Presentation Schedule.

Study Units

The study units in this course are as follows:

Module 1

Unit 1 Working Capital Management Theories
Unit 2 Working Capital Management Approaches
Unit 3 Ratio Analysis I
Unit 4 Ratio Analysis II
Unit 5 Ratio Analysis III

Module 2

Unit 1 Fund Flow Analysis
Unit 2 Cash Flow Analysis
Unit 3 Cash Flow Forecasting I
Unit 4 Cash Flow Forecasting II
Unit 5 Cash Flow Budgeting

Module 3

Unit 1 Money Market
Unit 2 Bank Credit: The Framework I
Unit 3 Bank Credit: The Framework II
Unit 4 Bank Credit: Assessment
Unit 5 Bank Credit Appraisal

Module 4

Unit 1 Non-Bank Finance I
Unit 2 Non-Bank Finance II
Unit 3 Receivables Management I
Unit 4 Receivables Management II
Unit 5 Cash Management I

Module 5

Unit 1 Inventory Management I
Unit 2 Inventory Management II
Unit 3 Payables Management

Units 1 and 2 take an overview of the field of working capital management. They identify and explain the dimensions of working capital management and introduce and illustrate the basic decision criteria, principles and approaches applicable in the field of working capital management.

Units 3, 4 and 5 explain the nature and illustrate the applications of ratio analysis for working capital planning and control.

Units 6 and 7 explain the nature and illustrate the applications of fund flows analysis and cash flow analysis for working capital planning and control.

Units 8, 9 and 10 deal with the concepts, methods and procedures of cash flow forecasting and budgeting useful for effective management of business liquidity.

Unit 11 – money market, explains the nature and function of money market

Units 12 and 13 – the framework spell out the regulatory framework of bank credit, the principles of bank lending and fund based and non-fund based credit extended by commercial banks to meet working capital

needs of trade and industry. The units also highlight the types of security to be offered to avail working capital from banks.

Units 14 and 15 – how do commercial banks assess the working capital needs of business and appraise borrower's loan application. This is broad focus of these two units.

Units 16 and 17 discuss sources of short-term funds other than bank credit and trade credit, to finance working capital needs of industry. The Units also spell out the framework of rules and regulations framed by the concerned authorities.

Each Unit consists of about one to two weeks work and includes introduction, objectives, reading materials, exercises or activities, conclusion, summary, tutor-marked assignment (TMA) and marking scheme, references and further reading.

The Units direct you to work on exercises related to the required reading. Activity together with TMA will assist you in achieving the stated learning objectives of the individual Units and of the course.

Presentation Schedule

Your course materials give you important dates for the early and timely completion and submission of your tutor-marked assignments and attending tutorials. Do remember that you are required to submit all your assignments by the due dates. You should guard against falling behind in your work.

Assessment

There are three aspects of the assessment of the course. First are the exercises i.e. Activities. Second are the tutor-marked assignments and third, there is a written examination. You are advised to be sincere in attempting the exercises. In tackling the assignment, you are expected to apply information, knowledge and techniques gathered during the course. The assignments must be submitted to your tutor for formal assessment in accordance with the deadlines stated in the presentation schedule and the assessment file. The work you submit to your tutor for assessment will account for 50% of your total course mark. At the end of the course, you will need to sit for a final examination of about three hours. This examination will count for 50% of your total course mark.

Tutor-Marked Assignment (TMAs)

There are nineteen (19) tutor-marked assignments in the course. You only need to submit five of the 21 assignments.
Units 18 and 19 highlight the importance of accounts receivable in the day-to-day operations of a business enterprise and the role of receivable management in improving profitability and liquidity of an enterprise. Various dimension of receivable management have been explained. The concept of marginal investment in receivable and cash discount decision have been discussed and illustrated. Different methods of monitoring accounts receivable have also been explained.

Units 21 and 22 – describe the nature and importance of inventory management as a component of working capital management. Transaction, precautionary and other motives for holding inventories and its benefits and cost associated with inventories have also been discussed. The process of formulating and operating a deterministic economic order quantity (EOQ) model has been explained. Quantity management have been explained in length. The Units close with a discussion of selective inventory management techniques.

Unit 23 explains the significance of trade credit or payables as source of working capital finance, it pinpoints factors that influence the quantum and duration of payables and discusses payable related benefits and costs. This Unit closes with hints for effective management of payables.

You are encouraged however to submit all twenty-one assignments in which case, the highest five of the 21 will be counted. Each assignment counts 10% towards your total course mark.

Assignment questions for the Units in this course as contained in the assignment file. You will be able to complete your assignment from the information and materials contained in your reading references and study u nits. However, it is desirable in all degree level education to demonstrate that you have read and researched more other references which will give you a broader viewpoint and may provide a deeper understanding of the subject. When you have completed each assignment, send it together with a TMA form to your tutor. Make sure that each assignment reaches your tutor on or before the deadline given in the presentation schedule and assignment. If for any reason, you cannot complete your work on time, contact your tutor before the assignment is due to discuss the possibility of an extension. Extension will not be granted after due date unless there are exceptional circumstances.

Final Examination and Grading

The final examination for the course working capital management will be of three hour duration and has a value of 50% of the total course grade. The examination will consist of questions which will reflect the types of self-testing activity and tutor-marked questions you have previously encountered. All areas will be assessed.

Use the time between finishing the last Unit and sitting the examination to revise the entire course. You might find it useful to review your self-tests, tutor-marked assignment and comment on them before the examination. The final examination covers information from all parts of the course.

Table I: Course Marking Scheme

Assignment	Marks
Assignments 1 – 19	19 assignments best five marks of the twenty count at 10% each = 50% of course mark.
Final examination	50% of overall course marks
Total	100%

Course Overview

This table brings together the Units, the number of weeks you should take to complete them and the assignment that follows them.

Table 2: Course Organizer

Module 1	Title of work	Week activity	Assessment end of unit
Unit 1 & 2	WCM Theories and Approaches	2	Assignment 1
Unit 3	Ratio Analysis I	1	Assignment 2
Unit 4 & 5	Ratio Analysis II and III	1	Assignment 3
Module 2			
Unit 1	Fund Flow Analysis	1	Assignment 4
Unit 2	Cash Flow Analysis	1	Assignment 5
Unit 3 & 4	Cash Flow Forecasting I and II	1	Assignment 6
Unit 5	Cash Flow Budgeting	1	Assignment 7
Module 3			
Unit 1	Money Market	1	Assignment 8
Unit 2 & 3	Bank Credit: The Framework I & II	1	Assignment 9
Unit 4	Bank Credit: Assessment	1	Assignment 10
Unit 5	Bank Credit Appraisal	1	Assignment 11

Module 4			
Unit 1	Non-Bank Finance I	1	Assignment 12
Unit 2	Non-Bank Finance II	1	Assignment 13
Unit 3	Receivable Management I	1	Assignment 14
Unit 4	Receivable Management II	1	Assignment 15
Unit 5	Cash Management I	1	Assignment 16
Module 5			
Unit 1	Inventory Management I	1	Assignment 18
Unit 2	Inventory Management II	1	Assignment 19
Unit 3	Payable Management	1	Assignment 20

How to Get the Best from the Course

In distance learning, the study Unit replaces the Unit lecturer. This is one of the great advantages of distance learning; you can read and work through the specially designed study materials at your own pace and at a time and place that suits you best. Think of it as reading, the lecture instead of listening to a lecturer.

In the same way that a lecturer might set you some reading to do the study units will tell you when to read your other materials. In addition, just as the lecturer might give you an in-class activity your unit provides activity for you to do at appropriate point.

Each of the study units follows a common format. The first item is an introduction to the subject matter of the Unit and how a particular unit is integrated with the other units and the course as a whole. Next is a set of learning objectives, which enable you to know what you should be able to do by the time you have completed the unit. You should use these objectives to guide your study. When you have completed the unit you must go back and check whether you have achieved the objectives. If you make a habit of doing this, you will significantly improve your chances of passing the course. The main body of the unit guides you through the required reading from other courses. This will usually be either from a source. Activities are spread throughout the units and answers are given at the end of the Units. Working through these tests will help you to achieve the objectives of the Unit and prepare you for the assignments and the examination. You should do each self-test as you come to it in the study unit. If you run into any problem, telephone your tutor. Remember that your tutor's job is to help you when you need help, do not hesitate to call and ask your tutor to provide it.

(1) Read this course guide thoroughly.

(2) Organize a study schedule which is most convenient for you. Refer to the course overview for more details. Note the time you

are expected to spend on each Unit and how the assignment relate to the Units. Vital information, e.g. detail of your tutorials and the date of the first day of the semester will be made available. You need to gather together all this information in one place.

(3) Once you have created your own study schedule, do everything you can to stick to it. The major reason that students fail is that they get behind with their course work. If you encounter any problem with your schedule, please let your tutor know before it is too late for help.

(4) Turn to Unit 1 and the introduction and the objectives for the Unit.

(5) Assemble the reading materials. Information about what you need for a Unit is given on the overview at the beginning of each Unit. You will almost always need both the study Unit you are working on and one of your references on your desk at the same time.

(6) Work through the Unit, the content of the unit itself has been arranged to provide a sequence for you to follow. As you work through the units, you will be instructed to read sections from other sources. Use the unit to guide your reading.

(7) Review the objectives for each study unit to confirm that you have achieved them. If you feel unsure about any of the objectives, review the study material or consult your tutor.

(8) When you are confident that you have achieved a Unit's objectives, you can then start on the next unit. Proceed unit by unit through the course and try to pace your study so that you keep yourself on schedule.

(9) When you have submitted an assignment to your tutor for marking, do not wait for its return before starting on the next unit. Keep to your schedule when the assignment is returned, pay particular attention to your tutor's comments, both on the tutor-marked assignment form and also written on the assignment. Consult your tutor as soon as possible if you have any questions or problems.

(10) After completing the last unit, review the course and prepare yourself for the final examination. Check that you have achieved the Unit objective (listed at the beginning of each Unit and course objective listed in the course guide).

Tutors and Tutorials

There are 22 hours of tutorial provided in support of this course. You will be notified of the dates, time and location of these tutorials as well as the names and phone number of your tutor as soon as you are allocated a tutorial group.

Your tutor will mark and comment on your assignments, keep a close watch on your progress and on any difficulties you might encounter and provide assistance to you during the course. You must mail your tutor-marked assignment to your tutor and this is returned to you as soon as possible.

Do not hesitate to contact your tutor by telephone, e-mail and discussion if you need help. The following might be circumstances in which you would find help necessary. Contact your tutor if:

- You do not understand any part of the study unit or the assigned readings.
- You have difficulty with the self-test or exercises.
- You have a question or problem with an assignment on which or with the grading of an assignment. You should try your best to attend the tutorials. This is the only chance to have face-to-face contact with your tutor and to ask question which are answered instantly. You can raise any problem encountered in the course of your study. To gain the maximum benefit from course tutorial, prepare a question list before attending them. You will learn a lot from participating in discussing activity.

Summary

The course working capital management: upon completing this course, you will be equipped with the knowledge of nature, scope, functions of working capital management. In order that you benefit the most from the course, you should try to apply the concepts and principles to any business enterprise. It is our hope that you will enjoy your acquaintance with the National Open University of Nigeria (NOUN).

We wish you the very best of luck for the future.

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MODULE 1

UNIT 1 WORKING CAPITAL MANAGEMENT THEORIES

CONTENTS

1.0 INTRODUCTION

Working capital is said to be the life blood of a business. Working capital signifies funds required for day-to-day operation of the firm. In financial literature, there exist two concepts of working capital namely: gross and net. According to gross concept, working capital refers to current assets, viz: cash, marketable securities, inventories of raw materials, work-in-process, finished goods and receivables. According to net concept, working capital refers to the difference between current assets and current liabilities.

Ordinarily, working capital can be classified as fixed or permanent and variable or fluctuating. The minimum level of investment in current assets regularly employed in business is called fixed or permanent working capital and the extra working capital needed to support the changing business activities is called variable or fluctuating working capital. What is the nature and the scope of working capital decision? What are the important dimensions of working capital management? What are the basic decision criteria, principles and approaches applicable in the field of working capital management? In this Unit, we

shall examine each of these questions and thus take an overview of working capital management.

2.0 OBJECTIVES

The objectives of this Unit are:

- to provide an overview of the field of working capital management
- to identify and explain the dimensions of working capital management
- to introduce and illustrate basic decision criteria, principles and approaches applicable in the field of working capital management.

3.0 MAIN CONTENT

3.1 Dimensions of Working Capital Management

Working capital management is concerned with all the aspects of managing current assets and current liabilities. Let us pinpoint its significant dimensions which require the attention of financial executives.

- **Managing Investment in current Assets**

Determination of appropriate level of investment in current assets is the first and foremost responsibility of a working capital management. Although the amount of investment in any current assets ordinarily varies from day-to-day, the average amount or level over a period of time can be used in determining the fluctuating and permanent investment in current assets. This distinction is of great importance in devising appropriate financing strategies. We shall elaborate this point a little later. Beside the level of investment, the type of current assets to be held is equally an important decision variable. Think of the inventory of a dealer in construction equipment, the dealer must decide how many bulldozers to keep in stock as well as whether to stock bulldozer or dump trucks. From the viewpoint of the financial managers, all the decisions as to particular items add up to an average level of inventory for a given item and these averages, for all items, add up to the total average inventory investment of the firm. Investment in receivables and marketable securities also pose a similar choice.

The result is that there is a very large number of alternative evels of investment in each type of current assets. Therefore in principle, current

assets investment is a problem of evaluating a large number of mutually exclusive investment opportunities.

- **Financing of Working Capital**

Another important dimension of working capital management is determining the mix of finance for working capital which may be a combination of spontaneous, short-term and long-term sources.
Spontaneous sources of financing consist of trade credit and other instance. As the firm makes purchase of raw materials and supplies, trade credit is often made available spontaneously as per trade usage from the firm's suppliers. In addition to trade credit, wages and salaries payables, accrued interest and accrued taxes also provide the firm with valuable source of spontaneous financing.

Bills payable, short-term bank loans, inter-corporate loans, commercial papers are the most common examples of short-term sources of working capital finance. Term loans, debenture, equity and retained earning constitute long-term sources of working capital finance.

- **Inter-relatedness**

Characteristic of working capital decision, the financial manager cannot simply decide that the investment in inventory for example, will be so much and stop there. The desired level of inventory is itself, a changing quantity. For example, the desired level for a period when its sales are very high would not be the same desired level for a period when its sales are very low. Furthermore, no decision regarding inventory and sales could be made without considering the implication for accounts receivables. Moreover, any business decision that results in increased sales and collections for the firm is likely to mean that lower average cash balances will be needed or that a new cash management system will be desirable. Thus, all the current assets decisions are interrelated. We may now consider some of the units between current assets and current liabilities. If sales increase, purchases must increase to maintain a constant level of inventory. Also growing sales will usually require greater inventory investment and purchases unless the firm purchases on cash terms and increase in purchases will lead to an increase in accounts payable. Thus, an increase in inventory will be financed spontaneously with trade credit. The amount of trade-credit financing will depend on decision regarding payments; inventory decisions are thus linked to trade-credit decisions

The inventory and accounts receivable commonly provide collateral for loans. Thus, for firms that are unable to obtain unsecured financing, the nature and quality of these current assets affects the availability and

terms of short-term financing. The working capital managers thus have to pay attention to the interrelated nature of current assets and current liabilities and take into account major interactions that influence the working capital investment and financing decisions.

Volatility and Reversibility

Another significant feature of the working capital management is that the amount of money invested in current assets can change rapidly and so does the financing required. The level of investment in current assets is influenced by a variety of factors which may be as erratic as labour unrest or flooding of the plant. Seasonal and cyclical fluctuations in demands are a common cause of rapid changes in investment in current assets and current liabilities, which means that the cash flow related to these could be readily reversed. Suppose we have taken a loan of N10.000 at 20% p.a. interest payable quarterly, we will continue to pay N500 per quarter so long as we do not repay N10.000.

At any time we choose to repay N10.000, the quarterly cash flow of N500 stops. This type of transaction is described as reversible. The current assets and current liabilities will be treated as reversible in our decision.

3.2 Risk Return Trade-Off in Working Capital Management

All the decisions of the financial manager are assumed to be geared towards the maximization of shareholders wealth, and working capital decisions are no exception.

Accordingly, risk return trade-off characterizes each of the working capital decision. There are two types of risks inherent in working capital management (WMC), namely: liquidity risk and risk of opportunity loss. Liquidity risk is the non-availability of cash to pay a liability that fall due. It may happen only on certain days. Even so, it can cause not only a loss of reputation but also make the work condition unfavourable for getting the best terms on transaction with the trade creditors. The other risk involved in WCM is the risk of opportunity loss, that is, the risk of having two little inventory to maintain production and sales or the risk of not granting adequate credit for realising the achievable level of sales. In other words, it is the risk of not being able to produce more or sell more or both and, therefore, not being able to earn the potential profit, because there were not enough funds to support higher inventory and book debts.

Thus, it would not be out of place to mention that it is only theoretical that the current assets could all take zero values. Indeed, it is neither

practicable nor advisable in practice; all current assets take positive value, because firms seek to reduce working capital risk. However, the greater the funds locked up or deployed in current assets, the higher is the cost of the funds employed and therefore the lesser the profit.

The risk return trade-off involved in managing the firm's liquidity via investing in marketable securities is illustrated in the following example.

Firm A and B are identical in every aspect but one firm B has invested N5000 in marketable securities which have been financed with equity. That is, the firm sold equity shares and raised N5000. The balance sheets and net incomes of the two firms are in Table 1.1. Note that firm A has a current ratio of 2.5 and earns a 10 percent return on its total assets while firm B with its larger investment in marketable securities has a current ratio of 3 and has net working capital of N20.000 since the marketable securities earn a return of only 8% before taxes (4.5 percent after taxes with a 50% tax rate). Firm B earns only 9.7 percent on the total investment. This investment in current assets and in particular in marketable securities does have a favourable effect on the firm's rate of return earned on invested funds. The risk-return trade-off involved in holding more cash and marketable securities, therefore, is one of added liquidity revenues and reduced profitability.

Table 1.1: The Effects of Investing in Current Assets on Liquidity and Profitability

	Balance Sheet	
	A	**B**
	₦	₦
Cash	500	500
Market securities	-	5,000
Account receivable	9,500	9,500
Inventories	15,000	15,000
Current assets	25,000	30,000
Net fixed assets	50,000	50,000
Total	75,000	80,000
Current liability	10,000	10,000
Long-term debt	15,000	15,000
Capital equity	50,000	55,000
Total	75,000	80,000

Income statements

		A	**B**
		₦	₦
Net income		7,500	7,725 *
Current ratio		25.000 / 10,000 = 2.5	30.000 / 10,000 = 3.0
Current assets/current liabilities	=	25,000 – 10,000 / 15,000	30,000 – 10,000 / 20,000
Return on total assets (Net income/total assets)	=	7,500 / 75,000 = 10%	7,725 / 80,000 = 9.7%

During the year, firm B held N5000 in marketable securities which earned a 9% return or N450 for one year. After paying taxes at a rate of 50 percent, the firm netted a N225 return on its investment.

In the use of current versus long term debt for financing working capital needs, the firm also faces a risk-return trade-off. Other things remaining the same, the greater its reliance upon short term debt or current liabilities in financing its current assets investment, the lower will be its liquidity. On the other hand, the use of current liabilities offers some very real advantages to the user in that it can be less costly than long term financing as they provide the firm with a flexible means of financing the fluctuation need for current assets. If for example, a firm needs fund for a three month period during each year to finance a seasonal expansion in inventories. Then a three month loan can provide substantial cost saving over a long term (even if the interest rate on short term financing should be higher). This results from the fact that the use of long term debt in this situation involves borrowing for the entire year rather than for the three month period when the funds are needed, which increases the interest cost for the firm. There exist possibilities for further saving because, in general, interest rates on short-term debt are lower than on long-term debt for a given borrower.

We may demonstrate the risk-return trade-off associated with the use of current versus long term liabilities with the help of an example given below.

Consider the risk return characteristics of firm X and firm Y whose balance sheets and income statements are given in Table 1.2. Both firms had the same seasonal needs for financing throughout the past year. In December, they each required N20.000 to finance a seasonal expansion in accounts receivable. In addition, during the four month period beginning with August and extending throughout November, both firms

needed N10.000 to support a seasonal build up in inventories. Firm X financed its seasonal financing requirement using N20.000 in long term debt carrying an annual interest rate of 10 percent for which X incurred N2.000 in annual interest expense. Firm Y, on the other hand, satisfied its financing needs using short term borrowing on which it paid 9 percent interest expense, for which Y incurred N1, 800 in annual interest expense.

The end results of the two firms financing policies is evidenced in their current ratio, net working capital and return on total assets which appear at the bottom of Table 1.2. Firm X using long term rather than short term debt, has a current ratio of 3 and N10, 000 in net working capital. Whereas firm Y's current ratio is only one (1) which represents zero net working capital. However, owing to its interest expense, firm Y was able to earn 10.8 percent on its invested funds whereas firm X produced a 10 percent return. Thus, a firm can reduce its risk of liquidity through the use of long-term debt at the expense of a reduction of its return on invested funds. Once again, we see that the risk return trade off involves an increased risk of liquidity versus increased profitability.

Table 1.2: Effect of short versus long-term debt on firm liquidity and profitability

Balance Sheets

	Firm X	**Firm Y**
	₦	**₦**
Current assets	30,000	30,000
Net fixed assets	70,000	70,000
Total	100,000	100,000
Accounts payable	10,000	10,000
Note payable	---	20,000
Current liabilities	10,000	30,000
Long term debt	20,000	0
Equity capital	70,000	70,000
Total	100,000	100,000

Income Statements

	Firm X	**Firm Y**
	₦	**₦**
Net operating income	22,000	22,000
Less interest expense	2,000	450
Earning before taxes	20,000	21,550
Less taxes 50%	10,000	10,775
Net income	10,000	10,775

Current ratio	Current Assets / Current Liabilities	= 30,000 / 10,000	= 3	30,000 / 30,000	= 1
Net working capital (Current assets – current liabs.)		30,000 – 20,000 = 10,000		30,000 – 30,000 = Nil	
Return on total assets = (Net income total assets)		10,000 / 100,000 = 10%		10,775 / 100,000 = 10.8%	

- Firm X paid interest during entire year on N20,000 of long-term debt at a rate of 10 percent, its interest expense for the year was 10% x 20,000 = N2000).

- Firm Y paid interest on N20, 000 for one month, and on N10, 000 for four months at 9 percent interest during the year. Thus firm Y's interest expense for the year equals (N20, 000 x 0.9 x 1/12) plus (10,000 x 0.9 x 4/12) or (150 + 300) = 450.

SELF ASSESSMENT EXERCISE 1

In order to maximize profits, business should aim at zero current assets. Do you agree? why?

3.3 Net Present Value (NPV) or Net Profit Criterion

It has been noted above that working capital management like other financial decision of the firm is agreed to maximization of shareholders wealth and involves risk-return trade-off. NPV (Net Present Value) is the basic rule of financing decision making, particularly long investment decisions. Does NPV hold valid for working capital decisions, which are essentially short term in nature? We shall address this question in the following paragraphs.

Theoretically, the same general rules regarding NPV, developed for the firm's investment decision, would apply to investment in current assets. But in practice, in view of certain unique characteristics of current asset via inter-relatedness, volatility and reversibility, the net present value is rarely used in practice. There are two many alternatives that must be evaluated in view of the continually changing level of current assets in the operations of the firm. Net present values are not only somewhat difficult to calculate, but also difficult to interpret for current assets. Some modifications of NPV, which reflect the unique characteristics of current assets and liabilities, may thus be used. Two useful modifications of NPV which can be readily followed as decision criteria in working capital decision are average net profit per period and total cost.

In general, the present value of an amount A to be received in N periods, at the rate of r per period will be = $A/(1 + r)^n$ and NPV = $^{-} C_o + (C_1/1 + r)$, where C_o stands for initial cash outlay C; for cash to be received from the investment in one year's time and r for the rate of interest. For example, if we are investing N5000 we will continue to receive N5000 (1 + r) per year. So long as we keep the N5000 invested, the net present value (NPV) of the above investment at a discount rate of 8 percent can be computed as follows:

$$NPV = -Co + \sum_{t=1}^{n} C_t / (1 + r)^t$$

i.e. $NPV = 5000 + 5000/ (1 +0.8) +5000/(1 + 0.8)^2 +\ldots+5000(1 + 0.8)^n$

We may also calculate an annuity that has present value equal to the net present value of the above investment. Interestingly, the annuity is the average net profit per period from the investment as may be seen from the following:

Net profit per period = Annuity

Net profit = $500 – 5000 [1 – (1 +r)^{-n}] \left\{ \frac{r}{1 – (1+r)^{-n}} \right\}$

= 500 – 5000 (r)

= 500 – 5000 (8%)

= 500 – 400

= 100

Thus, N400 is the annual capital cost of N5,000 invested at an 8% rate of interest and the annual net profit of N100 does not depend on when the investment is reversed. The result is that we can use net profit per period as a criterion for choosing among alternative reversible investments.

The investment with the highest value of net profit per period is also the investment with the highest net present value, regardless of when the investment is reversed. Investment with positive NPV's will have positive net profits, investments with zero NPV's will have zero net profits and investments with negative NPV's will have negative net profit.

This net profit per period instead of NPV can be used as a decision criterion for working capital management.

Many current assets decisions particularly inventory decisions, can be made on the basis of minimizing cost. Also instead of minimizing the net present value of costs, one may minimize total annual cost, where

the annual capital cost of the investment is the discount rate times the amount invested. In sum, the current policies may be selected that maximizes its profit or minimizes its total cost per period. The choice between the profit or cost criterion will, of course, depend on the particular problem being analyzed.

SELF ASSESSMENT EXERCISE 2

List two difficulties in the use of NPV as a decision criterion for working capital management.

4.0 CONCLUSION

In this Unit, the working capital management theories had been dealt with and working capital management dimensions had also been identified.

5.0 SUMMARY

In this Unit, it has been noted that working capital management is concerned with all aspects of the management current assets and current liabilities. Also, the determination of appropriate levels of investment in current assets and the selection of appropriate mix of spontaneous, short-term and long-term sources of finance for working capital are the two major dimensions of WCM. The interrelated nature of current assets and current liabilities and their features such as volatility and reversibility make the job of managing working capital fairly different from managing long-term investment and financing.

Working capital decisions involve risk return trade-off and net profit per period or total cost per period which can be used as basic decision criterion.

6.0 TUTOR-MARKED ASSIGNMENT

Describe all the working capital management theories.

Hint:

Write all you know about working capital management theories.
Use the following outline:

1. Define working capital management.
2. List the theories
3. Short notes on the theories.

7.0 REFERENCES/FURTHER READINGS

Pandey I.M. (1988). *Financial Management.*

James, C. Van Horne (1988). *Financial Management and Policy*.

UNIT 2 WORKING CAPITAL MANAGEMENT APPROACHES

CONTENTS

1.0 INTRODUCTION

In Unit 1, working capital has been defined and the theories also discussed. This Unit will answer the questions such as what are the basic decision criteria, principles and approaches available in the field of working capital.

2.0 OBJECTIVES

The objective of this Unit is:

- to introduce and illustrate basic decision criteria, principles and approaches applicable in the field of working capital management.

3.0 MAIN CONTENT

3.1 Current Asset Investment Approaches

How does a management fix appropriate level of investment in current assets? This question may be viewed in an aggregative or disaggregative context. Let us consider the aggregative context. What is the level of investment in total current assets, vis-à-vis fixed assets? In the disaggregative context: How does a management fix appropriate level of investment in individual current assets namely, investment receivables, cash and marketable securities. Let us explain the three broad approaches which the management may take to arrive at appropriate level of investment in current asset industry norm approach. In this approach, the industry practice is used to arrive at target level of

investment in current assets. There would be a year to year and inter-firm fluctuations and differences over a period of time in the industry, adjusting to its environment and risk expected to have settled down to some average number 30, 60 or 90 days of raw material consumption as inventory. The problems in following the approach are:

1. it can be less of a reality and more of a myth;
2. everyone might more or less do what others are doing, resulting in imitative behaviour;
3. the possibility of drifts determined by environmental changes and inadequate internal adjustments; and
4. absence of an impetus to search for better solutions than those embedded in the norms through economic or strategic choice approach.

In spite of these problems, the industry norm approach has survived by force of history and tradition. A careful use of this approach can, under certain conditions provide useful benchmark especially for new entrants.

Economic Model Approach

The economic model approach signifies an explicit rational model of profit maximization or cost minimization. The approach arrives at an optional solution for a specific case making trade-off between risk and profitability, using economic decision criterion. Economic order quantity model explained in Unit 22 is a typical example of this approach.

The economic model approach avoids the myth of the mean implicit in the industry norm approach. It is nearer reality in basing itself on the assumption that every company at a particular point in time represents more or less a unique case. Even so, the approach has been tried in a limited way, in part, because of its restrictive assumptions and exclusive reliance on financial or economic variables and not on total conditions.

This approach however incorporates the profit motive interest in business decision. Even if indicative solutions could be provided by such models, it could prove helpful in day-to-day management of funds.

Strategic Choice Approach

It is possible to take the position that there are no ideal solutions to the working capital problem of a company. As condition and goals changes, solution must be worked out every time to fit each unique situation without letting conventional restrictions limit our choice. There is this concept of strategic choice involved in the area of current assets

management. Having scanned its environment and set its goal, including those on profitability, a company can decide that it should maintain a certain number of days of raw material inventory necessary to achieve its goals. The same would apply to in-process and finished goods inventories as well as to book debts. The spirits behind the strategic choice approach is innovative behaviour, setting up a new function, a new arrival, a new set of total conditions. The effect is to gain competitive strength through a wider and more flexible range of choices. There is no dependence on decision rules, policies or conventions, self-imposed constraints are reviewed, and it asks the basic value question: do resources determine choice or do choices determine resources?

The strategic choice approach is based on the assumption of a highly competitive environment and the existence of a few ambitious competitors who would be willing to take the risks to build competitive strengths. It would be unrealistic to assume that all companies, in all industries, could adopt the strategic choice approach. There has been a clear shift in favour of this approach in many businesses experiencing competitive environment.

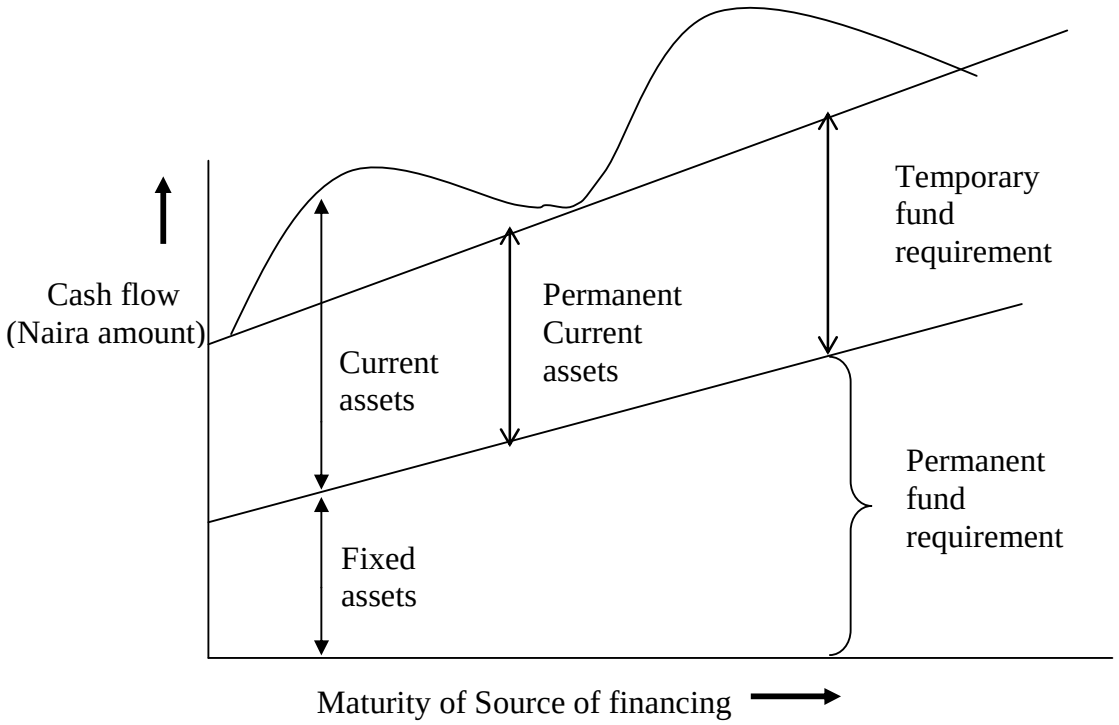
3.2 Hedging Principle: A Guide to Working Capital Financing Decisions

Financing the firm's working capital requirements has been shown to involve simultaneous and interrelated decisions regarding the firm's investment in current assets. Fortunately, there exists a principle which can be used as a guide to firm's working capital financing decisions. This is the hedging principle or matching principle.

The hedging principal involves matching the cash flow generating characteristics of assets with the maturity of source of financing used to finance its acquisition.

For example, a seasonal expansion in inventories according to the hedging principle should be financed with a short-term loan or current liability. The rationale underlying the rule is straight forward. Funds are needed for a limited period of time and when that time has passed, the cash needed to repay the loan will be generated by the sale of the extra inventory terms. Obtaining the needed funds from a long-term source would mean that the firm would still have the funds after the inventories have been sold. In this case, the firm would have "excess" liquidity, which they either hold in cash or invest in low-yielding marketable securities until the seasonal increase in inventories occurs again and the funds are needed.

Figure 1.1: Hedging Financing Strategy



Hedging principle provide an important guide regarding the appropriate use of short-term credit for working capital financing.

SELF ASSESSMENT EXERCISE 1

Define hedging principle.

4.0 CONCLUSION

In this Unit, the approaches of working capital management had been dealt with.

5.0 SUMMARY

Industry norm approach, economic model approach and the strategic choice approach are the three broad approaches which management takes to determine appropriate level of investment in current assets. Hedging principle which states that the firm's assets not financed by spontaneous sources should be financed in accordance with the following rules:

(i) permanent assets financed with long-term sources and

(ii) temporary assets with short-term sources.

This provides a useful guide for working capital financing decisions.

ANSWER TO SELF ASSESSMENT EXERCISE 1

Any of the approaches could be selected by students but they should defend their choice by stating the advantages of the chosen approach over the other approaches.

6.0 TUTOR-MARKED ASSIGNMENT

As a new entrepreneur, which of the three broad approaches, namely: industry norm approach, economic model approach and strategic choice approach would you prefer for deciding appropriate levels of investment in current assets? Why?

7.0 REFERENCES/FURTHER READINGS

Pandey, I.M. (1988). *Financial Management*

James, C. Van Horne (1988). *Financial Management and Policy.*

UNIT 3 RATIO ANALYSIS I

CONTENTS

1.0 INTRODUCTION

The importance of working capital management cannot be over-emphasized in view of the time and energy spent by company management on such decision. For any future corrective action, analysis of past performance of the firm on the working capital front is essential. This requires knowledge and use of certain tools and technique that may help management to spot out problem areas for further action. Among many such analytical tools, ratio analysis is a simple but effective tool available to the management.

2.0 OBJECTIVES

The objectives of this Unit are:

- to explain and illustrate the nature and role of ratio analysis as an analytical tool in the context of working capital management.
- to explain and illustrate the construction of various ratios used for evaluating efficiency of working capital.

3.0 MAIN CONTENT

3.1 Approaches to Ratio Analysis

A ratio is the relationship between two variables. However, if a ratio has to make sense, these variables should have logical relationship to each other. Ratio analysis involves calculation and interpretation of ratios. To evaluate management performance on working capital front, ratio analysis can be broadly classified into univariate and multivariate analyses. In univariate analysis, only a single ratio is taken into account

at a time though there may be more than one ratio affecting a dependent variable. In the case of multivariate analysis, several ratios are simultaneously considered.

Again, time series and/or cross-sectional approach can be adopted for the analysis.

Time series analysis is concerned with the evaluation of the behaviour of a given ratio over time. This is also called intra-form or trend analysis. This approach is adopted to find out systematic patterns in the historical behaviour of the series that can be used for production purposes. Its usefulness in evaluating the past performance is immense. It may also help in taking corrective action if needed.

Another useful concept is Cross-sectional analysis which is concerned with comparing the investigated ratios with certain norms as in a representative firm or with an industry average.

Working capital management as stated in Unit 1 is concerned with maintaining an adequate amount of working capital, proper balance of current assets vis-à-vis non-current assets in the assets structure and a reasonable mix of the short-term and long-term sources in the financial structure of the firm. Ratio analysis can be used by management as a tool to verify the level and composition of working capital held by management in the business as against its operations, the extent of liquidity present in its assets structure as well as financial structure and the efficiency with which working capital is being used in the business. In other words, management can employ ratios to analyze these facets of working capital management, namely: efficiency, liquidity and its structural health.

SELF ASSESSMENT EXERCISE 1

List four approaches to ratio analysis

SELF ASSESSMENT EXERCISE 2

List three factors of working capital management

3.2 Ratios to Analyze Efficiency of Working Capital

The efficiency with which working capital is being used by the management can be analyzed in terms of the overall working capital and/or its constituent parts viz: cash, inventory and receivables. We shall discuss some important ratios along with their formulation and

interpretation which may be used by the management to analyze efficiency of working capital.

3.3 Efficiency of Overall Working Capital

The efficient use of overall working capital in the firm can be gauged with the help of working capital turnover ratio. It is calculated by dividing the amount of net sales by average amount of net working capital during the year thus:

$$\text{Working capital turnover ratio} = \frac{\text{Net Sales}}{\text{Average net working capital}}$$

The above ratio indicates the rate of working capital utilization in the firm. This ratio can be computed either over a period of time or with that of an industry average. A higher turnover ratio of net working capital of a firm when compared with that of an industry average indicates that the amount of working capital in this firm is less than that required by its operations. By sales so the firm may have to go for additional working capital that can be supplied to it by its owners through reinvestment of earning or can be obtained by selling additional shares or debentures. Likewise, if this ratio is lower than the industrial average, it indicates that the investment in net working capital is more than what is required. This calls for either withdrawing excess amount or increasing the sales in the market, so that the relationship between the amount of working capital financed by long-term sources and sales is reasonable. Management may think in terms of redeeming its obligation if sales cannot be increased.

Net working capital turnover ratio can also be analyzed over a period of five to seven years. An increasing ratio indicates that working capital has been used more intensively over a period of time. However, management should be cautious while concluding like this as the intensive use of working capital is proper only up to a certain level. This is because in a situation of sudden reversal of sales, the company may have to face problem. The same can be true in a situation where increased sales are on credit, leading to increase in the amount of debtors as well as defaulters. Such a situation can be very dangerous from the company's liquidity point of view. A decreasing net working capital turnover ratio on the other hand, is indicative of relative inefficiency in the use of working capital.

You might have observed that one has to be quite cautious in analyzing ratios. There is no ready formula to follow standard norm which can be suggested for achievement. Every management has to develop its own standard and the control limits within which it will permit the ratio of its

firm to vary against other firms, as well as over a period of time. A variant of this ratio in current assets turnover ratio is calculated as:

$$\text{Current Assets Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Current Assets}}$$

In this ratio, the gross concept of working capital is used. It also indicates the rate at which working capital has been used. Generally, a higher ratio is considered an indicator of better efficiency and lower one the opposite but management should be cautious while interpreting this ratio also.

3.4 Efficiency of Working Capital Element

If there is proper balance between the individual current assets and the level of activity, say sales, it indicates that these have been managed efficiently. We shall now discuss ratio which are generally calculated to judge the efficiency of current assets utilization.

Inventory constitutes an important part of the working capital. Many a firm in actual practice face serious problems due to slow moving, outdated inventory. Inventory is an essential item in the business operation. But if too much amount is invested in this for too long, it poses a serious threat to the profitability as well as solvency of the concern. The ratios that are normally being used as indicators of the quality of management exercised over inventory as a whole and its parts is given by the , overall inventory turnover ratio. Inventory (stock) turnover reflects the efficiency with which inventory is being managed in the concern. It is calculated by dividing the cost of goods sold by average inventory thus:

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

Analysts often use the figure of net sales in the numerator to compute the above ratio as the figure of cost of goods sold is not generally available in the published financial statements. But it is logical that management should relate cost of goods sold with inventory as both being valued at cost are comparable.

Inventory turnover ratio indicates the way management has used inventory to conduct the operations of the business, it shows how rapidly the inventory is being run into receivable/cash through sales. Generally, a higher turnover is considered good and a low turnover bad.

A low turnover implies an excessive level of inventory than warranted by production or sales operations. This may also indicate the presence of slow moving or obsolete inventory. It can safely be said that management has a locked-up funds unnecessarily in them.

Another useful way to evaluate how inventory management is done in the concern is to look at the average period for which inventory is being held. Average holding period of inventory can be calculated by dividing the number of days in a year (365) that inventory is being held. Whereas inventory turnover ratio is calculated above, the average holding period is calculated as below:

Average holding period

$$= \frac{365}{\text{inventory turnover}}$$

$$= \frac{365 \times \text{average inventory}}{\text{cost of goods sold}}$$

$$= \frac{\text{average inventory}}{\text{cost of goods sold per day}}$$

Raw material inventory turnover

$$= \frac{\text{raw material consumed during the year}}{\text{average raw material inventory}}$$

The above ratio indicates the rate of utilization of raw material. A higher turnover ratio of raw material inventory over a period of time indicates its increasing utilization. But too high a ratio may indicate that proportionately less raw materials were held in order to carry out the production which may be quite risky.

Another way to indicate efficiency of raw material is to express it in terms of number of days of holding raw material inventory. This is calculated by dividing the number of days in a year by raw material holding period (in days).

Number of days of holding raw materials

$$= \frac{365}{\text{raw material inventory turnover}}$$

$$= \frac{365 \times \text{average raw materials inventory}}{\text{raw materials consumed per day}}$$

$$= \frac{\text{average raw materials inventory}}{\text{raw material consumed per day}}$$

The expression of the efficiency of raw material i.e. raw material storage period in terms of days, can be compared with the predetermined standard set up by management or with the industry standard or with the past performance in this regard. A significant variation from the acceptance standard may require corrective actions from management in respect of quantity of raw material to be ordered, timing and other related aspects that may have a bearing on this.

Another important ratio is Work-in-process inventory turnover ratio which establishes a relationship between the value of goods produced and the value of average work-in-process. Thus:

Work-in-process inventory turnover

$$= \frac{\text{cost of goods manufactured}}{\text{Average work-in-process inventory}}$$

A higher turnover ratio indicates lower inventory accumulation and lesser tied up working capital. A falling turnover means either management has become lax in controlling the productive processes or some external factors have retarded the production movement. At its final stage, turnover ratio is divided into the number of days in a year. It will give the conversion period which can be compared with some acceptable standard to evaluate the performance. Thus:

$$\text{Conversion period (in number of days)} = \frac{\text{Average W.I.P. inventory}}{\text{Cost of goods manufactured per day}}$$

Finished Goods Inventory Turnover

Firms produce goods in order to sell them in the market. However, there may be a delay in their sale or in meeting seasonal demand for finished goods. There is however a limit to the period for which finished goods should be in store. If the finished goods are turned over faster, the amount of locked up funds would be less otherwise it will be more. Finished goods inventory turnover ratio attempts to capture the above aspect. It is calculated as:

Finished – goods inventory turnover

$$= \frac{\text{Cost of goods sold}}{\text{Average finished goods inventory}}$$

The same can be converted into finished goods storage period if the number of days in a year is divided by the finished goods inventory turnover ratio that is:

$$\text{Finished goods storage period} = \frac{\text{average finished goods inventory}}{\text{Cost of goods sold per day}}$$

Generally lower storage period is considered good but too low a storage period is risky.

Receivables Efficiency Ratios

With the increasing competition in the business, management sometimes offers liberal credit terms to its customers thereby increasing sales and total profits. This is number of times the management is able to turn the receivables into sales indicates the efficiency with which the receivables are being managed. This is given by the receivable turnover ratio which is calculated as:

$$\text{Receivables turnover} = \frac{\text{Total Sales}}{\text{Average receivables}}$$

In the numerator of the above ratio, either total sales or only credit sales can be used.

The choice of credit sales is better due to its relationship with the denominator. A low turnover ratio is an indicator of the firm's increased reliance on credit sales in its marketing efforts. If this is not backed up by receivable, it may jeopardize the very solvency of the firm. For getting additional insight into the managerial aspects of receivable, this ratio can be divided into the total number of days in a year (365) to give collection period:

$$\text{Average collection period} = \frac{\text{365 x average balance of receivables}}{\text{Total sales}}$$

$$= \frac{\text{Average balance of receivable}}{\text{sales per day}}$$

Average collection period calculated above indicates the number of days for which receivables remain uncollected. This can be compared with

the credit period offered by management to its customers. If actual collection period as calculated above is more than the one which is offered, it indicates slackness on the part of management. This calls for variation. The whole approach towards recovery of dues needs to be streamlined, modified or changed as per the severity of the problem.

Cash Efficiency

Cash is considered an idle asset as it does not earn any return. Therefore, a balance has to be struck between too much and too less an amount of cash that a concern should have. In fact, it should be just adequate for the needs of the concern. Efficiency management of each of cash requires that there should be proper relationship between cash needs of the concern to the average balance of cash held by it during the year. This is:

$$\text{Cash turnover ratio} = \frac{\text{cash operating expenses during the year}}{\text{Average cash balance during the year}}$$

This ratio of a firm's cash can be compared with the ratios of similar firms in the same industry or its past performance.

No definite conclusions of course can be drawn if this ratio deviates from the selected standard of comparison. This is because of differences in requirements of cash among firms for their operations depending upon various factors like nature, size and quality of its operations, attitude of management etc. Still, this ratio does indicate the area where further probing is needed.

Again, management might be interested to know whether cash is being held in the concern for a desired period or not, as against their own norms or industry norms. This is reflected in cash holding period which is calculated as:

$$\text{Cash holding period} = \frac{365 \times \text{average cash balance during the year}}{\text{Total cash operating expenses during the year}}$$

Payable Efficiency

Accounts payable constitute an important source to provide spontaneous working capital finance for the firm. To what extent is management able to use it properly is an important area worth probing. Payables turnover ratio is calculated as:

$$\text{Payable turnover ratio} = \frac{\text{annual purchase}}{\text{Average payables}}$$

Payable turnover ratio expresses the number of times account payables are converted into purchases by management during the year. Normally, a higher turnover ratio is preferred. This means that with a similar amount of payables, management could purchase more material during the year. This therefore reflects efficiency on the part of the management.

A variant of this ratio is average payment period. This is calculated thus:

$$\text{Average payment period} = \frac{365}{\text{Payable turnover ratio}}$$

Average payment period of the firm can be observed for a period of time out, how management has failed on this front or it can be compared with an industry average to assess the firm's relative standing in this regard.

Remember

Efficiency ratios indicate the efficiency with which working capital and its constituent parts are being utilized.

Overall working capital and its elements are generally expressed as number of times they are converted into sales/cost of goods sold or number of days they are being held.

4.0 CONCLUSION

In this account, we have looked into the nature and role of ratio analysis as an analytical tool in the context of working capital management.

5.0 SUMMARY

Ratio analysis is a simple but very useful tool in analyzing the efficiency with which management is using working capital fund. The relevant ratios for working capital management are broadly divided into three categories; only one category is dealt with in this unit. The category is the efficiency ratios. The other ratio will be dealt with in the next unit. The efficiency ratio indicates the efficiency with which overall working capital as well as its various elements is being used in this category. The ratios are: working capital turnover ratio, inventory turnover ratio, receivables turnover ratios, cash turnover ratio and payable turnover ratio. Inventory turnover ratio is further classified as raw material turnover ratio, work-in-process turnover ratio and finished goods inventory turnover ratio.

6.0 TUTOR-MARKED ASSIGNMENT

Ratio analysis can be used by management to plan and control working capital operations in the business. Elucidate the above view.

7.0 REFERENCES/FURTHER READINGS

Pandey, I.M. (1988). *Financial Management.*

UNIT 4 RATIO ANALYSIS II

CONTENTS

1.0 INTRODUCTION

The important tool used by management is analytical tools like ratio analysis which is simple but effective tool available to the management. In this unit, emphasis will be placed on the construction and interpretation of various ratios used for evaluating liquidity and structure of working capital.

2.0 OBJECTIVES

The objectives of this Unit are:

- to explain and illustrate the construction of various ratios used for evaluating liquidity and structure of working capital;
- to interpret the various ratios used for evaluating efficiency liquidity and structure of working capital.

3.0 MAIN CONTENT

3.1 Ratios to Analyze Liquidity of Working Capital Elements

The liquidity of working capital is an important aspect to be analyzed by the management for maintaining proper liquid resources to meet both operational requirements as well as financing commitment of borrowed funds. Normally, the following ratios are used to indicate liquidity characteristics of working capital.

Current Ratio:

This ratio is known as current or working capital ratio. It gives the relationship between current assets and current liabilities of the concern and is calculated as:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

This ratio indicates the extent to which short-term credits are safe in terms of liquidity of the current assets. Thus, the higher the value of current ratio, the more liquid the firm is and the more ability it has to pay its bills. A low value of current ratio means that the firm may find it difficult to pay the bills. However, a current ratio of 2:1 is considered generally satisfactory, it educates that in the worst situation even if the value of current assets go down by half, management would still be able to repay the debts and meet its obligations. Thus, it represents the cushion that creditors have to protect themselves against any adverse liquid position. It should, however, be remembered that this standard of 2:1 should not be blindly followed. In actual practice, there might be firms with a current ratio of less than 2:1 and they do very well, while others despite a higher current ratio fail to meet their obligations.

A relatively very high ratio, therefore, indicates slackness of management practices as reflected in excessive holding of current assets. On the other hand, a low ratio indicates an inadequate margin of safety between the current resources and short-term obligations.

Acid Test Ratio

Another ratio that often gives choices about the liquidity of working capital is the acid test ratio or quick ratio.

Here, the relationship between quick assets and quick liabilities is noted, thus:

$$\text{Acid test ratio} = \frac{\text{Current assets} - \text{inventory}}{\text{Current liabilities}}$$

Quick assets are defined as current assets minus inventory. Among the various element of working capital, inventory is relatively less liquid and hence deducted from total current assets to give the value of quick assets in the firm. Quick liabilities, of course, are the same as current liabilities.

The ratio is often used to supplement the information furnished by a current ratio. An acid test ratio of 1:1 is considered satisfactory. This norm, however, should be interpreted with caution. A higher ratio does not necessarily mean that it is good nor lower ratio means that it is bad. Another useful ratio is the cash ratio defined as:

$$\text{Cash ratio} = \frac{\text{cash and marketable securities}}{\text{Current liabilities}}$$

You might have observed that this ratio is a structured one to measure liquidity position. Only cash and marketable securities have been used in the numerator as they are highly liquid. Thus, this ratio measures absolute liquidity of the business. This ratio is not much used in practice; however, it can give significant insight into the liquidity position if used in conjunction with current and acid test ratios.

Remember, liquidity ratios indicate the extent to which a firm will be able to meet its short-term obligations as and when due.

3.2 Ratios to Analyze the Structure of Working Capital

In addition to efficiency and liquidity of working capital, management should also look into its structural health aspects. The structural health of the working capital in the business is generally studied by analyzing the shifts and changes between its various elements, i.e., cash receivables, inventories and other items of current assets.

Decomposition analysis can help management to detect the occurrences and changes in a firm's resource allocation over a period of time. If after scanning the data any unusual phenomenon is detected, management can further investigate that in depth. Under decomposition analysis, the value of individual items can be seen in relation to total value of the current assets in relation to total assets. Likewise, the proportion of short-term liabilities can be gauged with respect to total liabilities. The following ratios are generally used to analyze the structure of working capital in the business and have been found to be quite useful:

a. Current assets to total assets ratio.
b. Cash to current assets ratio.
c. Receivables to current assets ratio.
d. Inventory to current assets ratio.
e. Current liabilities to total liabilities ratio.

All these ratios are very simple to calculate and if analyzed together they indicate area of strength and weakness in the sphere of working capital management.

These ratios can be studied over time and/or compared with an industrial average to find out useful dues to be investigated further for any corrective action.

Remember: This set of ratio helps to evaluate structural shifts and changes that have taken place over time and are indicators of structural health of working capital.

SELF ASSESSMENT EXERCISE 1

The data below is the balance sheet of SAT Company Limited.

SAT Company Limited
Balance Sheet

Assets	31 Dec. 2000	31 Dec. 2001
Fixed Assets	₦'000	₦'000
Plant & Equipment	1,610	1,800
Less depreciation	400	500
Net fixed assets	1,210	1,300
Current assets:		
Stocks	355	300
Debtors	250	200
Quoted investments	175	150
Cash	52	50
Total Current Assets	832	700
Total Assets	2,042	2,000
Liabilities and stockholders equity		
Ordinary share	600	600
Revenue reserve	380	400
Net worth	980	1,000
Debenture stock	720	700
Total	1,700	1,700
Current liabilities		
Creditors and accruals	97	70
Short-term loans	110	100
Corporation tax	135	130
Total current liabilities	342	300
Total Liabilities	2,042	2,000

Calculate the following ratios:

(1) current assets to total assets ratio.
(2) cash to current assets ratio.
(3) receivables to current assets ratio.
(4) inventory to current assets ratio.
(5) current liabilities to total liabilities

SELF ASSESSMENT EXERCISE 2

Write short note on inflation and financial analysis.

4.0 CONCLUSION

Analysis and interpretation of various ratios has been treated.

5.0 SUMMARY

Liquidity ratio indicates the extent to which current assets are liquid to meet the short-term obligations of the firm. These ratios include current ratio, acid test ratio and cash ratio. The third set of ratio is used to study the structural health of working capital management in the business. Working capital and its various elements should form a reasonable balance in the assets structure as well as financial structure. Most important ratios used are: current assets ratio and current liabilities to total liabilities ratio. Use of a single ratio may not be able to tell much to management, but taken together, these ratios indicate the areas of concern in the use of working capital that may either need further investigation or corrective action.

6.0 TUTOR-MARKED ASSIGNMENT (TMA)

To what extent should management rely on ratios to analyze working capital management in the firm? What factors should you bear in mind while using ratio analysis?

7.0 REFERENCES/FURTHER READINGS

James C. Van Horne (1988). *Financial Management and Policy*

Pandey, I.M. (1988). *Financial Management.*

UNIT 5 RATIO ANALYSIS III

CONTENTS

1.0 INTRODUCTION

In this Unit, emphasis will be placed on the illustration of the various ratios.

2.0 OBJECTIVES

The objective of this Unit is to illustrate the construction of various ratios.

3.0 MAIN CONTENT

3.1 Illustration

The following case illustrates how management can make use of ratio analysis to identify problem areas in working capital management. Here, we should remember that management of working capital is also guided by the accomplishment of the overall objective of the firm.

Let us look at the information in the financial statements of SAGAL Limited given in Tables 3.1, 3.2 and 3.3

From the information presented above, the ratios calculated to analyze working capital management of this company are listed in Table 3.4. As you will notice, we have not calculated all the ratios explained earlier due to non-availability of information. To an outside analyst, this is an important handicap. Management is in a more advantageous position in this regard. Since our purpose here is to illustrate the approach to use ratios to analyze the working capital in a business, the non-availability of more information does not pose a serious limitation to our attempt. Also, please note that while calculating ratios, we have used:

a) figure of net sales in place of cost of goods sold;
b) figure of manufacturing and direct expenses during the year;
c) investment as funds employed in the business both from long-term as well as short-term sources, i.e, shareholder's fund long-term funds and short-term funds.

Now if we assume that achievement of goals of the organization is reflected in the return on investment (ROI) over time. This ratio in case of SAGAL Limited is depicting a decreasing trend. This means that the return earned by the company on the funds deployed under various heads is declining. This should be a matter of concern to the management. But this ratio by itself does not suggest any concrete action to be taken as it requires identification of the specific aspects which is not up to the mark in the organization. Working capital management being one of the key areas let us probe this with the help of ratio given in Table 3.4.

Table 3.1: Balance Sheet of SAGAL Limited as on 30th June

Sources of Funds	1995	1996	1997	1998	1999	2000	2001
Share capital	2389	2389	2370	2450	2174	2174	2134
Reserves and surpluses	5295	4251	5530	5577	5157	4138	3976
	7684	6640	7900	8027	7331	6312	6110
LOANS							
Secured	8889	8266	8603	9291	8670	3670	5235
Deferred credits	312	166	114	163	188	156	155
Unsecured	3134	3630	2489	2534	2179	2031	1755
Total	14617	12062	10869	11300	11658	10857	7145
Total funds employed	22301	19702	18769	19327	18989	17169	13255
Uses of Funds							
FIXED ASSETS							
Gross Block	27101	22763	21549	20730	20115	18294	16606
Less depreciation	15160	14490	14117	13184	12702	12252	11194
Net Block	11941	8273	7432	7546	8013	6042	8412
(Capital Work)	461	1525	634	247	165	325	395
In progress	12402	9798	8066	7793	8178	6367	5807
Investment	655	655	655	157	158	158	153
CURRENT ASSETS (CA)							
Stock	12304	10825	10686	11151	11341	10810	8040
Sundry debtors	4621	3535	3842	3927	3377	2761	2137
Cash and bank statement	753	811	876	853	785	992	713
Loans and advances	1867	1990	2042	2438	1481	1284	1401
	19545	17161	17448	18369	16984	15847	12291
Current liabilities and prov.							
Current liabilities	2762	7974	6485	6037	5534	4544	3841
Provision	6	189	1165	1205	1147	909	1406
	10551	19702	18769	19327	18989	17169	13255

Table 3.2: Amount in Naira

Stocks/year	1995	1996	1997	1998	1999	2000	2001
Raw materials	1377	1451	1775	1659	1653	1799	1787
Stores and spares	3774	4154	3417	3005	2968	3282	2978
Process stocks	534	639	772	692	674	632	538
Finished goods	6619	4585	4724	5795	6045	5095	2740
	12304	10826	10688	11151	1340	10809	8040

Table 3.3: Profit and Loss Account of SAGAL Limited for the year ending 30th June

INCOME	1995	1996	1997	1998	1999	2000	2001
Sales of Products	50984	43581	52891	50259	45925	42016	38190
Other income	2022	2593	1832	1625	2735	1009	740
	53006	46174	54723	57884	48660	43025	38930
Less expenditures / others							
Other expenses	47377	40032	48172	45531	41254	37879	33049
Excise duty	2046	2283	3104	2893	2729	2220	2368
Profit before depreciation	3583	3859	3447	3460	4677	2976	3513
Depreciation	1205	1353	1122	1177	1521	1106	977
Profit before interest & tax	2378	2506	2325	2283	3156	1870	2536
Term interest	2282	1877	1812	1737	1767	1470	1105
Profit before tax	116	629	513	546	1389	400	1428
Less tax	66	81	208	(19)	71	50	750

Table 3.4 Ratios useful to analyze working capital

INCOME	1995	1996	1997	1998	1999	2000
Return on investment	7.2	9.0	8.8	8.6	12.3	8.3
Investment turnover	1.5	1.5	1.9	1.8	1.7	1.6
Profit margin	4.85	6.06	4.72	4.82	7.3	4.69
A) Efficiency Ratios						
Working capital turnover	5.44	4.39	4.76	4.40	4.15	4.56
Current assets turnover	2.67	2.39	2.78	2.68	2.90	2.83
Inventory turnover	4.20	3.80	4.60	4.20	3.90	4.20
Receivables turnover	11.98	11.20	12.88	12.97	14.07	16.25
Cash turnover	60.58	47.46	55.74	55.59	46.43	44.37
B) Liquidity Ratios						
Current ratio	1.9	2.1	2.3	2.5	2.6	2.9
Acid test ratio	0.69	0.70	0.88	0.99	0.86	0.92
Cash ratio	7.14	9.94	11.45	11.78	11.93	18.19
Structural Health of working capital ratio						
CA to TA	0.59	0.61	0.66	0.69	0.66	0.70
CL to CA	0.32	0.29	0.29	0.27	0.26	0.24
Cash to CA	0.04	0.05	0.05	0.05	0.05	0.07
Receivable to CA	0.24	0.21	0.22	0.21	0.20	0.17
Loans and advances to CA	0.09	0.11	0.12	013	0.08	0.08
Inventory to CA	0.63	0.63	0.61	0.61	0.67	0.68
RM to inventory	0.11	013	0.17	015	0.15	0.17
Stocks and spare to inventory	0.31	0.38	0.32	0.27	0.26	0.30
Process stock to inventory	0.04	0.06	0.07	006	0.0	0.6
Finished goods to inventory	0.54	0.43	0.44	0.52	0.53	0.47

The illustrations rate of net working capital or that part of working capital, which is financed from permanent sources as depicted by working capital turnover ratio, is fluctuating over this period. But as shown by current asset turnover ratio, the utilization of current assets in terms of sales has shown a decreasing trend. Again, if we look at the efficiency with which individual elements of working capital have been utilized, the picture of inventory turnover is not very bright.

Receivables turnover also shows a decline trend or the average collection period has gone up during this period. Generally, such a situation does not augur well for the company. Cash turnover ratio shows an increase over this period. Normally, an increase in this ratio reflects intensive utilization of cash. But as said above, this may be due to decrease in the denominator of this ratio, i.e, Cash balance or increase in the numerator.

As we look at the extent of liquidity of working capital, we notice that the relevant data shows a decreasing trend. This indicates problems on the liquidity front. If we analyze the structural health of working capital, the proportion of current assets (CA) to total assets (TA) has been very high. During this period such a higher total assets in the assets portfolio of a manufacturing company like SAGAL LTD is quite amazing. It seems that more amounts is invested in current assets. This is desirable, of course, inter-firm comparison frequently used is ratio or index relating to two pieces of financial data to each other.

SELF ASSESSMENT EXERCISE 1

State three limitations of ratio analysis.

SELF ASSESSMENT EXERCISE 2

State the standards of comparison of ratios.
Current Ratio:

4.0 CONCLUSION

Emphasis was placed on the illustration of the various ratios in this unit.

5.0 SUMMARY

The illustration has shown the procedures used in calculating various ratios.

ANSWER TO SELF ASSESSMENT EXERCISE 1

Although ratios are exceptionally useful tools, they do have limitations and must be used with caution. The following are some of the limitations of the ratios but the student are required to state three.

(1) Ratios are constructed from accounting data and accounting data are subject to different interpretations and even to manipulations. For example, two firms may use different depreciation methods or stock valuation methods, depending on the procedures followed; reported profits can be raised or lowered.
(2) It is difficult to decide on the proper basis for comparison. Ratios of a company have meaning only when they are compared with some standards. It is difficult to find a proper basis of comparison. Usually it is recommended that ratios should be compared with the industry averages, but the industry averages are not easily available.
(3) The situations of two companies are never the same. Similarly, the factors influencing the performance of a company in one year may change in another year. Thus, the comparison of the ratios of two companies becomes difficult and meaningless when they are operating in different situations.
(4) When firms use different operations and accounting procedures, it might be difficult to compare their ratios.
(5) Some firms use window dressing technique to make their financial statements look better to analyze.

ANSWER TO SELF ASSESSMENT EXERCISE 2

Standards of comparison:

The ratio analysis involves comparison for a useful interpretation of the financial statements. A single ratio in itself does not indicate favourable or unfavourable condition. It should be compared with some standards. Standards of comparison may consist of:

1. Ratios calculated from the past financial statements of the same firm.
2. Ratios developed using the projected or proforma financial statement of the same firm.
3. Ratio of some selected firms, especially the most progressive and successful at the same point in time.
4. Ratio of the industry to which the firm belongs.

6.0 TUTOR-MARKED ASSIGNMENT

Given below is the financial statement for Top Company Limited

Income Statement for Top Company Ltd. as at Dec. 31, 2001

Net Sales	10,000,000
Cost of goods sold	7,500,000
Operating expenses	1,200,000
Operating profits	1,300,000
Interest expenses	200,000
Profits before taxes	1,100,000
Taxes 50%	550,000

Balance Sheet for Top Company Ltd. As at Dec. 31, 2001

Assets	₦
Cash	200,000
Marketable securities	50,000
Accounts receivable	800,000
Inventories	950,000
Total current assets	2,000,000
Gross fixed assets	12,000,000
Less depreciation	3,000
Other assets	1000,000
Total assets	12,000,000
Liability and Stockholder Equity	
Current liabilities	100,000
Accrued liabilities	200,000
Note payable	900,000
Total Current liabilities	1,200,000
Long term debt	3,000,000
Stockholders equity	
Preferred stock	1,000,000
Common stock	3,000,000
Paid in capital in excess at par	2,800,000
Retained earning	1,000,000
Total shareholder's equity	7,800,000
Total liabilities and stockholders and equity	12,000,000

You are required to calculate the following financial ratios for the Top Company Ltd.

(1) Return on investment
(2) Current assets turnover
(3) Cash ratio
(4) Inventory turnover ratio
(5) Working capital turnover ratio.

7.0 REFERENCES/FURTHER READINGS

James Van Horne (1988). *Financial Management and Policy*.

Pandey, I.M. (1988). *Financial Management*.

MODULE 2

UNIT 1 FUND FLOW ANALYSIS

CONTENTS

1.0 INTRODUCTION

In units 2 and 3, we discussed the role of ratio analysis for evaluating efficiency, liquidity and structural aspects of working capital management in a business firm. In this unit, we shall discuss the concept of fund flow and the nature and managerial uses of fund flow analysis in the context of working capital management, especially the liquidity aspect of it.

2.0 OBJECTIVES

The objectives of this Unit are:

- to describe the concept of fund flow and its relevance to management of working capital in general and business liquidity in particular.
- to explain and illustrate the process of fund flow analysis.
- to highlight the managerial uses of fund flow analysis.

3.0 MAIN CONTENT

3.1 Fund Flow and Business Liquidity

Indeed, the importance of having sufficient amount of liquidity in the business cannot be over-emphasized. Management today spend a lot of time and efforts to maintain proper liquidity position in business. The term business liquidity has been interpreted in several ways. In one sense, it refers to the position of the net working capital (NWC) of the firm and this approach has traditionally been quite dominant. It suggests that liquidity of the firm depends upon the position of its net working capital. During an accounting period, working capital or fund flow from one element of balance sheet to another and according to this approach, it is the amount of net working capital which is available to the firm as a liquid resource. A statement that uses net working capital as a measure of liquidity position is referred to as fund flow statement, and its analysis is likewise referred to as fund flow analysis.

3.2 Fund Flow Analysis

Fund flow analysis is the detailed analysis of the net working capital position of the firm. This analysis helps management to administer and control the amount of total working capital, its various element and also its financing. Indeed, such an analysis can greatly facilitate a critical review of the liquidity position. If liquidity position has deteriorated over time, it can motivate the management to identify the problem areas and initiate corrective steps. In order to undertake fund flow analysis, one requires an understanding of the following:

(1) the concept of sources and uses of funds;

(2) the effect of changes in various balance sheet item on the NWC position of the firm, i.e., how various accounts affect working capital position. Here, one needs to identify and classify various items that increase or decrease NWC, and to know by how much amount;

(3) the rearrangement and consolidation of information taken from balance sheet as indicated above and relevant information from profit and loss account in the form of fund flow statement.

Let us elaborate these points in turn.

3.3 Concept of Sources and Uses of Funds

The first step to analyze the fund flows is to classify the business transactions into sources and uses of funds. Normally, an increase in liability or a decrease in assets of the firm is considered as source of funds. On the other hand, an increase in assets or decrease in liabilities is considered as use of funds.

We can find out the items that are a source of funds or those that constitute the use of funds from a comparison of the balance sheets of two sets of data. This is illustrated below:

Balance sheet as at Dec. 31

Assets	1999	2000	Change in amount	S / U
Cash	10	25	+ 15	U
Accounts receivable	20	35	+ 15	U
Inventory	30	25	- 5	S
Plants and Equipment	40	48	+ 8	U
	100	130	+ 30	
Liabilities				
Accounts payable	10	30	+ 20	S
Short term loans	20	30	+ 10	S
Long-term loans	30	20	-10	U
Equity capital	40	50	+ 10	S
	100	130	+ 30	

Increased in assets or/and decreases in liabilities = Use (U) of funds. Decreased in liabilities or/and decrease in assets = Source (S) of funds.

You might have noticed that the above given analysis spells out the sources and uses of funds, but it does not help to know their overall impact on net working capital of the firm. For this, we need to understand what caused a change in NWC and the amount of such a change over a period.

A change in net working capital can be either an increase or a decrease. An increase in net working capital means its amount at the end of the period is greater than its amount at the beginning of the period. If the reverse happens, it means a decrease in net working capital.

An increase in net working capital balance during account period denotes the deployment of more funds by the amount of the increase, hence it is considered a use of funds. On the other hand, a decrease in net working capital balance denotes the availability of funds with the business; hence it is a source of funds.

Remember:

1) An increase in the liabilities or a decrease in the assets is a source of funds.

2) An increase in the assets or a decrease in liabilities is a use of funds.

3) A decrease in net working capital balance during the accounting period is considered a source of funds.

4) An increase in net working capital balance during the accounting period is considered a use of funds.

3.4 Flows That Affect Net Working Capital (NWC)

To find out changes in NWC, an understanding of various inflows and outflows that affect NWC is essential. Given in Exhibit 3.12 is a schematic presentation of typical inflow and outflow that affect NWC of a business firm.

We can group various transactions as shown in Exhibit 3.12 broadly under three heads. The changes in them over a period of time can be either a source or a use of fund. What follows is a brief description of these.

The sources of funds or working capital inflows in the firm are the following:

(i) Decrease in non-current assets

An increase in funds for working capital either by a sale or disposal of no-current assets like plants and machinery, land, long-term investment. This is because sale of such assets either increases cash or short-term receivables in the business.

(ii) Increase in Non-current liabilities

Management can issue long-term debt securities to increase the inflow of working capital. Long-term debt securities may be in the form of debentures, convertible or non-convertible bonds, long-term notes payable. The issuance of such liabilities is exchanged for current assets. The issuance of debentures, a non-current liability, to the public, for example, will result in an increase of cash, a current asset.

(iii) Increase in owner's equity

There are mainly two ways in which management can affect an increase in total amount of owner's equity in the business. It may ask the owner of the firm to provide additional investment in the business. Secondly, it may retain the profits earned during the year. If a firm issues equity shares either as a right issue or a fresh issue, it leads to an increase in current assets in the form of cash or subscriptions receivable. Net income retained is another important source of funds as it signifies undistributed portion of surplus revenue minus expense generated through operations.

The use of funds in business may be broadly classified as follows:

(i) Increase in non-current assets

An increase in the non-current assets through new acquisition causes an outflow of working capital as it leads to decrease in working capital. For example, if a machine is bought, it will either reduce cash or increase accounts payable under both conditions. It is an outflow of working capital.

(ii) Decrease in Non-current liabilities

A decrease in non-current liabilities is possible by retiring such obligations. This involves an outflow of working capital. For example, the redemption of debentures reduces non-current liabilities because of the amount of long-term obligation, and on the other hand, decreases cash balance.

(iii) Decrease in Owner's Equity

Owner's equity can mainly be reduced either by the withdrawal of funds by the owners from the business in the form of dividend or by the purchase of its own shares by the company or by incurring losses.

To summarize, an increase in net working capital is possible due to increase in non-current liabilities and owner's equity or decrease in non-current assets. While decrease in net working capital results from an increase in non-current assets or decrease in non-current liabilities and/or owner's equity.

Another important point you must have observed by now is that management looks at changes in various long-term sources and uses of funds when it analyses the changes in net working capital. Thus, it is to

be remembered that net working capital does not get affected under the following conditions:

(1) If transaction affect only current items i.e. current assets and current liabilities;

(2) If transaction affect only non-current assets.

SELF ASSESSMENT EXERCISE 1

Put right (R), wrong (W) against each of the following statement:

(1) An increase in assets signifies a source of funds ( )
(2) A decrease in assets signifies a use of funds ( )
(3) An increase in net working capital signifies a use of fund ( )
(4) NWC gets affected by transaction which affect current assets only ( )
(5) NWC gets affected by transaction which affects non-current assets only ( )

3.5 Calculation of the Amount of Change in NWC

Having described the various transactions that affect changes in NWC, let us look at how the amount of change in NWC is determined. The amount of change in NWC can be calculated by using either only current items or only non-current items from the balance sheet; both approaches have been discussed below.

(1) Use of only current items

Net working capital is defined using only current items as an excess of current assets over current liabilities, thus, net working capital (NWC) = Current Assets (CA) – Current Liabilities (CL).

Change in NWC = Change in CA – Change in CL or $\Delta NWC = \Delta CA - CL$.

In this equation, values of different items can be put from the balance sheet and the change in the amount of NWC can be found out. Continuing our example given under 3.11, the amount of NWC is calculated by expanding the equation:

ΔNWC	=	ΔCA - ΔCL
	=	(ΔCash + ΔAccount receivables + Δ Inventory) – (ΔAccount Payable + ΔShort-term loans)
	=	[(+5) + (15) + (- 5)] – [(+ 30) + (+10)]
	=	+ 25 – (+ 30)
	=	- 5
Δ NWC	=	- 5

This indicates that there is a decrease in NWC during the period of operation by five Naira (₦5). To find out whether this change is desirable or not, management would be required to conduct further analysis vis-à-vis its working capital management.

(2) Use of Only Non-Current Items

To understand the dynamics of change in NWC in another way, the above equation of NWC can be slightly modified with the help of basic balance sheet equation. Assets = Liabilities + Owner's equity or current assets (CA) + Non-Current Assets (CA).

Asset = Current Liabilities (CL) + Non-Current Liabilities (NCL) + Owner's Equity (OE)

Or CA – CL = Non-current Liabilities (NCL) + Owner's equity (OE)
- Non-current assets (NCA).

Using the data given in 3.11 and the relationships given above, the amount of change in NWC can be calculated thus:

ΔCA - ΔDCL	=	ΔNCL + ΔOE - ΔNCA
	=	(-10) + (+10) – (+5)
	=	- 5
or ΔNWC	=	-5

This amount of N5 as a decrease in NWC us the same that we obtained from our previous calculations. This means that either of the two approaches can be used to ascertain the change in NWC of the firm. Both approaches give significant insight into the working capital flows in the business.

The first approach looks at the overall working capital and its elements. It tells management how various components of net working capital, i.e., current assets and current liabilities have changed over time. The second approach highlights how management utilized the long-term sources of funds for working capital. This is so because, it highlights how long-term sources of funds (NCL + OE) were used for buying long-term

assets (LTA) and the balance amount for financing current assets, particularly that portion which is of permanent nature and not financed by short-term sources. The above two approaches help management to critically evaluate whether the method of financing current assets by both long-term as well as short-term sources is alright i.e. whether a proper balance holds between the two sources of financing. Financing actually may depend upon various factors like; the availability of funds, nature of business etc. But those approaches do provide a useful insight to the management with regard to financing pattern developed over a period of time.

Management may be interested in further analyzing the transactions that have caused a change in various components of the above equation, namely: owner's equity, long-term assets and long-term liabilities. Such an analysis can provide useful insights to identify areas where management need to take corrective action in order to have desired liquidity position.

The information relating to working capital flows as described above can be presented in a statement known as funds flow statement. The suggested format is given in Exhibit 3:13A.

Exhibit 3.13A – Funds Flow Statement

Sources of Funds	Amount (₦)
Net income from operation	-
Long-term liabilities	-
Deferred taxes	-
Use of Funds	
Dividends	-
Long-term assets	-
Net working capital [(NWC (+/-)]	-

The figure of (NWC) is either a balancing figure in the funds flow statement or can be calculated by preparing a schedule of changes in NWC as shown as Exhibit 3.13B.

Exhibit 3.13B – Schedule

Items	Change in the amount (+/-)
Cash	-
Accounts Receivables	-
Inventory	-
Accounts Payable	
Short-term Loans	-
Change in NWC	-

You might have noticed that fund flow statement helps the management to understand the changes in funds position by focusing on sources and uses of funds. This is done simply by rearranging the available data in a way that sources of funds are shown first followed by their uses. Let it be clearly understood that we have discussed an approach of analysis, which the management might like to follow to use fund flow information for better management of working capital. In actual practice, different managers may use different approaches to suit their requirements.

3.6 Uses of Fund Flow Analysis

The suggested format of fund flow statement given in Exhibit 3.13A indicates three sources of funds i.e. income from business operations, long-term liabilities and deferred taxes. The funds have been used to finance increase in current assets and fixed assets and to reduce a part of short-term loans. The above pattern of investment and financing is typical of a firm with growing sales. Management can use fund flow analysis to answer question as follows:

(1) How much is the amount of NWC deployed in business?
(2) How much change has taken place in NWC over the period?
(3) Is the ratio between the sources of short term finance and long-term finance reasonable?
(4) How much funds are provided by business operations in order to finance permanent assets?
(5) Is the balance between funds from operation and other long-term sources reasonable?
(6) Which long-term sources of fund can be further tapped to finance current assets?
(7) What corrective action should be initiated by management, if problems are spotted both in investment and financing?

These questions are quite pertinent to manage liquidity and the structure of working capital in a business. Further, periodic fund flow analysis is useful and rather essential. So avail working capital loan from banks.

4.0 CONCLUSION

This unit has covered the ways for analyzing the funds flow of a firm.

5.0 SUMMARY

Funds flow is one of the most important tools available to management to analyze the liquidity position of the firm. Flow analysis takes net working capital view of the liquidity position. Funds flow analyses

provide such insights to the management to take informed working capital decisions in order to accomplish the goals of the organization efficiently and effectively.

SELF ASSESSMENT EXERCISE 2

Fill in the missing data and calculate the amount of change in Net Working Capital using only current items.

Balance Sheet as at Dec. 31

Assets	1999	2000	Change in amount	S / U
Cash	11,310	19,648		
Accounts Receivable	85,147	118,416		
Inventory	91,378	118,563		
Plants & Equipment	94,652	115,461		
Liabilities				
Accounts Payable	37,460	62,725		
Short-term loan	14,680	17,298		
Long-term loan	1,276	1,917		
Equity capital	45,883	63,049		

6.0 TUTOR-MARKED ASSIGNMENT

Explain the following terms with examples:

(1) Funds flow
(2) Liquidity position
(3) Current assets and liabilities
(4) Non-current assets and liabilities

7.0 REFERENCES/FURTHER READINGS

Brigham E.F. and Capenski, L.C. (1991). *Financial Management Theory and Practice.*

Corporate Financial Management – Glem Arnold.

UNIT 2 CASH FLOW ANALYSIS

CONTENTS

1.0 INTRODUCTION

Ratio analysis is, often supplemented with cash flow analysis. In this unit, we shall discuss the concept of cash flow, the nature, and the management uses of cash flow analysis in the context of working capital management, especially the liquidity aspect of it.

2.0 OBJECTIVES

The objectives of this Unit are:

- to describe the concept of cash flow and its relevance to management of working capital in general and business liquidity in particular
- to explain and illustrate the process of cash flow analysis
- to highlight the managerial uses of cash flow analysis.

3.0 MAIN CONTENT

3.1 Cash Flow Analysis

An analysis based on funds flow statement does not take into account the offsetting movement among the individual current assets and liabilities. An increase or decrease in the individual elements of current assets (other than cash) and liabilities affect cash in different ways. For example, increase in sundry creditors and bank overdraft has different implications in terms of repayment of cash. Sundry credits' bill may fall due after one month or two months. But bank overdraft facility may be for a longer duration.

Thus, it is possible that the firm is in a sound financial position as reflected by the amount of net working capital but it has difficulty in meeting its short-term commitments. For this purpose, cash flow statement is prepared and its analysis is conducted to assess the ability of the firm to meet its obligations to trade creditors and bankers, and to pay interest to debenture holders and dividend to its shareholders.

Cash flow analysis take a more conservative approach about the liquidity position of the firm by taking a limited view of the pool of funds available to the firm. It is cash and cash equivalent items only that form the liquidity position of the firm. According to this view, when cash basis is adopted for analysis, slight modifications are made in the steps suggested earlier for fund flow analysis. Now instead of NWC, the focus shifts to change in the cash account. A schematic presentation is given in Exhibit 3.0A to highlight this point.

Since we had to look for either non-current item to find out change in NWC, we also have to analyze all non-cash balance sheet accounts to look for change in cash account. You will recall that changes in current assets and current liabilities form a part of operating cycle of the firm. The impact of these changes on cash can thus be readily captured by appropriately adjusting net income from operations. Exhibit 3.0B shows suggested format to arrive at cash from operations.

Exhibit 3.0A

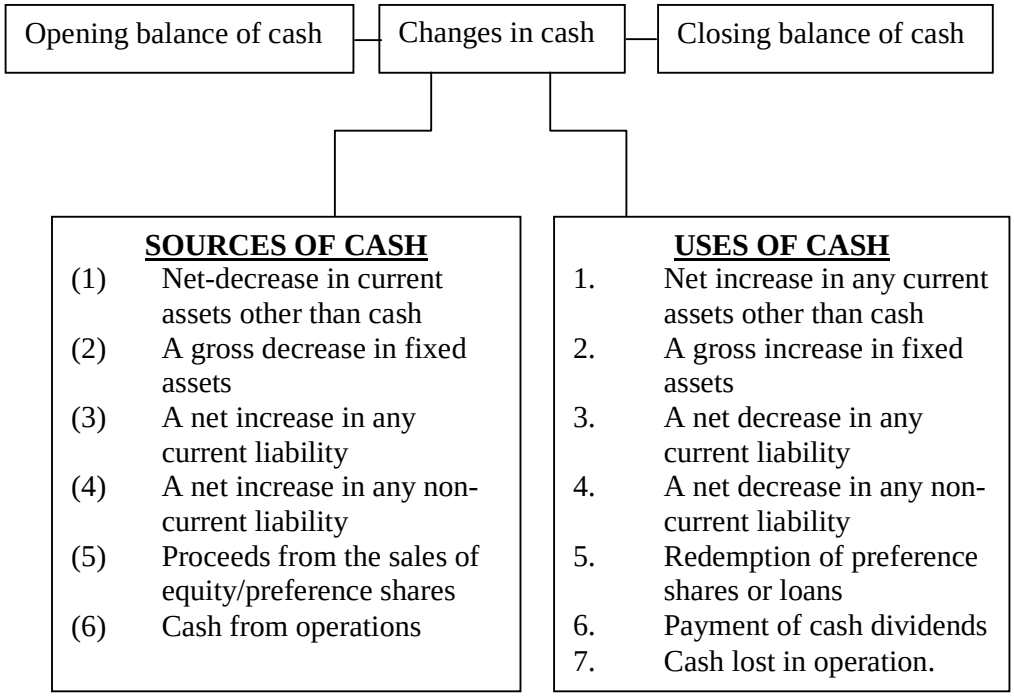


Exhibit 3.0B

Net income
Add: Depreciation
Add: Amortization expenses
Add: Decrease in each current asset (except cash)
Add: Loss on sale of non-current asset
Add: Increase in each current liability
Less: Gain on sale of non-current assets
Less: Increase in each current asset (except cash)
Less: Decrease in each current liability
Cash from operation (+ / –)

Once cash from operations is calculated, cash flow statement may be drawn as shown in Exhibit 3.0C.

Exhibit 3.0C

Statement of sources and uses of cash	
Sources	-
Cash from operations	-
Sales of long term investment	-
Sale of other fixed assets	-
Issue of Share capital	-
Uses	
Acquisition of fixed assets	-
Payment of dividend	-
Purchase of marketable securities	-
Change in cash (+ / –)	-

3.2 Uses of Cash Flow Analysis

Cash flow statement as depicted above is similar to fund statement except that it focuses attention on cash instead of working capital. A careful look into the cash flow statement can help to answer such questions as follows:

1) How much is the amount of cash?
2) How much change has taken place in case of overtime?
3) How much cash is provided by operation of the business?
4) Is there a proper balance between various sources of cash?
5) How much cash is used?
6) For which purpose?
7) How much cash has to be obtained as compared with what the firm has and from what source etc.?

Based on cash flow analysis, the answer to these questions can greatly facilitate the management of the structural health and liquidity aspects of working capital effectively.

SELF ASSESSMENT EXERCISE 1

In what manner do you consider cash flow analysis useful in the context of working capital management in an industrial enterprise?

Try to discuss your view with a finance executive.

3.3 An Illustration

Let us illustrate the process of cash flow analysis with the help of data of ADS Limited given in Table 3.1A and 3.1B.

Table 3.1A
Balance Sheet as at 31st December 2000

	2000	1999
Assets:	₦	₦
Cash	1000	800
Marketable securities	684	540
Debtors	600	500
Stock	380	280
Long-term investment	280	440
Machinery	2000	1400
Building	2540	940
Total:	**7484**	**4900**
Liabilities:		
Creditors	400	300
Bill payable	200	100
Accumulated depreciation	1100	600
Long-term loan	2000	1000
Share capital	2440	1600
Resources and surpluses	1344	1300
Total:	**7484**	**4900**

Table 3.1B

ADS LIMITED
Income Statement for the year ending 31st Dec. 2000

	₦
Sale	2400
Cost of goods sold	1348
Gross profit	1052
LESS: OPERATING EXPENSES	
Depreciation	500
Other expenses	900
	400
Net profit from operations	131
Gain or sale of long-term investment	48
Total:	180
Loss on sale of machinery	20
Net profit	**160**

Solution

Cash Flow Analysis

This requires the preparation of cash flow statement. Given below are the computation of cash from operations and the cash flow statement.

1. Cash from operations

Particulars	Amount ₦	Amount ₦
Net income	160	
Add: Depreciation	520	
Add: Loss on sale of machinery	20	
Add: Increase in each current liability	200	900
Less: gain on sale of long-term investment	48	
Less: increase in each current assets (except cash and marketable securities)	200	248
Cash from operations		652

2. Cash Flow Statement

Sources of cash	₦
Cash from operations	652
Sale of long-term investment	208
Sale of other fixed assets	60
Share capital	840
Long-term loans	1000

	2760
Uses of cash	₦
Acquisition of fixed assets	2300
Payment of dividend	116
Purchase of marketable securities	144
Change in cash	200
	2760

3. SUMMARY OF CASH FLOW ANALYSIS

(a)	Cash from operations to total cash available	652/2760	=	23.62%
(b)	Cash from long-term sources	1840/2760	=	66.67%
(c)	Proceeds from sale of non-current assets to total cash available	268/2760	=	9.71%
(d)	Acquisition of fixed assets to total usage of cash	2300/2760	=	83.33%

4.0 CONCLUSION

This unit has described the concept of cash flow and its relevance to management of working capital in general and business liquidity in particular. It also has highlighted the managerial uses of cash flow analysis.

5.0 SUMMARY

In this unit, the description of the concept of cash flow and its relevance to management of working capital and business liquidity together with the uses of cash flow analysis were dealt with. We have also explained the process of cash flow analysis.

SELF ASSESSMENT EXERCISE 2

Mention the steps in the construction of a source and use statement.

6.0 TUTOR-MARKED ASSIGNMENT

Process the cash flow analysis with the help of data of Ola's Company balance sheet.

Financial Statements for Ola's Company Balance Sheets

Assets	2000	1999
Cash	300	400
Marketable securities	200	600
Accounts receivables	500	400
Inventory	800	500
Prepaid items	100	100
Total current assets	1900	2000
Net fixed assets	1000	1200
Total assets	**2900**	**3200**
Liabilities and stockholders equity:		
Accounts payable	500	600
Notes payable	700	400
Taxes payable	200	200
Accruals	0	400
Total current liabilities	1400	1600
Long term debt	400	600
Preferred stock	100	100
Common stock	500	300
Retained earnings	500	600
Total shareholders equity	1100	1600
Total liabilities & Stockholders equity	**2900**	**3200**

Income State

	1999	
Sales	1000	
Less cost of goods sold	500	
Gross profit	500	
Less Expenses:		
General and admin. Expenses	100	
Depreciation	100	200
Profit before taxes	300	
Less taxes	150	
Profit after taxes	150	

7.0 REFERENCES/FURTHER READINGS

J. F. Western and T.E. Copeland Managerial Finance 2nd edition.

UNIT 3 CASH FLOW FORECASTING I

CONTENTS

1.0 INTRODUCTION

In managing working capital efficiently and effectively, the primary concern of management remains to provide adequate amount of liquidity to the firm. This requires not only analysis and evaluation of how the firm has performed in the past but also proper planning and monitoring in this respect. In Units 2, 3, 4 and 5, we discussed analytical tools of ratio analysis, fund flow and cash flow analysis that are useful to management in this regard. But as you might have observed, these tools of analysis suffer from a serious handicap as they assume liquidity to be a stock concept. Liquidity is represented by net working capital in the funds flow analysis and by cash and cash equivalents in the case of cash flow analysis and both of these measures are based on balance sheets that reported items as on a particular date. In this Unit, we shall discuss the dynamics of business liquidity and the nature and role of cash flow forecasting in managing the liquidity facet of working capital management in a firm.

2.0 OBJECTIVES

After you have studied this Unit, you should be able:

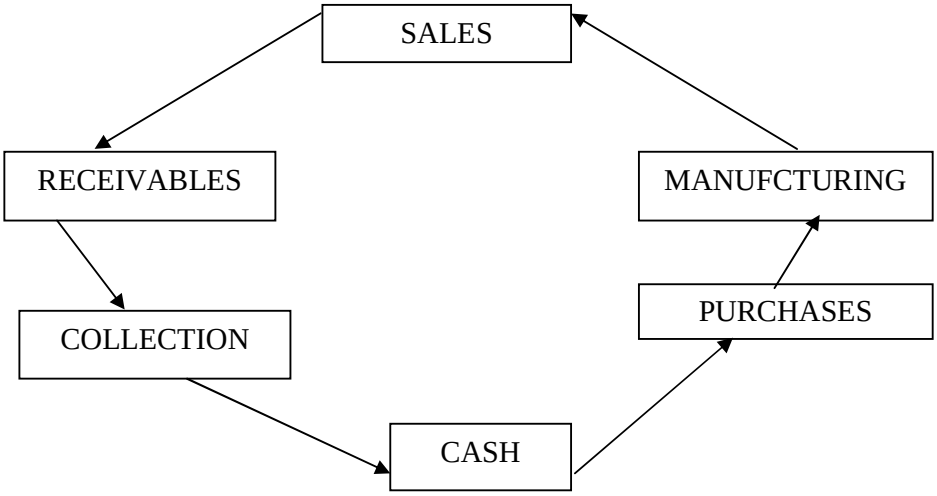
- to describe flow concept of business liquidity
- to understand the concept of cash flow
- to prepare cash flow forecasting.

3.0 MAIN CONTENT

3.1 Flow Concept of Business Liquidity

The term business liquidity refers to the ability of a firm to generate cash, both from within and outside, to meet the cash requirements. It is no longer taken to mean a stock of net working capital or cash and its equivalents. It is a flow concept. Liquidity management in this sense is a much more inclusive term than working capital management and embraces in its fold the total operations of the firm including sales expenses, investment, and financing activities. It encompasses all the decisions and actions that are involved in creating and sustaining the ability of business enterprises to generate cash to meet its cash requirements. In practice, business liquidity is commonly perceived as a dynamic phenomenon and, a function of cash flows to and from the business enterprise, resulting from its operations rather than a stock of liquid or current assets held at a point in time. The flow of cash in a business firm may be conceived as circular, as it changes its form from one item to another and then returns to its original form. And this goes on, and on a continuum basis in a business firm.

For a manufacturing organization, the circular flow of cash can be depicted as under:



The above diagram shows cash flow as a circular system of asset transformation. This contains both cash inflows and cash outflows. Interestingly, if both cash inflows and cash outflows in the organization match each other, there is no problem. But in actual practice, it is very rare to find a situation where periodic cash inflows and cash outflows have matched each other. It thus requires a proper system of cash flow management in order to provide adequate liquidity to the business. It is

in this context that cash flow forecasting can prove a very useful aid to management.

3.2 Cash Flow Forecast

The term cash flow forecast signifies the estimate with varying degrees of accuracy what most probably the cash flows will be under the influence of the current and foreseeable internal as well as external environment of business.

Remember: Liquidity is a flow concept and refers to the ability of a firm to generate adequate amount of cash from internal as well as external sources to meet its cash requirements.

3.3 Cash Flow Forecasting

Cash flow forecasting involves forecasting both cash inflows and cash outflows of the organization. As a systematic attempt, it would require management to clearly decide about the following:

(1) Time dimension of the forecast.
(2) Pattern of data critical to forecast.
(3) Elements and sub-elements of the selected variables.
(4) Development of relevant projections through:
    - appropriate data gathering system;
    - appropriate methods/techniques.
(5) Appraisal and setting of target plans.

Brief explanation of the above steps is given below:

3.4 Time Dimension

Cash inflows and outflows is an ongoing activity in business. Therefore, management is required to determine the time dimension for which forecasting of each flows is required. It may vary from the next day to 2, 3 or 5 years. The choice of length of time also influences the choice with regard to the techniques/methods of forecasting.

For our purpose, we can classify the time dimension as:

(i) **The capital period:** It refers to the forecasting period beyond one year.
(ii) **The budget period:** It refers to the forecasting period of one year. This may be divided into four quarterly intervals before being consolidated into annual budget.

(iii) The immediate period: It refers to the daily and weekly forecast of cash receipts and disbursements for the firm.

All these time horizons are interrelated. Forecasting for these periods can be taken up simultaneously but each of these has different assumption in terms of degree of planning and control of different elements.

3.5 Critical Variables

Cash flow forecasting requires selecting those variables of cash flow activity that might materially affect liquidity position from period to period. Some of the critical variables for an industrial firm may be listed as:

(1) Cash sales
(2) Collection from account receivables
(3) Cash payment to creditors
(4) Operating expenses
(5) Issuance of shares/debentures
(6) Loan payments
(7) Purchase of investment
(8) Payment of dividends
(9) Payment of taxes

3.6 Reporting Framework

The forecast data should be reported in a framework useful to management for quick comprehension, positive analysis and evaluation. Proforma financial statement provides such a framework for reporting cash flow forecast. A proforma statement or projected statement reflects current forecast of sales, cost, profits, taxes and other financial parameters. Proforma financial statements, generally used by the financial managers to assess and evaluate the liquidity position of the firm for capital period are:

(1) Proforma balance sheet;
(2) Proforma funds flow statement;
(3) Proforma cash flow statement.

More specifically, these statements are used:

(1) to analyze and evaluate the future liquidity condition of the firm;
(2) to project the future liquidity cash flows requirements of the firm;

(3) to determine how various alternative courses of action of the firm are likely to affect its liquidity condition and liquidity requirement; and
(4) to act as a benchmark against which actual results on liquidity front can be evaluated.

Before preparing any of the above three proforma financial statement, it is essential to first prepare one projected income statement. This is because either projected profits or projected fund/cash provided from operations in the future is an essential input to these. Sales forecast is the first and most critical input in this direction. Such a forecast has been based on the analysis of the likely situation of the economy. Industry demand of the product, market share and marketing efforts of the firm etc. This forecast may result from the internal marketing research efforts or can be obtained from some external agency.

Having obtained the sales forecast, the other variables of income statement and balance sheets can be projected using various techniques of forecasting and, then, proforma financial statement can be prepared. For reporting immediate period cash flow forecast, proforma receipts and disbursements statement is often used. An important point to remember is that a proforma financial statement is a format that reports forecast data relating to sales, expenses and other financial parameter. It is not a technique of forecasting.

SELF ASSESSMENT EXERCISE 1

Explain the following terms:

1. Time dimension
2. The budget period
3. The immediate time.

SELF ASSESSMENT EXERCISE 2

Write briefly on the reporting framework of cash flow forecasting.

4.0 CONCLUSION

This Unit has dealt with cash flow forecast.

5.0 SUMMARY

Liquidity is the ability of a firm to generate cash in order to meet its obligations. It is represented by cash flow and not by an individual asset or a group of assets as on a particular point in time. Cash as a flow is a

better measure of liquidity. In order to manage liquidity in an efficient and effective manner in he firm; it requires management to select the time horizon, the critical variable to be forecasted, their elements and sub-elements, technique of forecasting and the pro forma on which to report the forecast data. For short-term liquidity management, the variables to be forecasted usually are, sales collection from receivables, purchase of raw materials, operating expenses, taxes and dividend payments.

6.0 TUTOR-MARKED ASSIGNMENT

Which of the following items increase spontaneously with increase in sales? Give reasons.

(1) Fixed Assets
(2) Accrued Wages
(3) Cash
(4) Long-term Loans
(5) Bank Loan
(6) Inventory
(7) Account Payable
(8) Account Receivables
(9) Retained Earning
(10) Issue of Shares

7.0 REFERENCES/FURTHER READINGS

George E. Pinches, *Essential of Financial Management*

Denzil Watson and Tony Head. *Corporate Finance, Principles and Practice.*

UNIT 4 CASH FLOW FORECASTING II

CONTENTS

1.0 INTRODUCTION

This Unit is a continuation of Module 2 Unit 3. In this Unit, we shall discuss various techniques of cash flow forecasting in managing liquidity and the choice of technique.

2.0 OBJECTIVES

After you have studied this Unit, you should be able to select the best technique for a particular company in question.

3.0 MAIN CONTENT

3.1 Techniques of Forecasting

There are various techniques of cash flow forecasting available. However, the most useful methods for cash flow forecasting are discussed below;

3.2 Direct Estimates

Under this approach, there is direct estimation of an element value based on expert input obtained from various corporate sources or simply intuition. Sometimes, it is also referred to as “back of the envelope” approach. A large number of firms, big or small, make use of this technique to a limited extent at least.

3.3 Ratio Forecast

Under this approach, the fixed relationship or ratio between one element to another or to the total forecast is used as the basis. The percent of sales method is very popular in this category. Under this accounting-based forecasting method, it is assumed that the business pattern of the firm repeats year after year with minor changes. Thus, the fixed historical relationship between two variables can be used to predict future performance of forecast variables. As sales is the most critical variable of the firm, other variables are related to it.

3.4 Percent of Sales Method

Under this method, the first step is to isolate those items of income statement and balance sheets that change directly with sales. If we look at income statement, most of the items included in this are expected to vary with sales. For example, cost of goods sold and selling expenses increase with the increase in sales, so is the case with administrative expenses. At this stage, it may be pointed out that a part of these expenses may be fixed in nature. This will require an adjustment in the data as only that part of the expenses which vary with sales is to be used for forecasting under this approach. Again, financing expense like interest would not vary with sales as it is a function of financing decision of the firm.

Likewise, balance sheet items that are expected to vary with sales have to be separated from those that do not vary. Normally, components of current asset like cash, inventory and receivables increase with the increase in sales and decrease with its decrease. Other item of assets like fixed assets is not expected to change with the change in sales. But if the firm is working at full operating capacity, additional sales would be possible only if capacity is increased leading to increase in fixed asset. This means that for a firm working on full operating capacity, both current assets as well as fixed assets are expected to increase with increase in sales. Otherwise, only current assets would increase.

On the liability side of the balance sheet, not all items of current liabilities provide spontaneous financing to the firm. That means they do not automatically increase with an increase in sales. Bank loans do not automatically increase. Management has to make a deliberate attempt to negotiate with the bank for any additional loan. So is the case with other non-current source of financing like long-term loans, equity capital, etc. Account payable, however, tend to vary with sales. An increase in sales may result in increased material purchased on credit and thereby, an increase in the amount of account payable.

After having isolated the items that tend to vary with sales, the next step is to express these items as percent of sales. Remember, the asset side of the balance sheet reflects use of financial resource while liabilities side reflects the sources. The differences between the two will help us to find out the external funds required by the firm. This can be highlighted by a simple illustration given below.

Illustration: ADO & COMPANY

The balance sheet of Ado and Company as at 31st December 2000 is given below. The sales during 2000 were N400, 000 and the profit margin was 10 percent. It was expected that sales would go up to N600, 000. Management would like to have the same dividend pay out ratio of 40% as that of last year. The firm is working at less than its full operating capacity.

ADO & COMPANY

Balance Sheet as at 31 Dec., 2000

Assets	**Amount (Naira in '000)**
Cash	10
Debtors	90
Inventories	200
Total current assets	300
Net fixed assets	300
Total	600
Liabilities	
Accounts payable	40
Accrued wages	50
Bank loans	10
Total current liabilities	100
Long term loans	300
Equity capital	50
Retained earnings	150
Total liabilities	600
Income Statement during the year ending 31 Dec. 2000	**Amount (N '000)**
Sales	400
Cost of goods sold and other exps.	300
Profit before interest and tax	100
Interest expenses	20
Profit before tax	80
Tax (50%)	40
Net profit	40

Step by step solution

Step I:

Isolate balance sheet items that vary with sales and calculate them as percent of sales in order to find out the amount of working capital that needs financing from various sources internal as well as external thus:

Balance sheet items as percent of sales

Assets	Items as % of sales
Cash	2.50
Debtors	22.50
Inventories	50.00
Total current assets	75.00
Net fixed asset	N.A
Liabilities	10.00
Account payable	12.50
Accrued wages	N.A
Bank loans	N.A
Long-term loans	N.A
Equity capital	N.A
Retained earnings	N.A
	22.50

Note: N.A. stands for not applicable.

Step II

Compute additional funds required for working capital, i.e. use of fund – financing. Thus 75.00 – 22.50 = 52.50% of additional sales; so additional fund required for working capital in 2000 = 0.525 x ₦200, 000 = ₦105, 000
Where: additional sales = 600,000 – 400,000 = 200,000.

Step III

Calculate funds generated from operation of the business during 2000. It can be calculated as follows:

	Amount (Naira in '000)
Net sales	600
Cost of goods sold (75% of sales)	450
Profit before interest and tax	150
Interest expenses	30 *
Profit before tax	120
Tax (50%)	60

Net profits	60
Dividend to equity shareholders (40% of net profit	24
Retained earnings	36

* Change in interest results from the financing decision. It does not vary with sales. Here, we have projected an additional interest of ₦10, 000 in the year 2000.

Step IV

Calculate funds for working capital required from external sources which equals total funds required minus funds provided from internal operations. That is, funds for working capital required from external sources = ₦105, 000 – 36,000 = ₦69, 000. This indicates that management has to approach outside agencies to get N69,000.
External funds required (EFR) can also be calculated by using the following formula:

$$\text{i.e. } \frac{EFR}{S} = \frac{AS}{S}(S) + \frac{AF}{S}(S) - \frac{BS}{S}(S) - \frac{MB}{S}(S)$$

Where AS = refers to assets that increase spontaneously with sales as a % of sales (S).

AF = refers to assets that increase in 'lumps' and management takes
S investment decision but are related to S sales and expressed as its percentage.

BS = refers to liabilities that vary directly with sales as expressed as
S % of sales

S = additional sales
M = profit
B = retention ratio
S_1 = projected sales

To compute EFR for Ado & Company:

= (75% x 200,000 – 22.5 x 200,000) – (10%) (60%) = 600,000
= 150,000 – 45,000 – 36,000
= ₦150, 000 – 81,000
= ₦69, 000.00

Assuming that management obtains N19,000 from bank loan and N90,000 from long-term sources and the total increase in interest sums up to N10,000 as projected. The projected balance sheet of Ado & Company for 2000 would look like this:

Projected balance sheet as at 31 December, 2000

Assets		Amount (Naira '000)
Cash		15
Debtors		135
Inventory		300
Total current assets		450
Net fixed assets		300
Total assets		750
Liabilities		
Account payable		60
Accrued wages		75
Bank loans (10 + 9)		29
Total		164
Long-term loan 300 + 50		350
Equity capital		50
Retained earning (150 +36)		186
Total liabilities		750
Projected fund flow statement		
Sources of funds		Amount (N in '000)
Fund from operations		60
Long-term loans		50
		110
Uses of funds		
Fund from operations		24
Increase in net working capital		86
		110
Schedule of change in NWC		
	CHANGE +	(N in '000)
Cash		5
Debtors		45
Inventory		100
Accounts payable	20	
Accrued wages	25	
Bank loans	19	
	64	150

Increase in NWC = ₦150, 000 – ₦64, 000 = ₦86, 000
(+) here refers to source of funds
(-) here refers to the use of funds.

Projected cash flow statement

For this, we have to calculate cash from operations in the following manner:

		₦ in '000
Net profit		60
Less increase in current assets (except cash)	45	
Debtors	100	
Inventory	145	- 145
Add increase in current liabilities		
Accounts payable	20	
Accrued wages	15	
Bank loans	19	+ 64
Cash flow from operations		– 21

Proforma cash flow statement

Sources of cash flows	₦ in '000
Long term loans	21
Dividends	24
Increase in cash balance	50

You must have observed from the above that pro forma financial statement are not the techniques of forecasting, but merely framework for reporting the projected flows. These are in no way related to the flow of developing or generating the forecast data. For generating forecast data, you must have further observed that the percentage of sales technique is very simple and convenient to adopt and is based on the following assumptions:

(1) There is a business pattern that can be observed from historical data which gets repeated from year to year with minor changes and can be used to forecast business performance of the firm.

(2) There is a constant relationship between two variables, say, inventory and sales. The performance of the dependent variable, in this case inventory, is greatly influenced by the independent variable, i.e., sales.

Despite its simplicity, various assumption of the technique becomes its limitations. In a dynamic and complex business situation, due to the presence of multiple factors affecting the performance of operations of the business, the accuracy of the forecast data of cash flows becomes doubtful. This may lead to over-estimation or under-estimation of the required cash flows. Such a situation may be difficult to rectify at short

notice and inaccurate forecasts may prove very costly to the firm under the light interest rate situation.

3.5 Statistical Technique

In view of the limitation of the techniques discussed above, more refined techniques of cash flow forecasting are advocated. In actual practice, it is observed that there is a growing tendency on the part of practicing managers to adopt more refined, objective and quantitative techniques and sophisticated models for forecasting of each flow. This is because these quantitative techniques are commonly used to:

(1) provide accurate forecast;
(2) develop statistical measures to determine the accuracy of forecast, so that management can rely on the forecast with certain degree of confidence;
(3) construct models that incorporate changes over time and techniques used for different time horizons;
(4) reduce the direct cost of estimation.

The statistical techniques advocated for cash flow forecasting can be grouped into two categories:

(i) Time series techniques
(ii) Casual techniques.

3.3.1 Time Series Techniques

Under these techniques, historical financial data for a specific variable to be forecasted is collected at regular intervals, say daily, weekly, monthly and quarterly. The analysis is then conducted to find out the factors, like trend, seasonal, cyclical and erratic or irregular variation that influence the time series. On this basis the forecasting of cash flows is done.

Two techniques are generally used in this regard. These are:

i. Smoothing Techniques; and
ii. Decomposition Techniques.

i) Smoothing Techniques

Under this technique, the smoothing or averaging of historical data is done in order to eliminate the presence of extreme random fluctuations. Then, forecast is based on the expected average value. The application of smoothing techniques is generally suitable for forecasting those elements of cash flow whose value change only slightly from one period

to another. However, there may be occasions when there are significant changes. For example, daily cash sales are one such element to which these techniques apply. The daily cash sales may vary depending upon the day of the week, but the variation between sales; say on one Tuesday might not be much compared with that of another Tuesday.

Types of Smoothing Techniques

Two common type of Smoothing Techniques are:

(a) Simple Moving Averages;
(b) Exponential Smoothing.

1) Simple Moving Average

Under this technique, the forecast value of the element is calculated by eliminating random fluctuations. This is done by averaging a number of past observations. The determination of the number of past observations to use for analysis is very critical in this technique, and is initially selected by management and this remains unchanged for the future.

As a general rule, it should be an optimal time period and it should be carefully determined. For this, it is suggested that management should attempt an evaluation of varying time periods on the basis of forecasting error that have occurred. Using each such time period and based on the forecasting errors computed the mean square errors may be compared, thus, the time period should be selected for which mean square error is minimum.

Table A shows the cash flow forecast of sales based on a 3-week as well as a 5-week moving averages. Accordingly, cash flow forecasts of sales for the first week of April are also given.

In Table B, we have shown how the means squared error can be calculated to select the time period. As you will observe, the mean squared error in case of 3-week moving average is less as compared to that of 5-week moving average. Thus, the 3-week moving averages can be selected.

By this time, it must be clear to you that while adopting moving averages, we are averaging over several periods giving equal weightage to all observations. But it may be possible that a more recent observation contains more meaningful information on trend movements. Additionally, this method requires a lot of data depending upon the items to be forecasted which becomes costly.

Table A: Cash Flow Forecast Based on 3-Week/5-Week Moving Average Method

Time	Actual Sales ₦'000	Sales forecast with 3-week moving average ₦'000		Sales forecast with 5-week moving average ₦'000	
		MT	MA	MT	MA
Jan: Week 1	400	-	-	-	-
Week 2	480	1,340	447	-	-
Week 3	460	1,360	453	2240	448
Week 4	420	1,360	452	2350	470
Feb: Week 1	480	1,410	470	2340	468
Week 2	510	1,460	489	2370	474
Week 3	470	1,470	490	2470	494
Week 4	490	1,480	493	2490	498
Mar Week 1	520	1,510	503	2440	488
Week 2	500	1,480	493	2450	490
Week 3	460	1,520	480	2440	489
Week 4	480	1,500	473	-	-
Apr Week 1	480	-	-	-	-

Table B: Moving Average Forecasting Errors

	Actual Cash Sales (N)	3-Weekly Moving Average (MA)			5-Weekly Moving Average (MA)		
		Fore-cast	Error	Error Square	Fore-cast	Error	Error square
Jan: Week 1	400	-	-	-	-	-	-
Week 2	480	447	+33	1,089	-	-	-
Week 3	460	453	+ 7	49	448	+12	144
Week 4	420	453	-33	1,089	470	-50	2,500
Feb: Week 1	480	470	+10	100	468	+12	144
Week 2	510	489	+21	441	474	+36	1,296
Week 3	470	490	- 20	400	494	-4	16
Week 4	490	493	-3	9	498	-8	64
Mar: Week 1	520	503	+17	289	488	+32	1,024
Week 2	500	493	-7	49	490	+10	100
Week 3	460	480	-20	400	489	-29	841
Week 4	480	473	+7	49	-	-	-
Apr: Week 1	480	-	-	-	-	-	-
Total squared Error				3,964			6,129
Mean squared Error				360.36			681

ii) Exponential Smoothing

To overcome the limitations of the simple moving average method and more weightage to the more recent observations, exponential smoothing technique is generally adopted. This technique needs only actual value

and forecast value for the current period, and uses a weighting factor 'a' to apply to the variance between the forecast value and actual value to forecast next period. Thus:
New Forecast = Old Forecast + α (Latest Observation – Old Forecast)

$$F_{t+1} = F_t + a(X_t - F_t)$$
$$= a X_t + (1 - a) Ft$$

Where:

F_{t+1} = the forecast value for the next period
F_t = the forecast value for current period
a = the weight factor – between 0 and 1
X_t = the actual value for the current period

Table C illustrate the application of exponential smoothing technique.

Table C: Cash Flow Forecast by Exponential Smoothing

Time	Actual cash sales (₦'000) [Xt]	Sales forecast a = 0.8 (₦'000) [Ft]
Jan: Week 1	400	-
Week 2	480	400
Week 3	460	464
Week 4	420	460.8
Feb: Week 1	480	428.16
Week 2	510	468.63
Week 3	470	501.93
Week 4	490	470.38
Mar: Week 1	520	487.28
Week 2	500	513.45
Week 3	460	502.69
Week 4	480	468.54
Apr: Week 1	480	477.71

Calculations

The exponential forecast model is:

$$F_{t+1} = 0.8X_t + 0.2 F_t$$

Jan:	Week 1	F_1	?		
	Week 2	F_2	400		
	Week 3	F_3	0.8 x 480 +0.2 x 400	=	464
	Week 4	F_4	0.8 x 460 + 0.2 x 464	=	460.8
Feb:	Week 1	F_5	0.8 x 420 +0.2 x 460.8	=	428.16

	Week 2	F_6	0.8 x 480 + 0.2 x 428.16	=	469.632
	Week 3	F_7	0.8 x 510 + 0.2 x 469.632	=	501.926
	Week 4	F_8	0.8 x 470 + 0.2 x 501.926	=	470.385
Mar:	Week 1	F_9	0.8 x 490 + 0.2 x 470.385	=	487.277
	Week 2	F_{10}	0.8 x 520 + 0.2 x 487.277	=	513.455
	Week 3	F_{11}	0.8 x 500 + 0.2 x 513.455	=	502.691
	Week 4	F_{12}	0.8 x 460 + 0.2 x 502.691	=	468.538
Apr:	Week 1	F_{13}	0.8 x 480 + 0.2 x 468.538	=	477.708

Apart from the small amount of data required, there is a lot of flexibility in using this technique. Management can change the degree of responsiveness desired in the forecast data by varying the value of "a", i.e., depending upon the responsiveness. It can place greater or lesser emphasis on the most recent observation. The value of 'a', therefore, is of vital significance in this approach. A manager can use his/her experience in this regard, or through trial and error process, he/she can obtain its optimal value. A better way, of course, to find out the optimal value of 'a' is to vary the value of 'a' for the same data and calculate the mean squared error and accept that value of 'a' which has least mean squared error as was done in the case of simple moving averages above. The value of 'a' so calculated, however, needs rechecking periodically and if changes in pattern of data are significant, it needs resetting.

The techniques of simple moving average and exponential smoothing attempt to derive pattern from individual observation but do not highlight underlying factors of changes, like seasonality or cyclic fluctuations for which decomposition techniques is suitable.

2) Decomposition Technique

The decomposition technique, as the name indicates, decomposes a forecast into identifiable elements like seasonal, cyclical trend and irregular fluctuation. The suitability of this technique is more in cases where the finance manager wants to separate the impact of seasonal variations from the forecast data. A cash manager may use this technique when he wants to distinguish real ruse in cash inflows and cash outflows from those that are caused by purely seasonal forces.

Under the decomposition model, analysis may take either of the following form:

(1) $Y = S + C + I + T$ (Additive Model)
(2) $Y = S \times C \times I \times T$ (Multiplicative Model)
(3) $Y = (S + C + I + T)/(S \times C \times I \times T)$ (Mixed Model)

WHERE T = Trend factor, S = Seasonal factor, C = Cyclical factor, and I = Irregular factor.

An acronym for these models is 'SCIT' Reader Remember!
The first form is additive in nature, assuming various decomposed elements to be in watertight compartments, while the second form assumes multiplicative relationship, recognizing the interactive nature of these decomposed elements. The third form is a mixture of the first two. The model to use is based on a time plot analysis as explain later.

The following steps are required in order to develop a decomposition forecast:

(1) determining the trend;
(2) defining seasonal value;
(3) developing a seasonal index;
(4) defining cyclical value;
(5) computing residual; and
(6) preparing forecast.

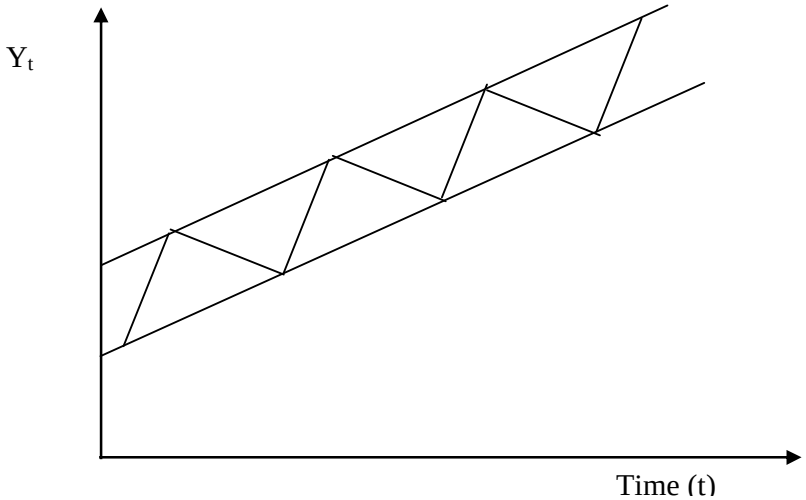
This technique has intuitive appeal as it breaks down the forecast into various elements but like any other time series technique, it suffers from the limitation that it cannot take more than two variables for analysis.

Defining Seasonal Value (s)

The seasonal variation model that defines the seasonal values of time series is usually obtained from the time plot or histogram. This is discussed below.

a. Additive Model

For an additive model, the upswings and the downswings of the time series are approximately equal over time. This is easily recognize when we make a time plot of the time series values as shown below.



Thus, an additive type of trend is one in which approximately regular amount is added or subtracted from each consecutive average value as influenced by the trend.

The seasonal variation is obtained as follows;

$$Y = S + C + I + T$$

Assume that C and I are negligible.
Then Y is = $S + T \Rightarrow S = Y - T$
But T contains C and I due to the assumption. So we obtain the seasonal variation only by adjusting the S above.

Then the adjusted S is denoted by $\hat{S}$
Therefore, the forecast of Y is given as

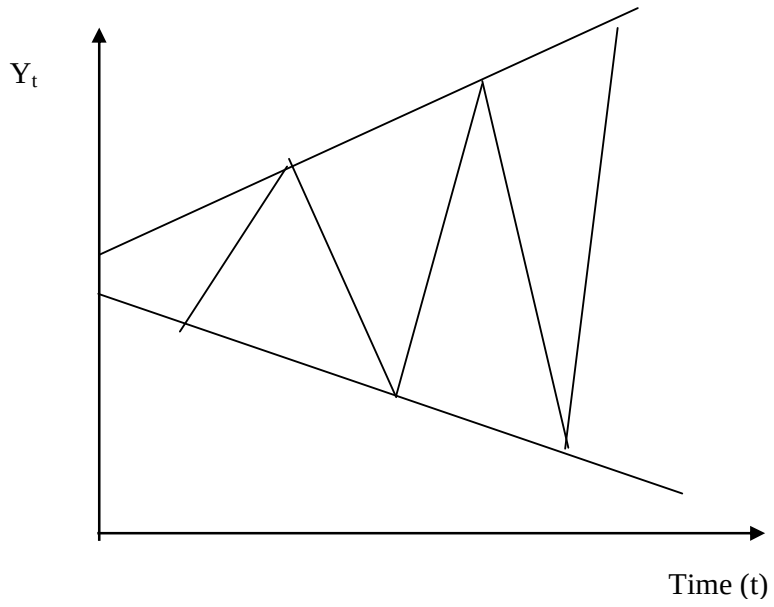
$$Y_F = T + \hat{S}$$

And the Irregular Variation (I) in the model is given as

$$I = S - \hat{S}$$

(b) Multiplicative Model

The multiplicative model is more appropriate than the additive model for forecasting when the trend is increasing or decreasing overtime, whereby variation about the trend line are not of the same size:
The figure below shows a trend of the multiplicative type (sometime known as ratio trend which is subject to a percentage increase or decrease as influence by the character of the trend.



In the above figure, the trend is increasing or decreasing geometrically in opposite directions at the same rate.

The model for multiplicative type is given as:

$$Y = S \times C \times I \times T$$

As before, assume that C and I are negligible. Then,

$$Y = S \times T \Rightarrow S = \frac{Y}{T}$$

Similarly, because of the presence of C and I, in S, it is adjusted to obtain seasonal indexes ($\hat{S}$). Thus the forecast for Y is:

$$TF = T\hat{S}$$

and $I = S - \hat{S}$, as before.

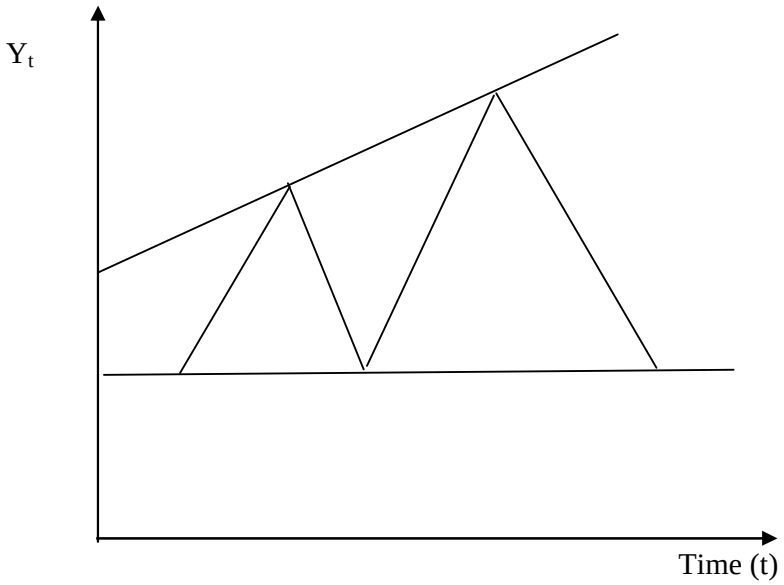
(c) Mixed Models

The mixed model is a direct combination of the two already mentioned models. The seasonal variation S and the forecast YF are obtained as;

$$S = \frac{Y - T}{T}$$

$$YF = T\hat{S} + T = T(I + \hat{S})$$

The graphical recognition is as follows;



Here the values of Y_t and t are increasing together but not at the same rate.

Illustration

Consider again the cash flow data in Table A. We can forecast sales using the Decomposition Method as follows:

(1) Determine the trend, using either of Moving Averages or Least Square Method

(2) Do a time plot or histogram of sales against time in order to determine what form of mathematical representation. (Additive, Multiplicative or Mixed) to use foe defining the seasonal variations (S)

(3) Compute seasonal variations

(4) Develop seasonal index or the adjusted seasonal variations.

(5) Define cyclical value, if necessary,

(6) Compute residual

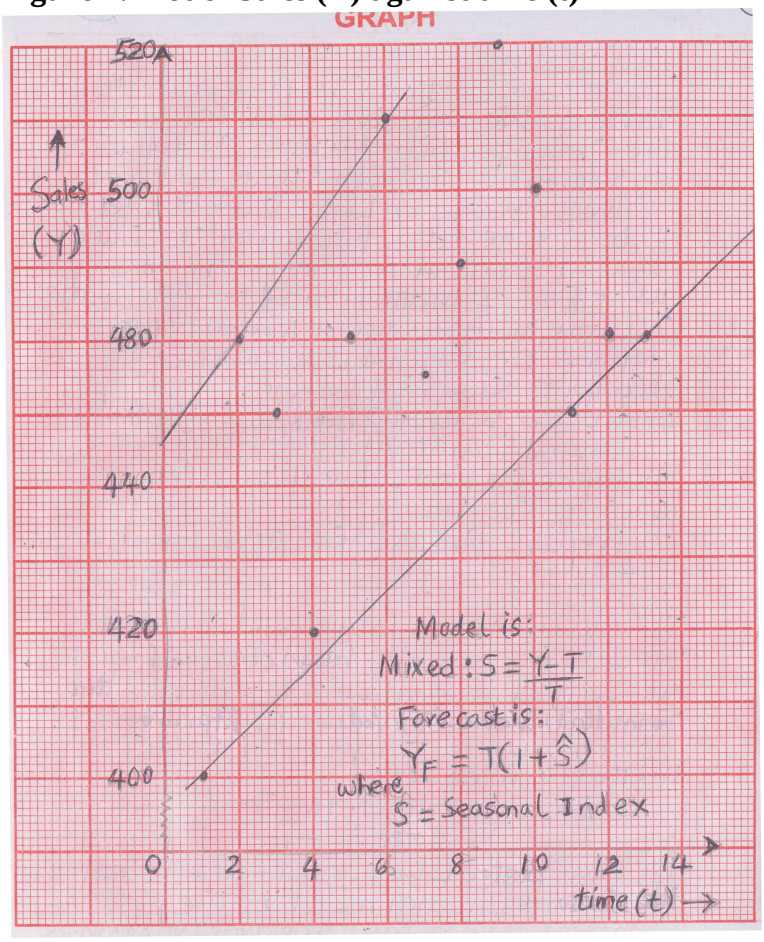
(7) Prepare forecast for April (week 2,3, and 4)

The Moving Average (MA) trend values for this data have already been obtained earlier. All we need to do now is to estimate the omitted trend (T) values for April week 1, 2, 3 and 4 using the Incremental Rate (IR) method defined as:

$$IR = \frac{\text{Last Trend} - \text{First Trend}}{\text{No. of Trend -I}}$$

We now sale values against time to determine the seasonal variation model to use.

Figure 1: Plot of Sales (Y) against time (t)



Calculation:

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Cash	MA	Seasonal variation	Seasonal Index	Irregular Fluctuation	Forecast
Month	Week	Time (t)	Sales (Y)	Trend (T)	S = (Y-Y)/T	$\hat{S}$	I = S - $\hat{S}$	Y_F = T (I+ $\hat{S}$)
Jan.	1	1	400	-	-	+0.02305	-	-
	2	2	480	447	+0.074	+0.02985	+0.04415	
	3	3	460	453	+0.015	-0.02715	+0.04215	
	4	4	420	453	-0.073	-0.02575	-0.04725	
Feb.	1	5	480	470	-0.021	-0.02575	+0.04675	
	2	6	510	489	+0.043	+0.02985	+0.01315	
	3	7	470	490	-0.041	-0.02715	-0.01385	
	4	8	490	493	-0.006	-0.02575	+0.01975	
March	1	9	520	503	+0.034	+0.02305	+0.01095	
	2	10	500	493	-0.014	+0.02985	-0.04385	
	3	11	460	480	-0.042	-0.02715	-0.01485	
	4	12	480	473	+0.015	-0.02575	+0.04075	
April	1	13	480	-	-	+0.02305	-	-
	2	14		477.72		+0.02985		491.98
	3	15		480.08		-0.02715		467.05
	4	16		482.44		-0.02575		470.02

Notes

1) Omitted Trend Values (T)

Incremental Rate (IR) = $\frac{T_L - T_F}{N\text{-}I} = \frac{473}{11} - 447 = 2.36$

Thus Trend (T) for:

April Week 1	=	473 + 1 x 2.36	=	475.36
April Week 2	=	473 + 2 x 2.36	=	477.72
April Week 3	=	473 + 3 x 2.36	=	480.08
April Week 4	=	473 + 4 x 2.36	=	482.44

2) Seasonal Index or Adjusted Seasonal Variation

S/N	Month	Seasonal Variation (S.V)				Total A.S.V	Adjustment (Adj.) = Total A.S.V. / 4
		Week 1	Week 2	Week 3	Week 4		
1	Jan.	-	+0.014	+0.015	-0.073		
2	Feb.	+0.021	+0.043	-0.041	-0.006		
3	Mar.	+0.034	-0.014	-0.042	+0.015		
4	Apr.	-	-	-	-		
5	Total S.V	+0.055	+0.103	-0.068	-0.064		
6	Average S.V (A.S.V)	+0.0275	+0.0343	-0.0227	-0.0213	+0.0178	$+\frac{0.0178}{4} = 0.00445$
7	Seasonal Index (Row-Adj.)	+0.02305	+0.02985	-0.0715	-0.02575	0	

Summary

Month	Week	Actual Sales	Sales Forecast
April	1	480	-
April	2	-	491.98
April	3	-	467.05
April	4	-	470.02

3.7 Casual Technique

These techniques are often use in place of time series techniques when the seasonal variation in the data has been averaged out, e.g., for annual summaries of transaction data. They attempt to develop casual relationship which can be described with certain degree of certainty

between two or more variables. Regression forecasting technique is an example of the casual technique.

1) Simple Regression

Under this technique of forecasting, the assumption is that variables being examined have linear relationship. If a manager is interested to forecast the value of receivables for a future period, given the historical data of sales, he can estimate the future requirements of cash for a particular projected level of sales.

The general form for the simple linear regression equation is:

$Y = a + bX$

Where Y = the forecast value of y;

a = a constant value which represents the value of y when X is zero
b = the rate of change in y corresponding to a unit change in x also known as regression coefficient
x = independent variable.

2) Multiple Regression

This technique takes into account the multiplicity of variables that affect a dependent variable. Generally, the relationship takes the following fork:

$$Y = a + b_1 X_1 + b_2 X_2 + b_n X_n$$

X_1's are independent variables, and
b_1's are the regression coefficients.

Non-Linear Regression Technique

Here, the assumption is that the relationship between variables is not linear. The reliability of the forecast results using regression techniques can be checked up by using various statistical measurements like standard error of the regression coefficient, confidence interval for the regression coefficient and the confidence interval for a specific forecast value. This increases the acceptability of these techniques for cash flow forecasting purposes.

The three (3) techniques discussed above can fruitfully be applied to the following cash forecasting elements:

(1) Annual sales
(2) Inventory levels
(3) Sale of fixed assets
(4) Account receivables
(5) Account payables
(6) Purchase of capital assets.

The time horizons of forecasting through these techniques are monthly, quarterly and annually.

Illustration

Consider again the cash flow data in Table A. We can forecast sales using the Casual technique known as Simple Linear Regression Model. Ideally,, the method is used for forecasting when the seasonal variations in the data has been averaged out, e.g., annual transaction data. The regression forecasting technique is given thus:

Month	Week	Time (t)	X = t-A = t-7	Cash Sales (Y)	XY	X^2	Forecast $\bar{\hat{Y}}$ 443.075 + 4.286t	Residual E = Y - $\hat{Y}$
Jan.	1	1	-6	400	-2,400	36	447.361	-47.361
	2	2	-5	480	-2,400	25	451.647	+28.353
	3	3	-4	460	-1,840	16	455.933	+4.067
	4	4	-3	420	-1,260	9	460.219	-40.219
Feb.	1	5	-2	480	-960	4	464.505	+15.495
	2	6	-1	510	-510	1	468.791	+41.209
	3	7	0	470	0	0	473.077	-3.077
	4	8	1	490	+490	1	477.363	+12.637
March	1	9	2	520	+1,040	4	481.649	+38.351
	2	10	3	500	+1,500	9	485.935	+14.065
	3	11	4	460	+1,840	16	490.221	-30.221
	4	12	5	480	+2,400	25	494.507	-14.507
April	1	13	6	480	+2,880	36	498.793	-18.793
Total	-	-	0	6,150	780	182		
	2	14		N/A			503.079	
	3	15		N/A			507.365	
	4	16		N/A			511.651	

The forecast for April week 2, 3 and 4 were obtained by repeated use of the forecast formula: $\hat{Y} = 443.075 + 4.286t$

Notes:

(i) Here A = Value of central time period = 7
X = Coded time
= t – A = t – 7

(ii) The regression line is fitted by;

$$\hat{Y} = a_o + bX$$
$$= a_o + bX(t - A)$$
$$= a_o + bt - bA$$
$$= (a_o - bA) + bt$$

$$\hat{Y} = a + bt$$

where $a = a_o - bA$

Also, a_o and b can be obtained by use of the formulae:

$$b = \frac{n\Sigma XY - (\Sigma X)(\Sigma Y)}{n\Sigma X^2 - (\Sigma X)^2} = \frac{3 \times 780 - 0 \times 6,150}{13 \times 182 - (0)^2} = 4.286$$

Since $n = 13$, $\Sigma XY = 780$, $\Sigma X^2 = 182$, $\Sigma X = 0$, $\Sigma Y = 6,150$

$$a_o = \frac{\Sigma Y}{n} - \frac{b\Sigma X}{n}$$

$$= \frac{6,150}{13} - 4,286 \times \frac{0}{13} = 473.077$$

Since $b = 4.286$

Thus, the line of best fit or regression line is:

$$\hat{Y} = a + bt$$
$$= (a_o - bA) + bt$$
$$= (473.077 - 4.286 \times 7) + 4.286t$$
$$= (473.077 - 30.002) + 4.286t$$
$$\hat{Y} = 443.075 + 4.286t$$

3.8 Computerized Cash Flow Forecasting Models

The techniques of forecasting discussed above can be applied using hand calculator, but computerized cash flow forecasting models are also being used by large, well-managed firm. Such models can be programmed to show the impact of different variables under different assumptions on the cash flow requirements of the firm. For example, it is very easy to find out how much cash will be needed under different level of sales, credit terms and pricing conditions. This provides a great help to management to adopt their plans/strategies accordingly.

3.9 Choice of Technique

We have discussed the various techniques of forecasting cash flow – both inflows and outflows, useful to the management in their task of managing liquidity in the business. The obvious question at this stage is, which is the best technique of forecasting that a manager should adopt in his/her firm? This is a question that has which no categorical answer. This is because the techniques discussed above need not be suitable to each and every firm and hence generalization cannot be made in this regard. Depending upon its individual requirements, it may said that instead of relying on just one technique, it is always better to use a combination of approaches. But all this has to be customized to the forecasting requirements of the company. It has been observed that the following factors generally influence firms in their choice of cash flow forecasting technique:

(1) The nature of company's business, in terms of degree of control exercised over cash inflows and cash outflows;
(2) Forecasting period;
(3) Degree of managerial appreciation and acceptance of advanced and sophisticated managerial techniques;
(4) Degree of accuracy required;
(5) Development and operational costs.

According to a survey (Parashar: 1986), about 65% of the companies polled prepared systematic cash flow forecast on regular basis whereas the remaining 35% either did not prepare or prepared only occasionally, typically when faced with a situation of credit crunch, financial losses or cash shortages. Projected receipt and disbursement has been the most commonly followed framework. Some companies adopted proforma fund flow/cash flow framework also, but the use of proforma balance for each flow forecast was almost non-existent. The use of expert or direct estimate for developing cash flow forecast values was not common; accounting ratios and statistical techniques were used only exceptionally. Though of late it has been observed that many large companies use computers for preparing cash flow forecasts.

4.0 CONCLUSION

This Unit has discussed the different types of techniques of cash flow forecasting.

5.0 SUMMARY

There are three types of cash flow forecasting techniques; they are direct estimates, ratio forecast and statistical forecast, but still the firms do

often use the first two. Many factors affect such a choice. However, before selecting a technique, cost benefit analysis should be made.

SELF ASSESSMENT EXERCISE 1

Write short notes on the following:

(1) Direct Estimates
(2) Ratio Forecast
(3) Percent of Sales Method

SELF ASSESSMENT EXERCISE 2

Describe:

(1) the smoothing technique.
(2) the decomposition technique
(3) the casual technique

6.0 TUTOR-MARKED ASSIGNMENT

Study a company of your choice and choose the best cash flow forecasting technique for, that particular company state the reasons for your choice.

7.0 REFERENCES/FURTHER READINGS

Pandey, I.M. (1988). *Financial Management.*

James, C. Van Horne (1988). *Financial Management and Policy.*

UNIT 5 CASH FLOW BUDGETING

CONTENTS

1.0 INTRODUCTION

In this unit, we shall discuss the nature and role of cash flow budget in managing the liquidity facet of working capital management in a firm.

2.0 OBJECTIVES

At the end of the unit, you should be able to:

- understand what a cash budget is
- prepare cash budget
- use cash budget for effective management of working capital.

3.0 MAIN CONTENT

3.1 Cash Flow Budgeting

Cash flow budgeting states what cash flow should be or what the management would like them to be. In fact, a cash flow budget displays a targeted cash flow profile of the business for a period of time, usually one year. But it can be prepared on monthly or even daily basis. This is a very useful tool for management, as cash flow budget performs three basic functions:

(1) it indicates the amount as well as the time when the firm will need financing;
(2) it provides basis for taking corrective actions in the case of any variation between budgeted figure and actual figure, and

(3) it acts as a benchmark to evaluate the way liquidity management is being done in the organization.

3.2 Elements of Cash Budget

The cash flow budget as stated above is a statement of the target cash inflows, cash outflows, net change in cash for the period and additional financing needed. Thus, the generic sub-elements of cash inflow and out flow are:

Cash Inflows

(1) Cash Sales
(2) Collection of receivables
(3) Sale of investment
(4) Sale of fixed assets
(5) Interest and dividend collection
(6) Bank loans
(7) Insurance of shares and debentures

Cash Outflows

(1) Payment of current liabilities like supplies of materials, pay roll expenses, taxes, etc.
(2) Draft payment
(3) Purchase of capital assets
(4) Repayment of loans
(5) Other cash outflow like interest-expenses etc.

3.3 Preparing Cash Budget

Given a cash forecast, the executive would set up target cash inflows and outflows by improving inflows and pruning and prioritizing outflows, wherever possible. This would hopefully get the management to think through the acceptability or otherwise of the operating plans upon which the cash flow budget is based. This is true especially in the context of annual cash budgets. For shorter horizon budgets like monthly, fortnightly or weekly cash budgets, these steps are minimized. Once these targets of cash inflows and outflows are set up, net change in cash for the period can be calculated. Then, adjusting this net change with opening and closing balance of cash, the amount of needed or excess cash can be found out. This is exemplified through an illustration.

Illustration of Excell Company:

The management of Excell Company wants you to prepare a cash budget for the quarter ending 31st December 19xx based on the following data.

	₦'000				
	Aug.	Sept.	Oct.	Nov.	Dec.
Total Sales -	0	100	100	90	100
Purchase of raw materials	50	65	60	55	65
Wages -	10	10	10	10	12
Expenses -	15	13	18	16	15

The estimated cash balance on 1st October, 19xx is ₦5, 000. Only 10% of the total sales of the firm are on cash basis. It is the practice of the firm to allow two months credit to its customers. Usually, the firm buys one fifth of its requirement of raw materials on cash basis, and the rest of the requirements are by credit purchases with credit period of one month. Management desires to pay an interim dividend of N80, 000 in November to its shareholders. Advance tax ₦60, 000 will be due for payment in December. It is the practice of the firm to pay wages and expenses on the last day of the month of occurrence.

Excell Company Cash Budget for year 19xx quarter ending 31st Dec.

	October	November	December
		₦'000	
Cash Inflow			
Cash sales	10	9	10
Collection from account	81	90	90
(A) Total cash inflow	91	99	100
Cash Outflow			
Cash purchase	12	11	13
Payment to supplier	52	48	44
Wages	10	10	12
Expenses	18	16	15
Interim dividend	-	80	-
Advance tax	-	-	60
(B) Total cash outflow	92	165	144
(C) Net monthly change (A) – (B)	-1	-68	44
(D) Plus opening balance of cash	5	4	62
(E) Equals closing balance of cash	4	-62	-106

3.4 Types of Cash Budget

Before concluding our discussion about cash flow budgeting, let us describe two types of cash budgets, namely: fixed and variable which are commonly followed. In practice fixed budget is the plan of cash inflow and cash outflows formulated at specific level of activity. In this case, the estimates and needs of new financing are meaningful only for that level of activity for which they were computed. The biggest limitation of fixed cash budget arises when the firm works at a different level of activity than the one anticipated while preparing cash budget, as the targeted cash flow become irrelevant. To overcome this limitation, cash budgets are prepared for different level of activity called flexible cash budgets. This type of budget are prepared as they provide additional information to management about the range of the firm's possible financing needs at different levels of its activity apart from acting as standard of performance against which performance of subordinates can be measured and evaluated.

4.0 CONCLUSION

This unit has covered cash flow budgeting, elements of cash budget, preparing cash budget, and types of cash budget.

5.0 SUMMARY

Cash budget is a detailed plan of cash inflows and outflows for a period of time. Cash budgets, apart from helping management to decide when and how much external funds will be required, provide a benchmark for performance evaluation.

6.0 TUTOR-MARKED ASSIGNMENT

Explain in a step by step manner, the process of cash flow budgeting for a manufacturing enterprise.

SELF ASSESSMENT EXERCISE 1

Define cash flow budgeting, and list the elements of cash budget.

SELF ASSESSMENT EXERCISE 2

How many types of cash budget do you know? Name and describe them.

7.0 REFERENCES/FURTHER READINGS

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Kuchhai S.C. (1988). *Financial Management.*

MODULE 3

UNIT 1 MONEY MARKET

CONTENTS

1.0 INTRODUCTION

Money market constitutes a pre-dominant source of working capital funds for business and industry. It is therefore necessary to delve on this before discussing bank and non-bank source of working capital in the remaining five unit of this module. We shall, in this unit, explain the nature and functions of money market which is the pool or reservoir from which the supplier of working capital draw the funds with which to finance business and industry. We shall also contrast capital market and money market, and formal and informal bills market, commercial bill market, inter-bank participation and certificates of deposits.

2.0 OBJECTIVES

The objectives of this unit are:

- to explain the nature and functions of money market as a source of working capital funds
- to contrast capital market and money market
- to distinguish between formal and informal money market.

3.0 MAIN CONTENT

3.1 Nature and Functions

The money market is a market for short-term financial assets that are close substitutes for money. It facilitates the exchange of money for new financial claims in the primary market as well as financial claims already issued in the secondary market. It provides a mechanism for meeting the liquidity needs of the lenders and the short-term requirements of borrowers with minimum transaction cost and delay. There is strictly no demarcated distinction between the short-term money market and the long-term capital market, and in fact, there are integral link between the two markets as the spectrum of, instruments in the two markets invariably form a continuum. However, as a matter of practice, money market deals in financial instruments/arrangements which are for a short period not generally exceeding a maturity period of 180 days.

The broad objectives of the money market are three-folds: First, it should provide an equilibrating mechanism for evenly out short-term surpluses and deficits. Secondly, the money market should provide a focal point for Central Bank intervention for influencing liquidity in the economy. Thirdly, it should provide reasonable access to users of short-term money to meet their requirement at a realistic price.

Certain important segments of money market are:

(1) Call money market;
(2) Treasury Bill market;
(3) Commercial Bill market;
(4) Inter-bank Participation certificate;
(5) Certificates of Deposits; and
(6) Commercial Papers.

SELF ASSESSMENT EXERCISE 1

State whether the following statements are true or false:

(1) The term capital market and money market have the same meaning.
(2) Money market and capital market have close links.
(3) The Central Bank of the country regulates the working of money market.
(4) Financial institutions constitute the informal money market.

3.2 Call Money Market

The call money market consists of overnight money and money at short notice for periods of up to 14 days. It essentially serves the purpose of equilibrating the short-term liquidity position of banks. The call money market as a significant component of the money market, possesses a few special characteristics, viz:

(1) call money is an instrument for ultra-short period management of funds and is easily reversible,
(2) it is primarily a telephone market and is, therefore, administratively convenient to manage for both borrowers and lenders, and
(3) being an instrument of liability management, it provides incremental funds and adds to the size of balance sheets of banks.

From the macro-side, developed call money market helps to smoothen the fluctuation in the reserve – deposit ratios of banks thereby contributing to the stability of the money – multiplier process. A stable money multiplier in turn serves as a reliable means of monetary regulation and policy guide. From the micro angle, short-run borrowing by banks improves the efficiency of funds management in two ways. One way, it enables banks to hold higher reserve deposit ratio than would be possible otherwise. In another way, it allows some banks to permanently increase their pool of investible funds; hence, active well organized call money market improves the funds management practices of banks which in turn further impact on their overall efficiency and profitability.

3.3 Treasury Bill Market

The budgetary deficit of the central government is financed though the issue of Treasury bill and/or drawing down the cash balances with the reserve bank. The treasury bills are sold at a discount by the reserve bank as the agent of the government. The major purchases are banks and the state governments. For banks, these bills have additional attraction; they provide an ideal form of short-term investment more because of their high liquidity and little of capital in case of sale before maturity. The effective return in this investment is the discount at which

they are sold and it is based on the difference between the price at which they are sold and their redemption value. Due to availability of discounting facility on such bill by reserve bank, an investor in treasury bills can earn a positive return on his investment even if the bills are rediscounted one day after their purchase. For banks, they are an eligible asset for computing statutory liquidity ratio (SLR) to be maintained by banks under the Banking Regulation Act. Treasury bills are issued in book entry form known as subsidiary general ledger account to banks and other institutional investors. To individuals, however, they are sold in the form of scripts. In well-developed money markets, treasury bills are an integral part of money market operation and an instrument of short-term borrowing by the government. This is an important tool in the hands of the Central Banks for influencing the level of liquidity in the money market through open market operations.

3.4 Commercial Bills Market

Bills rediscounting is an important segment of the money market and this instruments provides short-term liquidity to banks in need of funds. The effective cost of funds raised by scheduled commercial banks through the bills rediscounting scheme is lower than the effective cost of inter-bank term deposits/loan of over 60 days, as the latter are subject to reserve requirements. As such bank seeking funds through the money market find bill rediscounting very lucrative. The presence of a healthy bill market can enable the bank and also the other financial institutions to invest their surplus funds profitably by selecting appropriate maturities and it would impart flexibility to the money market by evenly out liquidity in the banking system, and would be more effective for monetary control. Progressive use of bills imposes financial discipline on borrowers as well as on lenders.

3.5 Inter-Bank Participation

Participation Certificates, as a money market instrument were initially intended to serve as a short-term money market instrument. Participation certificates were utilized by the financial institutions for ‘parking’ their funds for increasingly long maturities and hence this instrument was not developed for evenly out liquidity between banks and/or financial institutions. The basic tenet of participation certificate is that the credit risk of the relative advances to the borrowers designated in the certificates would be shared. Where this is not realized, the instrument mainly becomes a mechanism for obtaining additional resources rather than to share the advances as part of evenly out liquidity.

3.6 Certificates of Deposit (CD)

With a view to further widening the range of money market instruments and to give investors great flexibility in the deployment of their short-term surplus funds in the money market, banks quote rates on CD; those rates are changed periodically in keeping with changes in other money market rates. Yields on CD are greater than those on treasury bills and repose about the same as those in banker's acceptances and commercial paper. Original maturities of CDs generally range from 30 to 60 days. A fair secondary market has developed for the CDs of the large money, market banks. Default risk is that of the bank failing, usually a small possibility. Like bankers' acceptances, corporations buy domestic as well as CDs of large foreign banks.

3.7 Factoring

Factoring is a financial service designed to help firms in managing their receivables better. It involves an outright sale of the receivable of manufacturing or trading firms to a financial institution called the "Factor" who specializes in the management of trade-credit. A factor collects the accounts on the due dates, effects payments to the firm on these dates irrespective of whether the customers have paid or not and also assumes the credit risks associated with the collection of accounts. For rendering these services, the fee or commission charged is usually a percentage of the value of receivables factored.

Again, factoring arrangements are governed by a contract between the factor and the client. The contract frequently is for 1 year with an automatic provision for renewal and this can be cancelled only with prior notice of 30 to 60 days. Although it is customary in a factoring arrangement to notify customers that their accounts have been sold and that payments on the account should be sent directly to the factor, in some instances modification is not made. Customers continue to remit payments to the firm which in turn, endorses them to the factor. These endorsements are frequently camouflaged to prevent customers from learning that their accounts have been sold.

The typical factoring is continuous. As new receivables are acquired, they are sold to the factor and the firm's account is credited. The firm then draws upon his account as it needs funds. Sometimes the factor will allow the firm to overdraw its account during periods of peak needs and thereby borrow on an unsecured basis under other arrangements; the factor may withhold a reserve from the firm's account as a protection against losses. The principal sources of factoring are commercial banks, factoring subsidiaries of bank holding companies.

Factoring, like the assignment of accounts receivable, affords the firm flexibility in the financing. As sales increases, and the firm needs funds, financing becomes available automatically. This eliminates the uncertainty associated with the collection cycle. Consequently, the cash flows of the firm are more predictable. Although some people attach a stigma to the company that factors, in many quarters, it is regarded as a perfectly acceptable method of financing. Its principal shortcoming is that it can be expensive. We must bear in mind, however, that the factor often relieves the firm of credit checking, the cost of processing receivables and collection expenses. For a small firm, the savings may be quite significant.

4.0 CONCLUSION

In this unit, we have discussed the nature and functions of money market as a source of working funds.

5.0 SUMMARY

Money market essentially provides a mechanism for meeting the liquidity needs of the lenders and the short-term requirements of borrowers with minimum transaction cost and delay. As a matter of practice, it deals in financial instruments/arrangements which are for a short period of time not generally exceeding a maturity period of 180 days. There is, however, strictly no demarcated distinction between money and capital market as the players are common and the spectrum of financial instruments/arrangements in the two markets invariably form a continuum. In a nutshell, this unit has provided an idea about the pool of fund from where the suppliers of working capital finance to business and industry, i.e., commercial banks and others, draw short term finance.

SELF ASSESSMENT EXERCISE 2

Write short notes on the following:

(1) Treasury Bills
(2) Commercial Bills
(3) Certificates of Deposit

6.0 TUTOR-MARKED ASSIGNMENT

What is money market? List the broad objectives of money market.

7.0 REFERENCES/FURTHER READINGS

Bank Management by George Hempel.

UNIT 2 BANK CREDIT: THE FRAMEWORK I

CONTENTS

1.0 INTRODUCTION

Bank credit constitutes one of the major sources of working capital finance for trade and industry. In this Unit, we shall discuss the principles of bank lending, the forms of credit extended and the types of security required by banks.

2.0 OBJECTIVES

The objectives of this unit are:

- to explain the regulatory framework of bank credit
- to discuss the principles of bank lending
- to pinpoint the types of security accepted by banks and the forms of credit extended by banks to meet working capital needs of trade and industry.

3.0 MAIN CONTENT

3.1 Credit Control

All the functions of commercial banks are governed by the Banking Regulation Acts as amended from time to time. The Banking Regulation Act defines the three terms “banking”, “banking company” and “banking policy”. In terms of the act, banking means “accepting for the purpose of lending or investment of deposits of money from the public, repayable on demand or otherwise withdrawal by cheque, draft, order or otherwise. Banking company means any company which transacts the business of banking. Banking policy means any policy

which is specified from time to time by the Central Bank in the interest of banking system or in the interest of monetary stability or sound economic growth, having due regard to the interest of the depositors, the volume of deposits and other resources of the bank and the need for equitable allocation and the efficient use of these deposits and resources. The banking regulation act has provided vast power to the Central Bank of Nigeria to control the pattern, direction and extent of credit.

The specific authority vested in the Central Bank of Nigeria includes among others, the power to issue direction either generally to all banks or to a ban in particular as to:

(a) the purposes for which advances may or may not be made;
(b) the margin to be maintained in respect of secured advances;
(c) the maximum amount of advances or other financial accommodation which, having regard to the paid up capital, reserves and deposits of a banking company and other relevant consideration, may be made by that banking company to any one company, association of persons or individual;
(d) the rate of interest and other terms and conditions on which advances or other financial accommodation may be made or guarantee may be given.

The credit control measures are framed by the Central Bank in line with the monetary policy of the country. The objectives of the monetary policy are in two folds:

- to facilitate adequate flow of volume of bank credit to the various sectors with specific reference to the weaker sector;
- to keep on inflationary pressures by ensuring restraint on credit expansion and proper economic development. The monetary policy and the measures taken under it from time to time, assist in controlling expansion of money supply in ensuring price stability, both of which are necessary conditions for planned economic development.

3.2 Principles of Bank Lending

Over the years, bankers have evolved some principles of lending, broadly these principles are:

- The borrower must inspire confidence in his bank with his integrity and ability to run the venture. He must have adequate stake or capital in the venture, he should neither over –trade nor indulge in speculative activities.

- The venture of the borrower must be acceptable to the bank in terms of the policy guidelines and instructions of the government issued by Central Bank of Nigeria and of the Bank itself. An acceptable venture must be viable, i.e., capable of generating profits.
- The resources of a bank are of short-term nature being demand deposits (current and savings) and medium term/time deposits (fixed deposits etc). Therefore, banks generally lend on short term basis, i.e., for meeting the working capital needs of their customers. Long term loan are also extended, but only for certain specified purposes to certain categories of customers. The bank has to ensure that credit lent is well spent i.e. the end-use of the credit is in accordance with the terms of sanction.
- A venture which is well managed by honest and profession person or persons is the ultimate security to a bank. However, even good ventures are known to fail for a variety of causes. Therefore, when a bank calls security for extending credit limit, it is taking an insurance against unforeseen events such as business failure, diversion of funds, etc.
- As a bank lend on short-term, it expects its loan and advances to be repaid or liquidated as per term of sanction. This is necessary since a bank has to keep its assets as liquid as possible to meet all possible demand or withdrawals of its depositors from time to time.
- The principles of lending in fact involve a pre-sanction appraisal and a post-sanction follow up and control. The pre-sanction appraisal determine the credit worthiness of the customer; the purpose for which he needs a credit facility and the need or quantum of the facility. The post-lending control, through periodical statements, inspections and reviews determine the end-use of the credit facility. Should the periodical reviews show unhealthy symptoms such as mis-utilization of the facility or non-viability of the venture, the bank may seek to recall the facility or initiate recovery proceedings.

3.3 Security for Bank Credit

Bank credit is extended to individual customers for two-fold purposes, namely: to bridge the short-term resources gap and to act as a stimulant to production and sales. The level of credit to be extended depends upon the need and end-use of the credit by each customer. Bank credit is generally secured but unsecured loans and advances are also extended depending upon the needs of the customers. It is a maxim that the best security to the bank is a well-managed business run by competent people. However, looking at the vicissitude in business, banks take resources of various forms as securities some of which have been

indicated below. This does not mean that banks are rigidly security-oriented in their lending. Security merely serves as an insurance in the event of default by the customer to repay his bank loan when due.

The various type of activities in regard to which the working capital needs are financed by banks include trading, manufacturing, processing etc. whether in small scale, medium scale or large scale. These activities could be either seasonal or non-seasonal. Example of seasonal activities includes trading in manufacturing goods or processing of agro-based commodities. Bank credit may be extended either in a secured form or unsecured form. The banking regulation Act defines a secured loan or advance as a loan or advance made on the security of assets, the market value of which is not at any time less than the amount of such loan or advance. And unsecured loan or advance means a loan or advance not so secured.

The security for bank credit for working capital purposes is in the form of:

(1) Goods/stocks which include raw materials, work-in-process, finished goods, consumables spares and stores;
(2) Accounts receivable or book debts;
(3) Bills of exchange drawn by the customer on its buyer representing genuine trade transaction.

Securing for bank credit could be in the form of a direct security or an indirect security. Direct security includes the stocks and receivables of the customers on which a charge is created by the bank through various security documents. If in the view of the bank, the primary or direct security is not considered adequate, or is risk-prone, that is subject to heavy fluctuations in prices, equity etc., the bank may require additional security either from the customer or from a third party on behalf of the customer.

The additional security so obtained is known as ‘indirect’ or ‘collateral security’. The term collateral means running parallel or together and collateral security is an additional and/or separate security for repayment of money borrowed. In case the customer is unable to provide additional security when required by the bank, he may be required to provide collateral security from a third party. The common form of third party collateral security is a guarantee given by a person on behalf of the customers to the bank. The third party collateral security in turn may be secured or unsecured. For example, where the guarantor has executed a guarantee agreement only, the collateral security is unsecured. However, if he lodges along with the guarantee agreement security such

as title deeds to his property, creating mortgage by deposit of title deeds with the bank, a secured collateral security is created.

SELF ASSESSMENT EXERCISE 1

State whether the following statements are true or false:

(1) Banks take security because they do not trust their customers.
(2) Collateral security can be provided by the borrower himself.
(3) Agro-based commodities are price "sensitive" and are not financed by banks.

3.4 Forms of Bank Credit

The form in which the banker will extend credit is linked to his own policy and the directives of Central Bank of Nigeria within the sanctioned limit. A banker may allocate limit or sub-limit within the sanctioned limit for drawings against stocks, book debts and bill receivables which constitute primary security for bank's short term credit.

When the primary security is not considered adequate, further security such as collateral, may also be obtained. Working capital finance can be made available to the borrower in the form of either a loan or an advance. Popularly, the loan form is known as demand loan and advance form for a cash credit facility. Both being secured by pledge or hypothecation of goods. The cash credit amount is a running account on which drawing can be made by the borrower, within the drawing power. For business purposes, and subsequent deposits of sale proceeds on realization from time to time. Cash credit facility can also be extended against the hypothecation of book debts of the borrower. Let us discuss various forms of bank credit in detail.

Advance Against Pledge o Goods

Banks extend advances against pledge of goods in two forms:

Lock and key type of pledge:

This is a pledge in which the goods are stored in a go down under the bank's lock and key facility (under the personal supervision of the bank's keeper) and the key is held in the possession of the bank. Withdrawal of goods is accomplished by deposits of cash in the borrower's account equal to the value of goods required to be withdrawn, less margin. The goods are insured in the joint names of the

bank and the borrower for full value of the goods and the policy lodged with the bank.

Open factory type pledge or open key advance:

This is a pledge in which the pledge has possession of the goods for the limited purposes of manufacturing, processing, etc. The borrower has to submit periodical stock statements to the bank based on which the drawing power is determined. The bank may undertake periodical inspection of the goods pledged to ensure the correctness of quality, quantity and value. The bank also appoints a watchman, at a cost to the borrower, to have control over the factory and goods.

Advance against hypothecation of good:

Under this arrangement, the borrower hypothecates the goods to the bank. Goods remain in the possession of the borrower and he is free to utilize them as he deems fit. The borrower periodically submits statement of stock hypothecated to the bank and gives a declaration regarding his clear title to the goods and the correctness of the quality, quantity and valuation thereof. It is expected that the drawings in his account at all times are covered by sufficient stocks after maintaining stipulated margin.

Advance against book debts:

Book debts are the outstanding debit balances in the firm's ledgers representing the dues owing to the firm from its customers or dealer.
They evidence the sale of goods made or services rendered on credit term. Book debts are also known as accounts receivable. In terms of the transfer of Property Act, book debt may be assigned or hypothecated to the bank.

Advances against bills:

Outstanding bills of exchange drawn by the seller on his buyer are known as bills receivable. Bills can be drawn, payable at sight or at tenor (after the expiry of stipulated period of time). A bill payable at sight is called a demand bill or sight draft. A bill payable at tenor is called a Usance Bill, the term Usance meaning time allowed for payment of the bill. A bill of exchange is a clean bill if it is unaccompanied by documents.

A seller after despatching his goods to the buyer and having drawn a bill of exchange, based on the sale contract, submits the bill together with the document of title to goods and invoices, insurance policy, etc., to his

banker, who may purchase/negotiate the demand/usance bill and pay its value to the seller customer after charging a small commission/discount charge. The bill is then sent to the drawee through the banks for acceptance/payment whereupon the bill of lading. When due, the proceeds received from the acceptor is remitted to the purchasing bank. A bill arising out of a bonafide trade transaction constitutes a good security as the title to the goods is passed on to the banker by endorsement and delivery of the bill of lading.

Since the system of bill finance involves a certain element of discipline regarding genuineness of the trade transaction and of strict scheduling of payment. Due to this point, borrowers are encouraged to switch over from book debts financing to bill finance.

4.0 CONCLUSION

In this Unit, we have treated the framework of bank – credit and the principles of bank lending and types of security.

5.0 SUMMARY

In this Unit, we have discussed the framework of credit control. We have also discussed the basic principles of bank lending and the forms of bank credit.

SELF ASSESSMENT EXERCISE 1

Write the principles of bank lending.

SELF ASSESSMENT EXERCISE 2

Mention two forms of bank credit and describe them.

7.0 REFERENCES/FURTHER READINGS

Essays in Money and Banking by S. O. Asabia.

Economic of Money and Banking by Goldfield

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UNIT 3 BANK CREDIT: THE FRAMEWORK II

CONTENTS

1.0 INTRODUCTION

In this unit, we shall discuss non-fund based facilities and also cover credit investigation and post lending control aspect of bank credit.

2.0 OBJECTIVES

The objective of this unit is to pinpoint the types of non-fund based facilities extended by banks to meet working capital needs of trade and industry.

3.0 MAIN CONTENT

3.1 Non-Fund Based Facilities

The credit facilities referred to in Unit 9 are fund based facilities which provide funds to the customers to meet their working capital requirements. Often, banks are also required to extend non-fund based credit facilities to customers. Such facilities include: letters of credit and bank guarantees. Banks normally undertake a proper approval of the financial standing and requirement of the customer for non-fund based facilities just as in the case of fund based ones. This is because though the bank, in case of a non- funded facility, commits itself to pay only in the event of non-payment by the customer or non-performance of the customer, the possibility non-performance of the given real or funded credit facility on the customer's credit cannot be ruled out. Let's discuss these in detail.

Letter of Credit:

A letter of credit (LC) is a written undertaking by a bank on behalf of its customer, who is a buyer; to the supplier promising to pay a certain sum of money provided the supplier complies with the loan and conditions embodied in the letter of credit. A letter of credit is required where the supplier of goods and services deals with unknown parties or otherwise feels the need to safeguard his 00.000interest. In such circumstances, he stipulates in the sales contract with he buyer that the goods will be supplied and payment made only under a bank's letter of credit. A conditional commitment to make the payment is made by the bank which gives an assurance to the supplier that he will receive the necessary payment provided he does what the buyer requires him to do within the time period specified in that regard

In letter of credit transactions, bank's deal in documents and not in goods. The LC is an autonomous transaction quite distinct from the sale and purchase contract on which it may be based. The bank issuing the LC has to make up its mind within a reasonable time on receipt of the documents whether to accept or reject them. Bank LCs is governed by the Uniform Customer and Practice for Documentary Credit (UCPDC) of the international chamber of commerce (ICC), Paris.

Bank Guarantees

In the course of business, banks are often called upon by their customers to issue on their behalf a variety of bank guarantees. These may be short term or deferred payment guarantees extending over a period of time and depending upon the purpose which may be classified as performance or financial guarantee. A bank guarantee, which guarantees the satisfactory performance of an act, say, completion of a civil construction by the customers, failing which the bank will make good and loss suffered by the beneficiary, may be termed as a "performance" guarantee. A bank guarantee, guaranteeing the repayment of money (such as advance payment received under civil construction contracts) on default by the customer in complying with the term of his contract with the beneficiary is a "financial" guarantee. Very often, customers have to make one of the terms of tender for the bid in that either earnest money deposit must be made or bank guarantee in lieu of the earnest money tender be provided. Such guarantees, which are issued by banks in lieu of tender of earnest money by customer, are known as bid bonds or earnest money guarantees. In case the customer is successful in his bid, the other party may require performance guarantee from a bank to ensure compliance with the terms of contract for supply or erection of the machinery etc. In such circumstances, banks extend performance guarantee limiting their commitment to

paying a stated sum of money in the event of non-performance of the contract by the customer. In certain contracts, there is a stipulation in regard to payment of advance monies. After finalization of the contract or as a term of the contract, the other party may insist that the advance payment or the stage-by-stage payment to be made should be covered by a bank guarantee. Such guarantees when issued by banks at the request of their customers are known as financial guarantees. Customers purchasing machinery or capital equipment on deferred credit from their supplier may be required by the suppliers to provide bank guarantee covering the installments as and when payable under the deferred credit terms.

A bank guarantee, covering or guaranteeing the deferred credit, is called or known as "deferred payment guarantee".

3.2 Export Credit

In order to encourage export, the Central Bank of Nigeria has framed various schemes for extending credit to exporters. These schemes, implemented through the banks, include financing the exporter at both the pre-shipment state are called packing capital finance against exportable goods. The credit extended at the post-shipment stage is in the form of bill finance or purchase, discount or negotiation of documents relating to the shipment of the exportable goods. The prerequisite or pre-shipment credit is an irrevocable export LC or form order, except in the case of specified commodities for which Central Bank of Nigeria has waived the requirement of LC or form order at the pre-shipment stage.

3.3 Credit Investigation

A frequently heard complaint is that bankers demand excessive details in the credit application forms. It is often said that when the loan is adequately secured by primary security, and to many cases also by collateral security, there is the need for such a detailed investigation of the borrower. The need arise because the security available to a working capital banker comprises raw materials, stock-in-process and finished goods which do not fetch reasonable prices when the banker seeks to enforce his security. If the bank resorts to courts of law, the stocks in the custody of the banker or otherwise may lose their marketability by the time decrees are passed in the favour of the bank. Hence, the criteria of commercial banks for lending on a short-term are and continue to be rigorous. Also, as already discussed, a bank normally satisfies itself about the character, capacity (to run the business successfully), capital (owners stake in the business) and the collateral security offered, commonly referred to as the 4C's of a borrower before it takes a

decision to lend in short a borrower has to establish his credit worthiness and that of his guarantee, if any, before a bank would consider his proposal. And for this purpose, a bank may seek information from various sources, such as, (a) a banker's credit report, (b) market information, (c) analysis of past performance from financial statement, (d) personal visit, (e) interviews, (f) detailed questionnaire to be filled in by the borrower.

In the case of an export customer, a banker may, in addition to the borrower's credit worthiness also seek a credit report on his overseas buyer and for this purpose may seek the assistance of:

(a) Export Credit Guarantee Corporation (ECGC) which compiles buyer-wise information;
(b) Embassies/Consulates of foreign countries in Nigeria and Nigerian in foreign countries;
(c) Trade Development Authority and other export promotion authorities;
(d) Bank's own offices/correspondents abroad;
(e) Specialized trade journals;
(f) Credit investigation agencies such as Dun and BradStreet of U.S.A, who would provide the necessary information for a small fee.

3.4 Post Lending Control

If credit investigation forms are one side of the coin, the other side would be post-lending control. While one ensures that the initial decision to lend is judicious, the other ensures that it continues to remain so. Post-lending implies a constant monitoring of the operations of the borrower company, and the quality and the value of security available, with a view to ensuring that the operations continue to be viable and the safety of the monies lent is not threatened. This control is exercised by a banker by means of:

(1) Receipt of periodic stock statement indicating the quantity and value of securities changed.
(2) Periodical physical inspection at irregular intervals of the stocks and books of account at receivable changed.
(3) Keeping a close watch on the operation in the account, including credit and debts which would given an ideas of the unit sales and expenditure and also on bouncing of cheques and bills, if any.
(4) Scrutiny of the operating and financial health of the company by study of periodical financial statements.
(5) Annual review and renewal of the account when all aspects of the borrower's unit, i.e., its management, production facilities,

market, raw material and other infrastructural facilities, future plans, etc. are reviewed.

(6) Obtaining, in the case of bigger borrowers, major debtors, individuals etc.

(7) Classifying all borrowers' accounts in terms of various parameters, such as, financial, health and viability of operations, in the account adherence to stipulated terms and conditions, including repayments in time, etc.

SELF ASSESSMENT EXERCISE 1

Write short notes on the following:

(1) Letter of Credit
(2) Export Credit

SELF ASSESSMENT EXERCISE 2

How do you investigate creditors in your firm or bank?

4.0 CONCLUSION

This unit had pinpointed the non-fund based facilities capital needs of trade and industry. It has also touched credit investigation and post-lending control.

5.0 SUMMARY

The non-fund based credit facilities extended by banks for meeting working capital needs of Nigeria trade and industry have been discussed at length. We have also discussed the basic credit investigation and post lending control of bank credit.

6.0 TUTOR-MARKED ASSIGNMENT

What role does a letter of credit (LC) play in facilitating trade?

7.0 REFERENCES/FURTHER READINGS

Corporate Financial Management by Glen Arnold

J. F. Weston, T. E. Copeland, *Managerial Finance* 2nd Edition.

UNIT 4 BANK CREDIT ASSESSMENT

CONTENTS

1.0 INTRODUCTION

In the other units, we have discussed the various credit measures. It is also noted that since the deposits of a bank are of short to medium period only, the bulk of a bank's lending portfolio comprises of working capital advances, which in theory are self-liquidating, and of a short-term nature. In practice, the working capital advances continue to revolve from year to year with the quantum of the advance going up at each review or renewal. In this Unit, we are going to discuss how the commercial banks assess the working capital need of any business.

2.0 OBJECTIVES

The objective of this unit is to explain the process by which commercial banks assess working capital needs of industry.

3.0 MAIN CONTENT

3.1 Banker's Concept of working capital cycle

The term working capital has a specific connotation to bankers and is traditionally used to denote the sum of money required by a business enterprise for financing:

(a) purchase of raw material stores and spares;
(b) payment of wages to employees;
(c) payment of other expenses toward energy, fuel and water consumption, statutory dues, rates and taxes, carriage inwards and outwards, etc.

All these items of expenditure form part of working capital or funds required to keep the production process going, till the finished goods are sold and the sale proceeds are realized.

Traditionally, assistance of banks to commercial sector was perceived as facilitating trade i.e. movement of goods and merchandize from the producer, or the retailer to the consumer. In this situation, banks lent monies against security of goods or documents of title to goods.

Bank credit was perceived as reimbursing the borrower for these monies locked up to purchasing/storing/transporting inventory, i.e., the investment in inventory and receivables. Working capital is presently defined as the sum total of inventory, receivables and other current assets that are held by a business entity from time to time. Banks compute the working capital requirement through the concept of the operating cycle. The operating cycle or the working capital cycle is the time taken by any business entity to convert its raw material to cash.

Any organization starts its operation with cash, with which it purchases finished goods, which is then sold for cash or credit, and when the credit or receivables are realized, cash is received. The cycle of conversion from cash, back to cash through the production process is what is referred to as the operating cycle. The length of the operating cycle differs from industry to industry and from firm to firm depending upon the product manufactured, the technology used, process time, location, raw material availability, trade terms and the corporate policy.

Every business, depending upon its operating cycle, has to maintain a minimum level of current assets throughout the year. Holding current assets in excess of the required minimum would entail unnecessary lock-up of funds, leading to a drain on the profitability of the company, unless warranted by seasonal or cyclical fluctuation of the business. Over and above the minimum level of current assets, a business would need to maintain current assets to meet its seasonal or cyclical requirements. For example, an agro-based unit would need seasonal input such as fruits, vegetables etc, and build-up stocks when these commodities reach the market. The stock will progressively reduce as they are consumed in the manufacturing process.

The business would need to lay out its own funds to finance the minimum level of current assets of say “safety” stocks; but it will require either trade credit or working capital finance to meet the cost of the fluctuating current assets during its busy season or cyclical requirements. The “peak” level of current assets comprises the minimum level and the fluctuating component depends upon the business cycle.

Since the banker's role is primarily that of a short-term lender for working capital purposes and he has the additional responsibility of ensuring that scarce credit is not utilized for an undue accumulation of inventory and receivables, i.e. the speculative holding inventory, he is interested in finding out the peak level of current assets a business entity requires to maintain to optimize production. He identifies the parameters of he various components of the working capital cycle, which are detailed below.

Raw Material

Every unit would like to keep that minimum level of raw material, which ensures that a steady supply of the same is available for production requirements without having to face the prospect of idle machine and loss of man-hour due to 'stock-out' or non-availability of raw material. This minimum level is dependent on factors such as lead-time of supplies, minimum order quantity, budgeted production, etc. If the unit has well defined seasonal or peak level fluctuations of business, the peak season build up would also have to be worked out.

Stock-in-process

The level of stock-in-process would normally correspond to production or process time.

Finished Goods

The level of finished goods is determined both by market trends and, to a larger extent, through a conscious corporate policy.

Receivables

Market terms would normally dictate the extent of credit extended.

In addition to the above, the other item of current assets is:

Cash

The minimum cash balance to be held can be determined by multiplying the predetermined number of days of cash holding required by the average of the highest daily cash holding.

3.2 Assessment of Working Capital Needs

Based on the above criteria, the banker arrives at the peak level of current asset holding required by a business entity and then arrives at its valuation as per the under-noted traditionally accepted methods of valuation.

Raw Material

At cost/invoice value or market value whichever is lower.

Stock-in-process

At cost of production (including depreciation).

Finished Goods

At cost of production/cost of goods sold.

Book Debts

At gross sales or gross credit sales if this figure is available having arrived at the peak investment that the unit has to make in current assets. The banker would then like to keep a margin on the assets to be financed, i.e., that part of current assets to be financed by the unit from its own resources, the balance to be financed by the banker and other short term sources. The need for maintenance of margins arises for such reasons as:

(1) to ensure the owners stake in the business;
(2) to insulate the banker from price fluctuations of his security (i.e. current assets); and
(3) in the event of enforcement of security, the banker would need to realize in full the principal amount lent as well as interest and other charges due.

The level of margins would therefore be dependent not only on the security offered, e.g. margins on stock-in-process normally being higher than that of raw material or finished goods, but also the type of borrower. Larger borrowers and those with comfortable liquid position may be required to contribute higher margin while the weaker unit would be able to contribute less. Commodities, governed by the selective credit control directives of the Central Bank are subject to prescribed margins. Based on the aforesaid considerations, the banker would decide the margins to be maintained and fix credit limits accordingly.

Within the overall credit limit sanctioned to a borrower, actual drawings in the account would be determined on the basis of a periodic (monthly or weekly) stock statement and the statement of receivables to be submitted by the borrower. The stock statement contains details of the stocks and other assets charged to the bank, and also outstanding trade creditors. Based on the value of the stocks and receivables declared in the monthly or weekly statements, less stipulated margins, and the security cover available, the banker would arrive at the amount up to which the borrower would be entitled to borrow.

It is a condition of bank lending that, at all times, the outstanding in the account should be covered by the value of security available less margin. Drawings in the borrowers account are permitted within the drawing power determined on the basis of periodical stock statement, but subject to the sanctioned limit and in the process the banker would also like to satisfy himself about the quality, quantity and valuation of the goods the borrower has declared in the stock statement. The banker may also undertake, periodically, a physical inspection of the stock to ensure that the stock statement submitted reflects a true picture of the security offered.

Ideally, a business should finance the "safety" stocks or minimum level of current assets from its own resources, i.e., capital and other long-term funds. It is only the seasonal build up that the business should finance from short-term funds such as trade credit and bank finance.

SELF ASSESSMENT EXERCISE 1

Write on working capital cycle.

SELF ASSESSMENT EXERCISE 2

Define the following:

(1) Stock-in-process
(2) Finished goods
(3) Receivables
(4) Cash
(5) Raw material

4.0 CONCLUSION

The modern corporation has such an array of alternative sources of funds available to it. Each organization faces different circumstances and so the most appropriate mixture will change from one entry to another. It is important to assess the firm, as information to make this

judgement can come from a variety of sources, which must be examined. The sources are the current assets which contains the raw material, stock-in-process, finished goods, cash, etc.

5.0 SUMMARY

In this unit, w have explained the banker's concept of working capital which denotes the sum of money required by a business enterprise for financing purchase of raw material, stores and spares and to keep the production process going till the finished goods are sold and sales proceeds realized. We have also discussed the process followed by banks to assess the working capital needs of industrial borrowers.

6.0 TUTOR-MARKED ASSIGNMENT

(1) (a) What is banker's concept of working capital?

(b) How do commercial banks assess the working capital needs of business?

7.0 REFERENCES/FURTHER READINGS

Corporate Financial Management by Glen Arnold

George, H; Alan B. Coleman D.G. Simonson, *Bank Management: Text and Cases.*

Swaroop Gopal (1979). *Advances to Small Industries and Small Borrowers.*

Singh S.P. & Singh S. (1983). *Financial Analysis for Credit Management in Banks.*

UNIT 5 BANK CREDIT APPRAISAL

CONTENTS

1.0 INTRODUCTION

This unit deals with bank credit appraisal, export credit appraisal and a brief discussion of multiple banking arrangement and credit monitoring arrangement for working capital finance.

2.0 OBJECTIVES

The objectives of this unit are:

i. To discuss the process followed by banks for appraisal of industrial borrowers' applications.
ii. To describe credit monitoring arrangement, and multiple banking finance for working capital.

3.0 MAIN CONTENT

3.1 Traditional System of Appraisal

At the time of independence, the major customers of banks comprised mostly of agro-based industry, such as groundnut, cotton, cocoa, rubber, etc., and traders in these commodities, whose operations were mostly seasonal.

Bank credit was extended largely against the pledge of stocks, where under the financing bank took the goods into its custody in lock and key and released them when the borrower credited an equivalent value of the

goods in his borrowers account. Often goods were released against trust receipt to enable the borrower to pay proceeds within a stipulated period.

When the bank received the goods under its lock and key, it released the value of the goods less the stipulated margin in the pledge cash credit account of the borrower. The borrower was expected to utilize the funds so generated for his business purpose. He had the right to take delivery of the goods against payment and pledge further goods, depending upon his business requirements. In case he was required to extend credit to his buyer, the bank freely discounted his promise trade bills so that he could continue his operating cycle smoothly.

Banks obtained information from the borrowers in prescribed application forms on the projected or estimated holdings of inventories and receivables based on their estimated production cycles and annual sales estimates. The holdings of inventories were worked out in terms of the number of days/weeks, months of stocking period. The level of receivables was determined by the credit terms extended by the borrower and the forces of demand and supply. Then the total working capital needs were computed.

Requirements of Working Capital

(1) Raw material (months consumption)
(2) Stock in process (months cost of production)
(3) Finished goods (months cost of sales)
(4) Receivable (months of gross sales)
(5) Cash holding or expenses.

When the total working capital requirement is determined as above, the banker, after applying suitable margins arrives at the permissible bank finance.

The surplus long-term resources of the borrower represent the excess long-term funds (capital and long term liabilities) after meeting all fixed and non-current assets. In simple terms, the surplus long-term fund is equal to the excess of current assets over current liabilities. This surplus is also known as the liquid surplus or the net working capital (NWC). The NWC figure to be taken into consideration for margin purposes would be either the NWC as per the largest balance sheet of the borrower or the projected balance sheet. The projected balance sheet is preferable, because while assessing the working capital requirements, the bank takes into account the projected build up of current assets.

From the security point of view, the raw material and finished goods attract lower margin while stock in process or work in process attracts higher margins. Accounts receivable and bill receivable attract margin in view of the difficulties in collecting individual bad debts, while bills receivables are being represented by negotiable instrument easier to recover or due upon.

The margins are as follows:

S/N	Nature of Security	Margin	Permissible Limit
A	Raw material	25	75A
B	Stock in process	40	60B
C	Finished goods	25	25C
D	Receivables	50	50D
E	Cash holding expenses	100	-

Illustration A

A company plans to achieve annual sales of N100, 000. What would be its working capital requirement under the following conditions?

(1) The average period during which raw materials are kept in stock before being issued to factory is 2 months.
(2) The length of the production cycle, i.e., the period from the date of receipt of raw material by factory to the date of completion of goods or stock in progress is ½ month.
(3) Average period during which finished goods are stocked pending sale is 1 month.
(4) The period of credit allowed customers is 1 month.
(5) The period of credit granted by suppliers of raw material is 1 month.
(6) The analysis of cost as a percentage of sales.

Raw material	45%
Manufacturing expenses including wages and depreciation	30%
Overhead (excluding depreciation)	10%
Net profit	15%
Total	100%

Cash available in business to meet margins is ₦5, 000.

Solution

Based on available data, the cost of inventory works out as under:

	Annual Cost N	Month's Cost N
Raw material	45,000	3,750
Stock-in-process (at cost of production) 48,000 + 30,000	75,000	6,250
Receivables (at sales values)	100,000	8,333
Expenses (30,000 + 10,000)	40,000	3,333
Finished goods (at cost of production)	75,000	6,250

Calculation of working capital requirement:

S/N	Items	Cycle month	Value ₦	Margin ₦	Permissible limit ₦
1.	Raw material 7500 – 5628 (being 1 ½ month credit available on purchase)	2	1825	470 (25%)	1405
2.	Stock-in-process	½	3125	1250 (40%)	1875
3.	Finished goods	1	6250	1564 (25%)	4686
4.	Receivables in sales value	1	8333	4167 (50%)	4166
5.	Expenses	1	3333	3333	Nil
	Total		22,916	10,784	121,132

Based on the above, the bank can sanction to a limit of N12, 132 only. The margin requirements of the unit work out to N10, 784. Thus, the unit will have to raise additional resource of N5784, i.e., (10,784 – 5000), before the bank will allow availment of the limit.

3.2 Deficiencies in the Traditional Appraisal System

(1) The assessment is based on projection of sales figures, the borrower's ability to achieve the same level of chargeable current assets required to be maintained. It does not consider a total picture of the assets the borrower is likely to hold (including cash, advance payments) and the sources of funds already available to meet the same. In other words, the projected balance sheet plays no part in the assessment.

(2) Period of holding inventory and receivables is quite subjective, and the larger borrower can normally get away with projecting larger levels of holding of current assets which have no relation to his actual needs.

(3) Other short-term sources of funds current liabilities to meet working capital requirements are not taken into consideration.

(4) A fund flow analysis to determine the need and end use of fund was not done.

(5) No attempt is made to verify whether the working capital limit already sanctioned was justified in terms of actual sales/production achieved in the previous year. The end use of the limits availed of is not known.

3.3 Modern Appraisal System

All borrowers are expected to submit their financial figures, i.e., profit and loss statement, balance sheet and fund flow statement. They fill a form which contains a detailed break up of the items that may be classified as current assets and those that should be classified as current liability. The bankers call for analysis of profit and loss account and balance sheet for two and three immediately completed financial years respectively, and also projections for the current year and assessment of the working capital limits which are to be sanctioned.

The banker scrutinizes these forms essentially to verify:

(1) viability of past operations;
(2) financial health of the company;
(3) classification that has been done as per Central Bank guidelines;
(4) classification is consistent over the year;
(5) projected production/sales and balance sheet figures are reasonable in the light of past trends;
(6) borrower can bring in the required minimum net working capital;
(7) projected inventory and receivable holdings are reasonable in the light of past trends;
(8) the end use of the limits sanctioned or to be sanctioned from the funds flow statement.

If the above scrutiny is satisfactory, the banker sanctions the limit and monitors disbursals through the stock statements, quarterly operative limits etc. Limits are normally sanctioned for a period of one year and are subject to annual renewal/review.

3.4 Export Credit Appraisal

Where a borrower is engaged in export business, forms will also be submitted. The only relaxation made by the Central Bank for assessing export limits pertains to margins on export receivable which may not be insisted upon.

Export credit limit are also secured by inventory and receivables of borrower, which are subject to periodic inspection/verification by the banker. Drawings within the sanctioned limit are as in the case of domestic credit, subject to available drawing power as calculated from stock statement.

3.5 Multiple Banking Arrangement

Where the credit requirements of a borrower are met by more than one bank and each bank lends independently on its own terms and conditions, viz, security, rates of interest, the system of financing may be called multiple banking arrangement.

3.6 Credit Monitoring Arrangement

With a view to ensuring certain levels of credit discipline by banks and borrowers, the Central Bank should direct all banks to submit for post-sanction scrutiny all proposals. The Central Bank should subject such proposal to close scrutiny and if they consider the limits sanctioned as unjustified, they may reduce the limits. The Central Bank gives various directions to banks and borrowers with a view to ensuring credit discipline. Some of the more important provisions are indicated below:

A borrower should maintain basic financial discipline as under:

(a) estimates of current assets, current liabilities and working capital should be reasonable in the light of past trends;
(b) classification of current assets and current liabilities should conform to Central Bank guidelines;
(c) minimum stipulated current ratio to be maintained;
(d) borrowers should submit his annual audited accounts in time and banks should review them annually.

SELF ASSESSMENT EXERCISE 1

Write short notes on Traditional system of appraisal.

SELF ASSESSMENT EXERCISE 2

State the differences between Traditional and modern appraisal systems.

4.0 CONCLUSION

In this Unit, we have discussed the traditional and modern systems of bank credit appraisal, export credit appraisal, multiple bank arrangements. The credit monitoring arrangements of working capital finance were briefly discussed.

5.0 SUMMARY

In this Unit, we have discussed the traditional and modern methods of appraisal of working capital loans. The method of export credit appraisal has also been discussed. Multiple banking finance and credit monitoring arrangement have also been dealt with.

6.0 TUTOR-MARKED ASSIGNMENT

Write short notes on the following:

1. Multiple Banking arrangement
2. Credit Monitoring arrangement
3. Export Credit appraisal.

7.0 REFERENCES/FURTHER READINGS

Advances to Small Industries and Small Borrowers by Swaroop Gopel (1979).

MODULE 4

UNIT 1 NON-BANK FINANCE I

CONTENTS

1.0 INTRODUCTION

The two important sources for mobilizing short-term funds for financing working capital requirement have been commercial banks and trade credit apart from support being provided through equity base. However, more stringent credit policies of the banks on one hand, and the growing complexities and ever-tightening discipline and other controls attached with bank credit and institutional finance on the other, have paved way for the companies to go in for new and innovative sources other than bank credit. Such an increasing reliance of corporate sector on capital market and use of other innovative resources has helped it to meet the ever-increasing and dynamic quest for working capital finance.

Some of the instruments which were already in vogue for raising project finance have been given a new look so as to meet working capital requirements as one of the approved purposes for which they could be used. The sources of working capital finance other than bank credit have witnessed a great deal of growth and popularity in the past two decades. Raising short-term and medium term debt by inventing and accepting deposits from investing public has become an established

practice with a large number of companies both in the private and public sectors.

The spirit experienced in the capital market for new issues of convertible and non-convertible debentures and also public sector bonds have overtaken all other segments. This demand has been further fuelled by the administrative moves liberalizing the scope and purpose of their issues to include financing of working capital requirements. Deposits play very important role in parking of short term idle funds with the correspondingly cash deficit units to the mutual advantage of both parties.

2.0 OBJECTIVES

To discuss company deposit and debt as sources of short-term funds to finance working capital needs of industry.

3.0 MAIN CONTENT

3.1 Company Deposits

One of the easiest and most convenient methods adopted by companies in the private sector to raise resources for their short term working capital requirements is by way of acceptance of fixed deposits from the public. Public deposit or company deposit refers to those categories of unsecured loans accepted by a company which are for a specified period and which bear a specific rate of interest. These deposits have acquired prominence as a source of finance for industrial activities largely due to problems and complexities involved in obtaining funds from other sources and also higher cost in certain cases.

There are different types of company deposits from specific sources. They are:

(1) deposit against unsecured debenture;
(2) deposit from shareholders;
(3) deposit guaranteed by director and
(4) other deposits from the general public.

Companies accept short-term deposits for meeting their short term requirement for funds either from specified sources or from the general public.

Every company intending to invite or accept deposits from the public must issue advertisement for that purpose in a leading newspaper. Such advertisement should be valid for up to the end of the financial year in

which it is issued and fresh advertisement is required in each succeeding financial year for any further invitation of deposit. A copy of the advertisement must be signed by the director. The advertisement must contain, in particular, the following:

(a) Name of company,
(b) The date of incorporation of the company,
(c) The business carried on by the company and its subsidiaries with details of branches or units, if any,
(d) Brief particulars of the management of the company,
(e) Names, addresses and occupations of the directors,
(f) Profits of the company,
(g) Dividends declared by the company in respect of the said years, and
(h) A summarized financial position of the company as in the two audited balance sheets immediately preceding the date of advertisement in a prescribed form.

The provisions regarding the issue of advertisement apply in those cases only where a company invites or allow any other person to invite or causes to be invited on its behalf, any deposits. This is where a person voluntarily proposes a company to deposit certain amount with it without there being any invitation from the company. No advertisement need be issued.

3.2 Application for Deposit and Acceptance

In response to the advertisement made by a company inviting deposits from the public and member of the public may apply to the company in the prescribed form (supplied by the company) on the terms and condition as set forth in the advertisement. The intending depositor must give a declaration in his application to the company to the effect that the amount is not being deposited out of the funds acquired by him by borrowing or accepting deposits from any other person.

In the acceptance or renewal of a deposit, the company is required to forward a receipt for the amount received by it to the depositor or his agent. Such receipt has to be signed by an officer of the company, directly authorized in this behalf and to state the date of deposit, the name and address of the depositor, the amount received by the company as deposit, the rate of interest payable thereon and the date on which the deposit is repayable.

Every company accepting deposits is required to keep at its registered office one or more registers in which the following particulars about each depositor are to be entered:

(a) Name and address of the depositor;
(b) Date and amount of each deposit;
(c) Duration of the deposit and the date on which each of the percentage deposits is repayable;
(d) Rate of interest;
(e) Date or dates on which the payment of interest will be made,
(f) Any other particulars relating to the deposit.

The company is also required to preserve the registers of deposit in good order for a period of not less than eight calendar years from the financial year in which the latest entry is made in the register.

3.3 Provisions Regarding Repayment of Deposits

Deposits accepted by a company are repayable by it in accordance with the terms and conditions subject to which deposits have been accepted. Generally, deposits are accepted for varied periods to which different rates of interest are payable. In the context of repayment, rules provide that where a company makes a repayment of a deposit after the expiry of a period of six months from the date of such deposit but before the expiry of the period for which such deposit was accepted by the company, the rate of interest payable by the company on such deposit shall be reduced by one percent from the rate which the company would have paid had the deposit been accepted for the period for which such deposit had run.

3.4 Penalty for Default in Repayment

If a company or any other person contravenes any provision of this rules, the company and every officer of the company who is in default or such other person shall be punishable with fine and in case of continuing contravention, a further fine for every day of default.

3.5 Convertible and Non-Convertible Debentures

Convertible and non-convertible debentures are another form of raising debts for augmenting funds for long-term purposes as well as for working capital. It has been gaining popularity during the present decade. Moreover, since banks generally advance only on the security of floating assets, issue of debentures is regarded as the only other suitable alternative for raising capital including working capital. In general, the issue of bearer debenture is not permitted. Issue of debentures to only prevent an undertaking from closing down because of recurring losses is also not allowed. The maximum permissible rates of interest on debentures are notified by government from time to time.

The principal requirements of the existing guidelines for issue of both kinds of debentures are as follows:

(i) the object of the issue can be either to raise long-term funds for the financing of any expansion or diversification project or to augment the long-term resources of the company for working capital requirements;

(ii) the amount of debenture in the case of working capital requirement is not to exceed 20 percent of the gross current assets, loans and advances as per the latest audited balance sheet of the company. The amount of issue of debenture for project financing is to be considered on the basis of the approvals of the scheme of finance by the financial institution;

(iii) the debt-equity ratio including the proposed debenture issue should not exceed 2%. Debt for this purpose, means all term loan. Debentures and bonds with an initial maturity period of five years or more including interest accrued on them and deferred payment liabilities. It does not include short-term bank borrowing and advances, unsecured deposits or loan from the public, shareholders and employee and unsecured loans or deposits from others. Equity means paid up share capital including preference capital and free resources. Relaxation in the norm of debt-equity ratio of 2:1 are considered favourable for capital intensive projects;

(iv) the debentures are normally not redeemable before the expiry of a period seven years. However, a company has the option of redeeming them from the 5^{th} to the 9^{th} year from the date of issue in such a way that the average period of redemption continues to be 7 years. While exercising such an option, the small investors will have to be paid debentures in one installment only;

(v) the debenture must be listed on the stock exchange;

(vi) the face value of the debenture is ordinarily N100 each;

(vii) the company proposing to issue the debentures to the public should be listed on and its equity shares must have been quoted on one or more stock exchange at or above the par value during the 6 months prior to the date of application to controller of capital issues for issue of debentures;

(viii) the issue of debentures must be underwritten. A relaxation is permitted in this regard, if otherwise satisfied that the issue need not be underwritten, and

(ix) only secured debentures should be permitted for issue to the public.

SELF ASSESSMENT EXERCISE 1

What are Convertible and Non-convertible debentures?

SELF ASSESSMENT EXERCISE 2

Write short notes on company deposit.

4.0 CONCLUSION

Company deposits and debentures are some of the resources of short-term funds other than bank credit and trade credit to finance working capital needs of industry. In this Unit, we have discussed the company deposits and debentures in detail.

5.0 SUMMARY

In this Unit, we have discussed two sources of short-term funds other than bank credit and trade credit which are used by the companies or industries in order to finance their working capital needs. This particular unit covers company deposits, convertible and non-convertible debentures.

6.0 TUTOR-MARKED ASSIGNMENT

Write a short note on company deposits as a source of working capital finance for industry in Nigeria.

7.0 REFERENCES/FURTHER READINGS

Bank Management Text and Cases Second Edition – George H.H, Allan H. Coleman, Donald G.S.

UNIT 2 NON-BANK FINANCE II

CONTENTS

1.0 INTRODUCTION

The sources of working capital finance other than bank credit are company deposits, debentures, bonds, cumulative convertible preference shares, inter-corporate loans and commercial paper. But company deposits and debentures has been discussed in Module 3 Unit 3. Public sector bonds and inter-corporate loans have overtaken all other segments. They play very important role in parking of short-term idle funds with the correspondingly cash deficit units to the mutual advantage of both parties. Issuance of commercial paper (CP) by large sized profitable companies hold a vast potential in relieving the pressures on banks for meeting obligations of working capital finance on one hand and the need to obtain funds by companies at finer rates of interest on the other.

2.0 OBJECTIVES

The objective of this unit is to discuss other sources of short-term funds other than bank credit and trade credit to finance working capital needs of industry.

3.0 MAIN CONTENT

3.1 Public Sector Bonds

Both existing and new government corporate bodies engaged in certain specified areas of communication and power and other sectors that government may notify any issue of bonds subject to guidelines issued by government.

The interest rate on the bonds is determined by the Ministry of Finance and can be cumulative or non-cumulative. The maximum annual rate of interest is fixed by the ministry. Post-dated interest coupons for half yearly payment of interest could be attached by the company with the bonds. The face value of the bonds will be listed on the stock exchange. The bonds are normally redeemable after the expiry of seven years but not later than ten years. There is no deduction of tax from the interest which occurs to the investors in these bonds. The incomes by way of interest from these bonds are entitled to exemption. The transferee is expected to inform the company by registered post within a period of 60 days to avail of tax incentives.

3.2 Cumulative Convertible Preference Shares

Companies can raise capital for financing working capital requirement in the form of convertible or participating preference shares. This type of preference shares are different from straight preference shares, because these preference shares are convertible into equity shares or carry a contingent right to participate in the distributable profits of the company.

The principal requirements for issue of cumulative convertible preference shares are as follows:

(i) Object of Issue

The object of the issue of cumulative convertible preference (CCP) shares should be that for setting up new projects, expansion or diversification of existing projects, normal capital expenditure for modernization and/or working capital requirements.

(ii) Quantum of Issue

The amount of issue of CCP shares should be to the extent the company would be offering equity shares to the public for subscription.

(iii) Term of Issue

CCP shares issued are regarded to be equity issue for the purpose of calculation of debt-equity ratio. The entire issue of CCP shares would be convertible into equity shares between the end of 3 years and 5 years as may be decided by the company.

(iv) Denomination

The face value of CCP shares would ordinarily be N100.

3.3 Inter-Corporate Loans

One other source for mobilizing short-term finance for working capital requirements is through raising inter-corporate loans or deposits. At any one point in time, it may happen that a company is having surplus funds lying idle which it may like to lend to some other company that is facing financial stringency, due to its peak seasonal requirement or due to some pressing problems of liquidity.

Inter-corporate loans facilitate lending and borrowing transactions in such a manner that company with temporarily idle money can park to funds for a short period with another company which requires the same urgency. Normally, the borrowers and lenders are identified and are matched by brokers who charge for their services.

Rate of interest and other terms and conditions are governed by the negotiation between the two parties which are in turn determined by relative fund's security and alternative availability of funds.

3.4 Commercial Paper

Commercial paper (CP) is a short-term money market instrument ideally suited for corporate sector borrowing from banks for their working capital needs and investments. Highly rated companies can take advantages of this source and it serves the needs of investors for parking their short-term funds. CP, as a source of short-term fund is popular in the Western countries and Japan. In USA, it has been in vogue for over 100 years, whereas its origin in European countries and Japan is of a recent one. Commercial paper (CP) is a usance promissory note negotiable by endorsement and delivery typically with a fixed maturity between three months and six months and is issued on a discount basis. It enables companies to raise short-term debt at attractive rates of interest. CP is an unsecured instrument and is not tied to any specific business transaction. It does not carry any underlying collateral security like cash credit advance. However, since CP is carved out of the working capital limits being enjoyed by the issuing company with its bankers, it becomes a substitute source and not an additional source.

CP can be issued for a period not less than three months and not more than six months from the date of issue. Unlike the normal bills of exchange, the CP will not have any grace period of maturity. If the due date happens to fall on a holiday, the company shall be liable to make

payment on the immediate preceding working day. Every issue of CP is treated as a fresh issue.

The aggregate amount to be raised by issue of CP shall not exceed twenty percent of the company's fund based on working capital limit. Moreover, CP issue is carried out on the existing fund based on the working capital limits being enjoyed by the company from bonded banks, hence working capital (fund based) limit will be correspondingly reduced by the bank or banks under the supervision of the leader of the consortium of banks.

CP are to be issued in the form of usance promissory notes, negotiable by endorsement and delivery and at such discount to face value as may be determined by the company issuing the CP.

Banks are prohibited from underwriting or co-accepting the CP issue in any manner. The company issuing CP has to bear expenses on issue like dealers, fees, rating agency fees, charges levied by banks for providing stand by facilities, etc., On request, banks can provide stand by facility for an amount not exceeding the amount of issue for meeting the liability of CP on maturity, if there is no roll-over of CP.

CP may be issued to any person, including individuals, banks, companies and other corporate bodies, registered, incorporated or unincorporated bodies.

Every company proposing to issue CP shall submit in the prescribed form an application to the banking company. The banking company designated as leader of the consortium makes arrangement for working capital facility together with the certificate issued by the credit rating agency.

The banking company on receipt of the application for issue of commercial paper from such company, and if on verification is satisfied that the company is eligible for issuing commercial paper, shall forward the application to the Central Bank within one week of the receipt of the application together with the certificate issued by the credit rating agency.

The Central Bank may, after considering all the application for issue of commercial paper received up to a specified date, allot to each eligible company such amount for issue of commercial paper as may be decided, having regard to the conditions in the money market; which means that the Central Bank may; (1) not allow an application, or (2) allow only a part of the amount applied for, if it is of the opinion that the issue of

commercial paper is not conducive to the stability of the money market at the relevant time.

The Central Bank will communicate the decision of allotment of the amount of commercial paper to be issued to the banking company in writing indicating other terms and conditions, if any, to be complied with by the banking company, the leader and the issuing company, with regard to the approved issue.

Every company shall on receipt of the approval to issue the commercial paper make arrangements for privately placing the issue and ensure that the issue of commercial paper, as approved, is completed within the period of two weeks from the date of the Central Bank's approval.

The initial investor in commercial paper shall pay the discounted value of the commercial paper by means of a crossed account payee cheque to the account of the issuing company with the banking company or the leader.

The working capital (fund based) limit of every company issuing the commercial paper shall be correspondingly reduced by the banking company/leader of the consortium arrangement. Once the issue is actually placed in the market and the banking company/the leader shall make necessary adjustments in the account of such company respectively with the specific banking company or the other member banking companies.

Every company issuing commercial paper shall advise the Central Bank through the banking company or the leader about the amount of commercial paper actually issued in pursuance of the Central Bank's approval, within three days from the date of completion of issue.

In conclusion, it may be noted that CP will be a very ideal and veritable tool for raising short-term finance for meeting occasional outflows of companies, like distribution of interim and final dividends, payment of income tax, higher seasonal requirements of many industries, etc. CP will contribute to the growth of money market further if the rates of return on investment in CP prove to be attractive and this instrument play a vital role in transactions in short-term funds. This will ultimately relieve pressure on the banking sector for short-term funds requirement of the corporate sector.

SELF ASSESSMENT EXERCISE 1

Write short notes on the following:

(1) Bonds
(2) Commercial papers (CPs)
(3) Shares

SELF ASSESSMENT EXERCISE 2

Describe the cumulative convertible preference shares (CCPS).

4.0 CONCLUSION

Non-bank finance sources as covered in this Unit are public sector bonds, cumulative convertible preference shares, inter-corporate loans and commercial papers.

5.0 SUMMARY

In this Unit, we have discussed various sources of short-term funds other than bank credit and trade credit which are used by industries in order to finance their working capital needs. The unit covers public sector bonds, cumulative preference shares, inter-corporate loans and commercial paper.

6.0 TUTOR-MARKED ASSIGNMENT

Compare and contrast inter-corporate loans and commercial paper as source of short-term finance for companies.

7.0 REFERENCES/FURTHER READINGS

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UNIT 3 RECEIVABLE MANAGEMENT I

CONTENTS

1.0 INTRODUCTION

Accounts receivable present the amount due from its customers to whom the company has extended credit. In the modern world, the extension of credit is inevitable and most of companies have to offer the credit to maintain the existing level of sales. Also to improve the sales performance, the company may be required to change the terms of its credit.

For most of the companies, investment in accounts receivable constitutes a major component.

When a company sells on credit, it does not get cash at the time of sale, while during the process of manufacturing, it has already spent money to pay for labour, raw material and other expenses. Therefore, the company has to find out source of financing which would provide funds to finance that transaction for the time period for which credit has been granted (i.e. difference between date of sale and date of realization). It is in this sense that accounts receivable imply investment and involve certain costs.

This investment in accounts receivable is an important aspect which requires careful management. Besides the cost of investment, there are two types of risks which are associated with the accounts receivable management. One is the risk of opportunity loss and the other liquidity risk. The firm has to extend the credit to its customers to generate enough sales. The grant of credit is an important tool to realize the operating plans and budgets of the company. But at the same time, management has to see that the company has not extended too much of credit to its customers which has resulted in high degree of liquidity risk. By liquidity risk, we mean the ability to collect back the amounts due from the customers. This would happen if the company extends the

credit to customers whose financial position is doubtful or weak and subsequently the funds tied up with them are recovered after a long period or they are not at all realized. If this happens, it would result into the company's inability to meet its own obligations and, thus, affecting the short-term and long-term solvency of the company.

The decision to extend the credit to its customers also determines the timing and amount of cash flows accruing to the company. At the same time, minimization of liquidity risk would imply the risk of opportunity loss of sales by refusing the credit to its potential customers. This would further affect the loss of revenue and the loss of profit. Thus, the objective of accounts receivable management is to arrive at an optimum balance of these two risks and help the company to realize its operating plans. This balancing is not a static but a dynamic one. To arrive at the balance of these two risks, the company would frequently require to adjust their credit policies. Management of the company would also be required to consider general economic conditions while making such adjustments.

The management of accounts receivable broadly involve the following steps:

(i) Firstly, management has to decide to whom the company should sell its products on credit. This would require the development of the credit standards. In this regard, the company has to analyze the contribution of marginal accounts towards the profitability of the company and also whether the company should hold the policy of extending the credit to such accounts.

(ii) Secondly, what are the factors the company should take into account while analyzing the potential customers who are interested in availing the credit facility of the company. How does one draw upon the customer's past records or his past financial statements? What are the other sources of information which one can use in such analysis? This also has to be settled.

(iii) Thirdly, the company has to determine the terms on which the company would be interested in selling the goods. How long should the company allow its customers to pay their bills? Should the company allow any cash discounts to its customers to otivate them to pay promptly? What should be the discount rate and discount period? What should be the extent of credit unit to each customer or group of customers? This would require the development of credit terms for each customer or group of customers.

Once the decision to grant the credit has been implemented, what should be the collection policy of the company? How would the company monitor its accounts receivable and subsequently control them? Are there some other questions of concern?

In brief, the concerns of the company in managing the accounts receivable would be the following 4Cs:

Credit Standards,
Credit term analysis,
Credit Control and Monitoring.

2.0 OBJECTIVES

The objectives of this unit are:

- to highlight the importance of accounts receivable in the operation of business enterprises
- to discuss credit standard, credit terms.

3.0 MAIN CONTENT

3.1 Credit Standards

Defining the credit standards is an important component of the credit policy of the company. The credit standards do have an important bearing on the sales of the company. The credit standards of a company lay down minimum requirement for the evaluation of credit to its customers. The company may define these requirements in the very conservative or a strict manner and this restrain the marginal customers, though those whose financial position is doubtful may not really be bad. Such a policy would be appropriate for the companies which do not want to take high risk or alternatively, the company that may follow a very liberal standard and be very aggressive in taking the risk.

The company uses some of the following quantitative indicators for establishing credit standards:

a) Payment period
b) Selecting financial rates
c) Rating based on financial ratios.

The subjective assessment obtained through the market about the credit worthiness of the customers may also feature as one of the item in the credit standards. These quantitative and subjective indicators may provide the basis for establishing and enforcing the credit standards.

At any point of time, the company would be interested in examining the effect of change in credit standards. This is done by comparing the profitability generated by lowering down the credit standards and the added cost of accounts receivable. So long as the profitability is more than the added cost, the company can lower down the credit standards. It is important to determine the costs of lowering down the credit standards and also to find out the impact on profitability of the company. Lowering down toe the credit standards would have the following effects:

i. increase in average collection period;
ii. increase in sales;
iii. increase in accounts receivable investment;
iv. increase in bad debts losses; and
v. increase in servicing cost of accounts receivable.

The effect of lowering down the credit standards on key variables such as sale and investment in accounts receivable "can be quantified by the costs versus benefits of such changes". At the time of the cost, such as increase in bad debt losses and increased cost of monitoring and servicing, the accounts receivable should also be considered. It may be very difficult for the firm to make any distinction between the credit standards for new customers and existing customers. Relaxing the credit standards for the new customers would have certainly some impact on the payment behaviour of existing customers. The firm may experience collection period.

You may take the following approach in assessing the effects of lowering down the credit standard:

- Determine and find out the profitability of additional sales;
- Determine increase in bad debt losses, collection expenses and any other cost arising from relaxing the standards;
- Determine increase slowness of the average collection period and additional amount of investment requirement in accounts receivable and multiply it by the required rate of return on investment in accounts receivable.

Let us take a case to illustrate this approach.

Illustration

ADE LIMITED is engaged in manufacturing water. Each water pack is priced at N100. The sales of the company during the last accounting year were 80,000 units. The variable cost per unit is N60, the fixed costs of the company are N16. the company is contemplating to relax its

credit standards and as a result, the company is expecting 10 percent increase in sales. But at the same time by relaxing the credit standards the average collection period of the company is likely to increase from 30 days to 45 days. The bad debt losses are expected to be 2% of increased sales. The collection expenses are likely to go up by N50,000. The company also pays commission of 10% on the sales and this cost is not included in the variable cost. If the after-tax required rate of return on investment of the company is 15 percent and the tax rate is 50% should the company relax its credit standards?

Solution

	Unit		₦
Additional sales generated	8000 x 100		800,000
Variable cost	8000 x 60		480,000
Gross margin			320,000
Other costs:			
Bad debt expenses	800,000 x 0.2	16,000	
Commission	800,000 x 1	80,000	
Collection expenses		50,000	146,000
Profit			174,000
After – tax profit50%			87,000

The effect of increase in sales on investment in accounts receivable will be calculated as follows:

Accounts receivable = Average Collection Period x sales per day

Accounts receivable before change in credit standards:

30 x (8,000,000/360) = N666, 667

Accounts receivable after change in credit standards:

45 x (88,000,000/360) = N1, 100,000

Additional investment in accounts receivable as a result of change in result standard is N433, 333. Thus, the required return on additional investment:

4,333,333 x 1.5 = N65, 000.

The above analysis shows that the profitability on additional sales as a result of change in credit far exceeds the required return on account receivable investment, thus, the change is profitable for **ADE LIMITED**.

It is important to understand that the above analysis is based on the following assumptions:

(1) The company has the capacity to meet the additional demand and as a result of the increase in sales does not create any additional capacity costs.

(2) In case the company is operating already at full capacity then the analysis has to take into account the possible change in the costs structure of the company. The above analysis is thus based on the assumption that the price and the costs remain constant.

(3) Only the cost related to bad debts expenses and credit administration change.

(4) To meet the higher requirement of demand, the company does not require additional inventory. If the level of inventory requirements changes as a result of change in sales volume, then the additional investment requirements for inventory purpose should be included in accounts receivable investment.

The required return should then be calculated by applying the opportunity cost to the total investment.

SELF ASSESSMENT EXERCISE 1

Define credit standards

SELF ASSESSMENT EXERCISE 2

List out four Cs of receivable management.

3.2 Credit Terms

The other important dimension of accounts receivable management is to decide the terms of credit in advance. The decision about the credit terms would involve the decision about the following variables:

- Credit period
- Credit limit
- Cash discount
- Discount rate and discount period.

Credit period is the time for which the company is willing to allow their customers not to pay their bills. By the end of the credit period, the company expects that the customers would pay their bills. At any point of time there may be interested customer in a longer credit period. If the company liberalizes its credit period, the company may be able to attract such customers. But at the same time the extension of credit period

means more investment in accounts – an extension of ADE LIMITED is used to illustrate this point.

Illustration

Suppose **ADE LIMITED** is interested in increasing their credit period from 30 days to 45 days. The company is expecting a 5 percent increase in sales as a result of relaxing credit period. The bad debt will be 2.5 percent of increased sales. The company would also be required to incur additional amount of N20, 000 for collections.

Solution

The relaxation in credit period would thus have the following effects:

	Unit ₦	₦	₦
Increase in sales	4000 x 100		400,000
Increase in variable costs	(4000 x 60)		240,000
Increase in gross profit			160,000
Less Bad debts		10,000	
Collection charges		20,000	
Commission		40,000	70,000
Profit before tax	160,000 – 70,000		[90,000]
Profit after tax	50%		[45,000]

The relaxation of credit period would involve additional investment in accounts receivable. The increase in accounts receivable investment can be obtained in the same way as done under the last illustration – the increase in account receivable investment would be N433, 333. On this additional investment, we are getting a return of N45, 000 in terms of percentage. This return is 10.38 percent which is less than 15 percent, hence ADE LIMITED would not relax the credit period.

Similarly, the liberalization of credit limit has positive impact on the sales of the company, whereas at the same time the investment in accounts receivable will increase. One can use the same approach in analyzing the financial effects of relaxing the credit limit.

4.0 CONCLUSION

In this Unit, we have given the importance of accounts receivable in a day-to-day operation of a business enterprises and we have also discussed two dimensions of receivable management, that is, the credit standard and credit terms.

5.0 SUMMARY

It has been noted that accounts receivable is important to any business or enterprises. Consequently, efficient and effective management of accounts receivable can contribute to significantly improve the profitability and liquidity of a business. From various dimension of management of accounts, credit standards and credit terms have been discussed with suitable examples.

6.0 TUTOR-MARKED ASSIGNMENT

How would you judge the credit worthiness of a customer?

7.0 REFERENCES/FURTHER READINGS

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UNIT 4 RECEIVABLE MANAGEMENT II

CONTENTS

1.0 INTRODUCTION

This Unit will continue with receivables management, i.e., dealing with the other dimensions of receivable management and also discuss the methods used in monitoring accounts receivable.

2.0 OBJECTIVES

The objectives of this Unit are:

- to discuss credit analysis and collection policies
- to explain and illustrate the concept of cost of marginal investment in the accounts receivable
- to analyze the role of cash discounts in determining the sales average collection period and debt expenses and profits
- to discuss methods used in monitoring accounts receivable.

3.0 MAIN CONTENT

3.1 Credit Analysis

No company does sell blindly on credit to every customer approaching it. The company has to evaluate the capability of the customer and his strengths to fulfill the promise of paying the bills in time. The companies ignoring adequate analysis of their customers would soon find themselves in the situation of not generating sufficient resources for day-to-day operation of the business. The company .must therefore analyze the risk of paying late or risk of default before extending credit. The credit analysis would broadly involve the following three steps:

- getting financial and non-financial information about customer;
- analyzing the credit worthiness of the customer and assessing the risks involved;
- deciding to grant the credit.

Analyzing the credit worthiness of the customer is the most difficult task. The financial and non-financial information may provide some insights into credit worthiness of the customer, with the help of this information and other insights the company has to assess the following six Cs of credit worthiness:

- Character
- Capacity
- Capital
- Condition
- Cost
- Collateral

The analysis of credit worthiness begins with the assessment of the customer's willingness to pay the bill of the company. Capacity is the ability of the customer to meet the obligations whenever they are due. In this regard, it would be important for the company to see that the obligations are met through the funds generated from the operations of the customer. That would reflect the long-term ability of the customer to meet the obligations. In case the customer is not in position to meet his obligation out of operation in some abnormal year, the company should examine the capital base of the company. This would indicate the capability of the company to face the problems in case of some difficulty. The company should examine the net worth of the customer to assess the capital base. The market conditions play an important role when one is doing credit analysis. The expected necessary trends in the market, a growing competition and other market factors should be taken into account when doing credit analysis of the customer. Given a particular set of conditions, the costs associated with extending the credit may sometimes be high. The cost may get reflected in high bad debt expenses or the default in payments. And finally, the company has to examine the kind of security, collateral in the form of assets, the customer is providing.

There will always be a problem in obtaining financial and qualitative information about the customers. This problem arises because there is no systematic source of information, particularly about the small sized customers. It may not be possible for most of the companies to administer the collection of information about the customers. The costs in terms of time, money and other resources involved in such experience

would outweigh the benefits. But at the same time the company has to come to the conclusion and satisfy itself that the customer to whom it is extending credit is worthy of it and the risks involved is commensurate with the return.

In order to undertake credit analysis, the company may analyze the financial statements of the customer. For the companies which are listed on stock exchanges, obtaining their financial statements is not difficult, as the same are available with the exchanges. Some of the major stock exchanges regularly publish summarized financial statements in their directories. In case the customer to whom the company is thinking to extend the credit is not listed and the financial information is not available, the option left is to jettison the idea of granting a credit facility.

3.2 Cash Discount

A company short of cash resources and facing liquidity problem may consider the use of cash discounts to influence its customers to pay promptly. There are two important cash discount policy aspects:

- cash discount rate;
- discount period.

Giving the cash discount facility is not the same as cutting the prices and thereby affecting demand. It is a mechanism through which the company is giving some benefits to customers who opt to pay early. There is a remote possibility that all customers will pay the company their dues within the cash discount period. Only a segment of customers who have sufficient cash resource and good liquidity position will avail cash discount facility. The introduction of cash discount as a policy will also affect customers who were earlier paying promptly. Suppose 5 percent of sales were on cash basis and rest 95 percent on credit. By introducing cash discounts, the company has to pay cash discount to the 5 percent customers who were paying cash immediately at the time of sale. Some of the customers from the 95 percent segment would avail cash discount but certainly not all.

The cash discount policy would result into loss of revenue to the company. At the same time the company would experience a quick collections resulting into lower collection period. The reduction in average collection period in turn will affect the investment in accounts receivable. Before deciding about the cash discount policy, the company has to find out whether the returns on funds released on account of reduction in investment in accounts receivable is more than the loss of revenue. Only if the returns completely offset the loss of

revenue that the cash discount policy should be introduced. Let us once again take the example of ADE LIMITED.

Illustration

ADE LIMITED is contemplating to introduce a cash discount policy on the terms "2/10 net 30". The terms imply that if the customer pays his bills within 10 days he gets a cash discount of 2 percent, otherwise the customer is required to clear his bills before 30th day. ADE LIMITED is expecting that 60 percent of sales will opt for cash discount and as a result the average collection period will improve from 30 days to 18 days.

Solution

Loss of revenue	(8,000,000 x 0.6 x 0.02)	=	N96, 000
Release of accounts receivable investments.			
Accounts receivables before cash discount:			
	30 x (8,000,000/360)	=	N666, 667
Accounts receivables after cash discount:			
	18 x (800,000/360)	=	N400, 000
Release on investment		=	N266, 667
Return on funds released		=	N266,667 x 0.15
		=	N400,000

Loss of revenue is more than the return on the amount of funds released and hence the cash discount policy should not be introduced.

3.3 Collection Experience

In addition to setting the credit standards, credit period and cash discount policy, it is also important for the company to design the collection policy and procedures so as to speed up the collection as and when they become due. What would the company do if the customers do not pay within the set credit period? In this regard the company has to assess the chances of collection of the accounts receivables by putting some effort. If by putting small effort the chances that the customer will pay his bill are high, then the company should go ahead with that much of effort. In a situation where the chances of collecting the money are considerably less, then the company should explore other ways of collecting the money. The company can use a number of methods to speed up the collections. Letters and telephone calls are the easier ones

and least expensive. The company may design a policy of sending a letter few days before the payment becomes due. Depending upon the situation, the company can call the customers on telephone just before the due date. A visit to customer may prove to be effective when the bills are overdue. Legal action should be treated as the last resort. Before that, the company should try to understand the problems of the customer and if the company finds that the integrity of the customer is at doubt, they should resort to legal action. On that basis, the company can find out whether the particular debt should be treated as doubtful and should be written off or not.

SELF ASSESSMENT EXERCISE 1

Define the following terms:

(1) Credit Analysis: ……..
(2) Credit Period: ……..
(3) Credit Limit: ……

3.4 Monitoring Of Accounts Receivable

Once the company has set the credit standards, credit policy and its collection policy, it is important for the finance manager to watch and monitor the effectiveness of collections. Generally, the finance manager sets targets in terms of average collection period and the bad debts to sales ratio and monitors accounts receivable with reference to these ratios. It is important to note the changes in credit standards or credit policy and revise these indicators appropriately. As seen in the previous example, the average collection period is very useful in forecasting the average investment in accounts receivable. With this indicator, it is also important to have some insights into the payment pattern of accounts receivable.

One traditional method for monitoring collection pattern associated with credit sales and the resulting accounts receivable is the aging schedule. In comparison to the average collection period which is used primarily to forecast the level of accounts receivable. The ageing schedule provides the primary basis for monitoring or controlling accounts receivable. In the ageing schedule, we generally consider the monthly time periods to observe the possible changes in accounts receivable. The schedule may also focus on shorter time periods.

Table 3.3Z: Ageing Schedule of Accounts Receivable

Month	Credit Sales	Receivables at the end of month three		
Situation A		Amount in ₦	% Sales	% of total Sales
Month 1	200	20	10	7.7
2	200	60	30	23.1
3	200	180	90	68.2
		260		
Situation B				
Month 1	100	10	10	2.9
2	200	60	30	17.7
3	200	270	90	79.4
		340		
Situation C				
Month 1	300	30	10	16.7
2	200	60	30	33.3
3	300	290	90	50.0
		180		

Let us examine the aging schedule of a hypothetical company given in Table 3.3Z under situation A. At the end of month 3, the total receivable of that company are N260. Month-wise break-up of these accounts receivable provide the ageing schedule of these amounts. Examine the last column in terms of percentages, it indicates that 7.7 percent of these receivables belong to month 1, and similarly, 23.1 percent of these are related to month 2 and so on.

In case the company is experiencing the stable sales throughout the period, the ageing schedule will clearly indicate any deviations from the suggested norm of collections. But in a situation when the company is in a seasonal business, the ageing schedule provides misleading signals. Examine situations A and B in the ageing schedule. Table 3.3Z. the situation indicates as if the collection experience has improved since lesser amount of receivables are from months 1 and 2, more than seventy-nine percent of receivable are from the latest month. Again, examination of situation reveals as if the collection patterns have worsened. If we take into account the actual collections pattern, we find that there has been no change in the collection pattern. In all situations, the receivables outstanding at the end of month 3 as a percent of sales of each month have not changed. The only thing that has changed is

pattern in sales. As a result, the ageing schedule provides the misleading signals. Therefore, the ageing schedule should be used with great caution. The ageing schedule would provide the appropriate signals only in a situation when the company has got stable sales throughout the period.

If we calculate the average collection period, under three different situations based on the latest month's sales and also based on sales of the quarter as a whole, we have the following results:

	Based on latest Month sales (30 days)	Based on quarter Sales (90 days)
Situation A	39	39
Situation B	34	51
Situation C	54	27

The average collection period also provide misleading signals, depending on the reference period which, we use. For example, in our case, 30 days or 90 days, the average collection period provide wrong signals. Using 30 days as a base period, we find as if the collection experience has improved whereas calculations based on 90 days period give exactly opposite information. The changes in average collection period just reflect the seasonality pattern in the sales. Hence, average collection period should not be used to monitor the experienced accounts receivables of the company volatile sales.

As seen above, both average collection period and the ageing schedule provide misleading signals and should be used with great caution. Under such a situation, the company should use receivable balance pattern or collection pattern to monitor the accounts receivable of the company. The receivables balance pattern is concerned with the proportion of any month's credit sales that remains outstanding at the end of each following or subsequent month.

Illustration

To illustrate the calculation of the receivable balance pattern, consider a firm which sells N100, 000 worth of goods and services on credit in the month of January and receives collection as follows: N10, 000 in January, N40, 000 in February, N30, 000 in March and N20, 000 in April. The percentages are as shown in Table 3.3Q:

Table 3.3Q: Payment and Receivable Pattern to Sales of one month.

Month	Payment for January sales		Receivables relating to January sales	
	Sales during the month (N)	Percent sales (%)	Sales at the month (N)	Percent Receipts (%)
January	10,000	10	90,000	90
February	40,000	40	50,000	50
March	30,000	30	20,000	20
April	20,000	20	0	0

Conversion Matrix

Table 3.3Q showed the payment pattern relating to sales of one month. For analyzing the payment pattern for several months, it is helpful to prepare a conversion matrix like the one shown in Table 3.3Y. This matrix shows the credit sales in each month, and the pattern of collection associated with it. For example, the credit sales during the month of January and as they are realized as per Table 3.3Q are shown in the conversion matrix. Looking at the conversion matrix, one can judge whether the collection pattern is improving, stable or deteriorating.

Table 3.3Y: Payment and Receivable Pattern to Sales of several months

Month	Credit Sales	Receivable to the nearest N'000								
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Jan.	100	10 (10%)	30 (30%)	40 (40%)	20 (2%)					
Feb.	80		28 14%)	28 (25%)	32 (40%)	9 (11%)				
Mar.	120			18 (15%)	48 (40%)	25 (21%)	29 (24%)			
Apr.	160				195 (12%)	72.5 (45%)	28 (24%)	30 (9%)		
May	200					20 (10%)	72 (35%)	60 (30%)	48 (69%)	
June	160						14.5 (9%)	50 (35%)	49 (31%)	40.5 (25%)
Total - Collection		10	51	76	119.5	128.5	153.5	146	97	40.5

SELF ASSESSMENT EXERCISE 1

ADS Corporation presently gives terms of net 30 days. It has N60 million in sales and the average collection is 45 days. To stimulate demand, the company may give terms of net 60 days. If it does instigate these terms, sales are expected to increase by 15%. After the change, the average collection period is expected to be 75 days, with no differences in payment habits between old and new customers. Variable cost is N80 for every N100 of sales and the company's required rate of return on investment in receivables is 20%. Should the company extend its credit period? (Assume a 360 day year).

SELF ASSESSMENT EXERCISE 1– Answer Kit:

Receivable turnover = 360/75 = 4.8
profitability of additional sales 15% of N60 million x (1.00 – 0.80)
= N9 million x 0.20 = N1.8 million

Additional receivables associated with the new sales
= 9 million / 4.8
= N1, 875,000
Additional investment in receivables associated with the new sales
= 1,875,000 x 0.8 = N1, 500,000

New level of receivable associated with the original sales
= N60 million / 4.8 = N12, 500,000

Old level of receivable associated with the original sales
= N60 million / 0.8 = N7, 500,000

Incremental receivable investment, original sales
= 12,500,000 – 7,500,000
= N5, 000,000

Total increase in receivable investment
= 1,500,000 + 5,000,000
= N6, 500,000

Carrying cost of additional investment
= 0.2 x N6.5 million
= N1, 300,000

As the incremental carrying cost is less than the incremental profitability, the company should lengthen its credit period from 30 to 60 days.

4.0 CONCLUSION

This Unit dealt with the various dimensions of receivable management, viz: credit analysis and collection policies and different methods of monitoring accounts receivable viz: Average collection period, ageing schedule and collection.

5.0 SUMMARY

It has been noted in this Unit that accounts receivable constitute about of the current assets of business enterprises. We also discussed various dimensions of management of accounts receivable viz: credit analysis and collection policies. The concept of marginal investment in account receivable and cash discount decisions has also been fully illustrated. Different methods of monitoring accounts receivable have been explained and illustrated.

6.0 TUTOR-MARKED ASSIGNMENT

A firm has annual sales of N400, 000. It desires to adopt more liberal credit policies and for that matter, raise the collection period from 45 days to 60 days. This policy is estimated to enhance sales by 35%. The selling price of the product is N10 per unit, and variable cost amounts to N7. The firm expects 25% of rate of return on investment, should the firm raise its collection period (Assume 360 days in a year).

7.0 REFERENCES/FURTHER READINGS

Pandey, I.M. (1988). *Financial Management.*

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UNIT 5 CASH MANAGEMENT I

CONTENTS

1.0 INTRODUCTION

Corporate cash management is perhaps the most critical aspect of working capital management as expressed in an old saying. The thing is finest when the need is urgent. Efficient cash management requires proper cash planning, management of receipts and disbursement and, an efficient control and review mechanism. In this unit, we extend to discuss, in some details, cash forecasting under uncertainty by adapting technique like simulation approach.

2.0 OBJECTIVES

The objectives of this Unit are that you should be able to:

- list out the motives of holding cash, prepare cash flow forecast under conditions of uncertainty by using techniques like simulation approach
- point out sources of uncertainty affecting cash balance of a firm
- prepare cash flow forecast under conditions of uncertainty by using techniques like simulation approach.

3.0 MAIN CONTENT

3.1 Motives for Holding Cash

1. Transactions Motives:

Transaction motives require a firm to hold cash to conduct its business in elite ordinary course. The firm needs cash primarily to make payments for purchases, wages, operating expenses, taxes, dividends, etc. The need to hold cash would not arise if there were perfect synchronization between cash receipts and cash payment, i.e., enough cash is received when the payment has to be made. But cash receipt and payments are not perfectly synchronized. Some times cash receipts exceed cash payments, while at another times cash payment are more than cash receipts. For those periods when cash payments exceed cash receipts, the firm should maintain some cash balance to be able to make the required payments. For transactions purpose, a firm will purchase the securities whose maturity corresponds with some anticipated payments, such as dividends, taxes, etc., in future. However, the transactions motive mainly refers to holding cash to meet anticipated payment whose timing is not perfectly matched with cash receipts.

2. Precautionary Motives:

The precautionary motive is the need to hold cash to meet any contingencies in future. It provides a cushion or buffer to withstand some unexpected emergency. The precautionary amount of cash to be kept depends upon the predictability of cash flows. If cash flows can be predicted with accuracy, less cash will be maintained against an emergency. The amount of precautionary cash is also influenced by the firm's ability to borrow at short notice, when the need arises. Stronger ability of the firm to borrow at short notice lessens the need for precautionary balance. The precautionary balance may be kept in cash and marketable securities. Marketable securities play an important role here. The amount of cash set aside for precautionary reasons is not expected to earn anything, therefore, the firm should attempt to earn some profit on it. Such funds should be invested in high liquid and low-risk marketable securities. Precautionary balances should, thus, be held more in marketable securities and relatively less in cash.

3. The Speculative Motives:

The speculative motive relates to the holding of cash for investing in profit making opportunities as and when they arise. The opportunity to make profit may arise when the security prices changes. The firm will hold cash, when it is expected that interest rates will fall. Securities can

be purchased when the interest rate is expected to fall. The firm will benefit by the subsequent fall in interest rates and increase in security prices. The firm may also speculate on materials prices. If it is expected that materials price will fall, the firm can postpone materials purchasing and make purchases in future when price actually falls. Some firms may hold cash for speculative purposes. By and large, business firms do not engage in speculations. Thus, the primary motives to hold cash and marketable securities are the transactions motive and the precautionary motive.

3.2 Cash Forecasting Under Uncertainty

The worst time to raise cash is when you need it most. The company that cannot predict and plan its short term cash flows simply does not have ability to handle critical reality. Smart cash managers have learned to forecast cash flows for this reason.

The cash forecast is the estimation of the flows in and out of the firm's cash account over a particular period of time. The cash flow forecast can cover a short time period (e.g. quarter, month, week or day), an annual accounting period or longer period of time. Forecasts for different time spans have different uses. For example, the long-range cash projections may cover period ranging from three to five years and is useful in planning business growth, investment in projects and introduction of new products. Various capital budgeting techniques and cost volume profit analysis are used in developing a long-range cash strategy. The medium-range forecast usually covers one accounting period and is related to the overall yearly budgeting procedures for the business. This is what we commonly refer to as 'cash budget'. Improved cash utilization within this time frame is obtained through control of accounts payable polices, improving inventory, turnover, and a review of credit, billing and collection procedures. The short-range forecast reflects the availability of cash for current operation and indicates a firm's short-term borrowing and investment needs. Techniques used to improve the short-term cash flow include lock-box system for speeding up collections, using float, reducing compensating balances in bank accounts as much as possible, taking cash discounts, and making short-term investments.

3.3 Issues and Approaches in Forecasting

As mentioned in Unit 1, an important question in short-term cash forecasting is, what should be the length of the shortest period to forecast? This depends critically on the volume of the firm's cash inflow and outflows. If the firm is sufficiently large, it will probably pay the firm to forecast on a daily basis. Small firms with lesser

amounts to deal with are probably better off using a month or even a quarter as the length of their shortest period.

Most firms, however, do not confine themselves to a single forecast; instead they use several forecasts with periods of various lengths. In this context, the question arises as to how one forecast relates to another. To see how this question arises, it is assumed that a firm is practicing multiple period length forecasting and is generating forecasts for the next quarter or months; for months within the quarter, and weeks within the month. Does the forecast start with quarterly data and break this down into months; then break the month down into weeks? Does the forecast start with weekly data and aggregate this into months and quarters? Starting with data on relatively long periods and breaking it down into smaller periods is called **distribution**. Also starting with data on relatively short period and aggregating into longer periods is called **scheduling**. Both methodologies have advantages and disadvantages. Scheduling requires more data manipulation, but distribution requires more sophisticated statistical techniques. The most common approach to short-term cash forecast is the receipts and disbursement approach. This method minutely traces the movement of cash and is preferred by firm that exercise very close cash control.

After the firm has determined what types of receipts and disbursements are important in its overall cash flow, an important question is how to forecast the future level of these types of inflows and outflows.

3.4 Techniques of Forecasting Financial Variables

There are four common techniques of forecasting financial variables (i.e. items of receipt/distribution).

(1) Direct Method

In using this technique, it is assumed that the variable to be forecasted is independent of all other variables or alternatively, is predetermined. The variables (e.g. lease rentals) are forecasted by using its expected or predetermined level.

(2) Proportion of another Account

This technique is used to project financial variables that are expected to vary directly with the level of another variable. For example, if sales volume increases, it is natural that more units will have to be produced to replenish inventory. It is then reasonable to project certain direct cost of production such as direct materials as a percent of sales.

(3) Compounded Growth

This method is used when a particular financial variable is expected to grow at a steady growth rate over time. The formula used is $Y_t = (1 + g) Y_{(t-1)}$ where $Y_{(t-1)}$ is the prior period's level of y, and g is the growth rate.

(4) Multiple Dependencies

Under this technique, the variable is considered to be fluenced by more than one factor. The statistical technique of linear regression is often employed with historical data to determine which explanatory variables are significant in explaining the dependent variable. We will see the application of regression technique after a while.

Since cash forecasts deal mostly with the near future, many of the items on the cash forecast are usually estimated by some variation of the spot method. The bases of these spot estimates are usually the firm's other financial plans. The remaining estimates are mostly on a 'proportion of another account' basis; another account often being of a particular period's sales. The other two methods are employed less frequently.

It is a common experience that forecast of disbursements is much easier than receipts because the cash manager can reply on internal information and knowledge of payment policies in order to determine what needs to be paid and when. Besides, he has the knowledge of the firm's other plans (or budgets) and can make use of the forecasting techniques described above. However, a major challenge for him comes in estimating the receipts from the collection of the firm's receivables. In this regard, a useful forecasting method is to analyze the historical payment patterns to determine the proportion of credit sales that are collected at various times after the date of sale, and then use this information (along with the estimates of future sales) to project future receipts.

In this approach, all collection rates are estimated simultaneously by regressing past sales figures against past collections. The estimated coefficients of the sales figures in the regression can be interpreted as the collection proportions and the standard errors of the estimated regression coefficients as the uncertainty inherent in the estimation of these collection proportions.

Let us take an example. Suppose that a firm has regressed its monthly collections for past months against the appropriate past monthly sales figures and has obtained the following results:

$$C_t = 0.754\ S_{t-1} + 0.241\ S_{t-2}$$
$$= (0.250) \quad (0.087)$$

The figure in parentheses below the estimated collection rates are the standard errors of these collection rates. In this equation, C_t is the collection from receivables in period t, S_{t-1} is the sales in period t_1 (say previous month; and S_{t-2} is the sales in period t_2 (say two months previously). Assume also that these were the only statistically significant explanatory variables. The variables like S_{t-3}, S_{t-4} etc., and dummy variable to assess seasonality, were not significant, and that the overall estimated equation was highly significant. We may now interpret the regression results in the following way. The estimated collection rates 75.4 percent (regression coefficient on S_{t-1}) of the previous month's sales and 24.1 percent (regression coefficient on S_{t-2}) of the sales from two months previously. The implied bad debt rate of 0.5 percent is equal to one minus the sum of the collection rates. The standard error figures are used to test the statistical significance of the estimated regression coefficients.

In a situation where the firm is in multiple business lines, the use of overall payment patterns to forecast receipts will be accurate only when the proportions of total sales made in each business line are constant. This is an unlikely situation, particularly since the different lines usually have different seasonal variations. In such a multi-line situation, the most accurate forecasting result is achieved by forecasting receipts for the difficult units of the firm that are individually based on their own receipt patterns. Then summing these receipt we forecast to obtain total cash receipts for the firm.

3.5 Sources of Uncertainty in Cash Forecasting

Accurate cash flow forecasting hinges on the forecaster's ability to reduce the amount of observed error between forecast values and actual values that have occurred given the short-run nature of the cash forecast. With most things occurring in the near future, one would tend to think that most financial transactions could be forecasted very accurately. This is far from true. In practice, few firms, if any, are able to forecast their inflow and outflow accurately. Sales forecast are notoriously unreliable, for actual sales depend in part, upon factors that lie outside the control of the firm. Changes in the marketing of competitive products, as well as changes in general economic conditions can lead to large forecasting error. We may further note that any errors in sales forecast have multiple impacts on the firm's cash flows, they impact on receivable level (and therefore collections) and also on production expenses (and therefore disbursements).

The firm is also faced with collection rate uncertainty. The firm may historically have collected an average of a certain percent of its outstanding receivable from a particular period in another particular period, but this average contains considerable variability. Further, changing market and economic conditions may make extrapolation of past historical data into future periods a futile exercise. There is still another source of uncertainty – production cost uncertainty. The price of material may change, production problems may arise that lead to increased labour costs and errors in the sales estimates would necessarily be used to estimate forecasting errors of purchases – hence the volume of payables.

Capital outflows uncertainty – is one of the biggest sources of surprises in cash flow forecasting. This is the uncertainty regarding the turning of cash disbursement related to the firm's major capital expenditure and construction firms are notorious for filing late progress reports and then expecting immediate payment. While only a small percent of the firm's total bills are from capital construction programmes, the amounts involved are usually very large once unexpected item of this sort can impair a carefully drawn cash flow forecast.

3.6 Simulation Approach

An efficient way to deal with the above uncertainties is to apply simulation approach of cash forecast. Simulation approach permits the financial managers to incorporate in this forecasting both most likely value of ending cash balances (surplus/deficits) for each of the forecast period (say, for each month over the next quarter) and the margin of error associated with this estimate. It involves the following steps:

1) **Probability distributions** for each of the major uncertain variables are developed. The variables would generally include sales, selling price, proportion of cash and credit sales, collection rates, production costs, and capital expenditures. Some of these variables have the greatest influence upon cash balances.
Clearly, more time and effect should be spent in obtaining probability distributions of these variables.

2) Compute the **Cumulative probability distribution.**
Distribution of the uncertain variables

3) Attach **tag numbers** to the values of the variables.
Tag numbers are a range of values between 00 and 99 attached proportionally to each segment of the simulated variable.

4) Using the random numbers generated by a computer or any other electronic device, example the calculator.
Values are drawn at random for the variables for their respective profitability distribution and using these values each of the balances are estimated.

5) **The process is repeated several times** (say 1000 times).

Needless to say, each tedious and cumbersome computation is done on computer. From the trial results, information of the kind as shown in Table 3.1D.

Table 3.1D: Hypothetical Simulation Results

Month	Average cash balance ₦ (000)	Standard deviation ₦ (000)
April	3104	334
May	1258	375
June	1221	353
July	1104	402
August	363	403
September	591	421

How can the finance manager use the results of the simulation? The usefulness of the results as shown in Table 3.1D lies in the fact that summary statistics (i.e. average cash balance and standard deviation) can be used to determine **upper/lower estimates of cash surplus or deficit** for each month, with a probability of say 95 percent that cash balance will remain within the estimated range. Assuming that the distribution of month-ending cash balances is normal, we can obtain the upper/lower estimates by applying the following formula:

Upper/lower estimates = average Cash balance ± Z x standard deviation

Where Z is the standard normal variate.

With the information of this type in hand, finance managers can now address the **formulation of appropriate investment and financing strategies.**

Let us now proceed with some examples to illustrate the point.

Illustration

Consider our hypothetical simulation results and assume that the costs of having insufficient cash and the costs of hedges (i.e. financial arrangements to fall back upon in case of shortage of cash) are such that the firm desires to incur, at maximum, a 5 percent chance of having insufficient cash to cover expenses. What is the maximum amount expected as deficit in the month of June, given a mean of N1, 221,000 and a standard deviation of N353, 000.

Solution

The Z statistics for 95 percent confidence interval is 1.745. The 1.745 times of N353, 000 is N580, 685. The maximum amount that the firm should arrange to borrow is N1, 221,000 plus N580, 685 or N1, 801,685. The maximum amount is N221, 000 – N582, 685 or N640, 315. There is a 5 percent chance that the actual borrowing needs in June will be greater than N1, 221,000 and a 95 percent chance that the requirements will be less than this.

Illustration

Let us now consider that the firm is contemplating how much of the estimated surplus in September to invest in a 60-day investment. How much can the firm invest and have only 10 percent chance of having to recall the investment in September?

Solution

Z statistic for 90 percent confidence interval is 1.28, 1.28 times N421, 000 is N538, 880; N591, 000 less N538, 880 is N52120. There is 10 percent chance that cash surplus in September will be less than N52, 120 so, the firm can invest the amount in the 60-day investment and have a 10 percent chance that they will have to liquidate the investment prior to maturity.

Notice that the maximum amount expected in this case is N591, 000 plus N538, 880, which is N1, 129,880

Illustration

A bakery keeps stock of a popular brand of cake. Previous experience shows the daily demand pattern for the item with associated probabilities as given below:

Daily demand (NOS.):		0	10	20	30	40	50
Probability	:	0.01	0.20	0.15	0.50	0.12	0.02

Use the following sequence of random numbers to simulate the demand for next 10 days: 25, 39, 65, 12, 05, 73, 89, 19, 49.

Also estimate the daily average demand for the cakes on the basis of simulated data.

Solution

Steps 1 to 3: According to the given distribution of demand, the random number coding for various demand level is shown in Table 3.1A below. Here random numbers are allocated to the events in the same proportion as indicated in the probabilities.

Table 3.1A: Random Number Coding

Demand	Probability	Cumulative Probability	Random number interval
0	0.01	0.01	00
10	0.20	0.01 + 0.20 = 0.21	01 – 20
20	0.15	0.21+ 0.15 = 0.36	21 – 35
30	0.50	0.36 + 0.50 = 0.86	36 – 85
40	0.12	0.86 + 0.12 = 0.98	86 − 97
50	0.02	0.96 + 0.02 = 1.00	98 − 99

Steps 4 & 5: The random number are generated and linked to the appropriate events. The simulated demand for the cake for the next 10 days is given in Table 3.1B below.

Days	Random Numbers	Demand
1	25	20
2	39	30
3	65	30
4	76	30
5	12	10
6	05	10
7	73	30
8	89	40
9	19	10
10	49	30
Total	-	240

Thus, expected demand = $\frac{240}{10}$ = 24 units per day

Explanatory notes

(1) The demand for each day is obtain by matching the random numbers generated in Table 3.1B against the appropriate Random Number Interval in Table 3.1A. For instance, for the first day, the Random Number (RN) generated is 25. This is in the 21- 25 Random Number Interval (RNI) in Table 3.1A. Thus corresponding demand is 20. Similarly, when RN = 39 on the day 2, RNI is 36 – 86 and the demand is 30, etc.

(2) In a situation where we have more than one variable being simulated, the above steps taken in the Table 3.1A and 3.1B are repeated for each variable. The only difference here is that we use a different set of Random Numbers (RNs) to simulate each additional variable.

(3) A continuous stream of Random Numbers (RNs) can be obtained by the use of a scientific calculator, example, CASIO fx-82MS. You will see on the bottom low of the keyboard the symbol "RA#". Just press this key as many times as required and the calculator will return to Random Number (RN) each time you press. A note of warning, "Don't expect to get the same set of Random Numbers (RN) each time you open the calculator for work". The Random Number (RN) generator in the calculator has been designed to re-initialise itself each time an operation is terminated and another commences. Also, it is almost impossible for two different calculators to produce the same sets of Random Numbers (RN). However, the randomness and independence in the numbers generated is always preserved, no matter what calculator is used. The same result can be obtained with the use of a computer. There are also some published tables of Random Numbers in statistical tables and books

SELF ASSESSMENT EXERCISE 1

List out three sources of uncertainty which affect the cash position of a firm.

SELF ASSESSMENT EXERCISE 2

Briefly mention the steps involved in the simulation of cash flow forecasting.

4.0 CONCLUSION

This Unit highlighted the sources of uncertainty affecting the cash balance of a firm and explained the process of preparing cash flow forecast under conditions of uncertainty by adopting a technique like simulation approach.

5.0 SUMMARY

Firms make and use forecasts in order to be able to plan for expected surpluses and deficits. A common approach to short-term forecast is the receipts and disbursement approach. Several techniques are available to predict the individual items of inflows and outflows; however, a major challenge lies in estimating collection from receivables. This can be forecasted by the payment pattern approach. Given this approach, one can improve upon the estimates of collection rates by the application of regression analysis. There are several sources of uncertainty in cash forecasting – sales, collection rates, production cost and capital outflows. Simulation analysis leads to better estimates of required borrowings and surpluses under the condition of uncertainty.

6.0 TUTOR-MARKED ASSIGNMENT

Write a brief note on simulation approach as a technique of cash flow forecasting under uncertainty.

The student should answer this question within 30 sentences.

7.0 REFERENCES/FURTHER READINGS

J.F. Weston and T.E. Copeland: *Managerial Finance* 2nd Edition.

Brigham E.F. and Copeski C.C. (1991). *Financial Management: Theory and Practice.*

MODULE 5

UNIT 1 INVENTORY MANAGEMENT I

CONTENTS

1.0 INTRODUCTION

Working capital as net concept is defined as the difference between current assets and current liabilities. Current assets being those assets that are likely to be converted into liquidity within a year's time or so, and include items like inventories of raw materials, semi-manufactured articles or work-in-process and finished goods, accounts receivable or dues from customers, hunches or bills receivable, bank balance and cash balance etc. Current liabilities are in essence short-term liabilities which have to be settled in a year's time, e.g. accounts payable or amount payable to suppliers of goods and services for goods and services delivered on credit, bills payable, bank overdraft etc. Since inventories constitute a major item of current assets, the management of inventories is crucial to successful working capital management. In this unit, we shall discuss the nature and importance of inventory management as a component of working capital management, the motive of holding inventory and the economic order quantity (EOQ) model.

2.0 OBJECTIVES

The objectives of this Unit are that you should be able to:

- discuss the nature and importance of inventory management as a segment of working capital management
- list various motives of holding inventories
- pinpoint inventory related cost
- design deterministic EOQ models.

3.0 MAIN CONTENT

3.1 Nature and Importance

Working capital management are influenced by inventory holding i.e. the period during which raw material remain in store, that period during which processing takes place and that period during which finished goods lie in the warehouse prior to sale. The level of inventory investment affects the total investment in working capital. Thus, operating ratios such as the ratio of turnover or sales to working capital are affected by it as well.

Return on investment can be viewed as follows:

$$= \frac{\text{Return}}{\text{On sales}} \times \frac{\text{Sales}}{\text{On investment}}$$

Therefore, return on investment can improve if the return on sales improves and/or if the turnover ratio improves. Since the two major components of total investment are fixed capital or fixed assets (like land and buildings, plant and machinery, furniture and fixture, motor vehicles, etc.) and working capital, proper management of working capital is imperative so as to avoid unnecessary blockage of funds in this area and to ensure that the optimum level of investment is made. This will make room for reduction in the investment and thus pave the way for a higher return on investment.

3.2 Motives of Holding Inventories

It is possible to identify the major motives for holding inventories:

(1) The transaction motive propels a business to maintain inventories so that there are no bottlenecks in production and on sales. It is natural for a business to plan inventory investment commensurate with the level of transactions in the business. The business seeks

to ensure that on the shop floor, production does not get stalled for want of materials etc., and sales do not suffer on account of non-availability of finished goods.

(2) The precautionary motive is also at work. Inventories are held so that there is a cushion against unpredictable events. For instance, there may be a sudden and unforeseen spirit in demand for finished goods or there may occur a sudden and unforeseen slump or delay in supply of raw materials or other components needed for production. An enterprise would surely like to have some cushion to tide over such situations.

(3) Inventories may also be held so that advantage can be taken of price fluctuations. For instance, if the price of a particular raw material is expected to go up rather steeply, an enterprise may decide to hold a larger than necessary stock of this item (the acquire prior to escalation).

3.3 Inventory Related Benefits and Costs

As indicated earlier, inventories include stocks of raw material, semi-manufactured or semi-processed or work-in-process and finished products. While trading businesses carry inventories of the merchandize they offer for sale, manufacturing businesses carry inventories of all three kinds. Raw materials inventories are maintained so that there remains some flexibility in purchasing and in production scheduling. Inventories of semi-manufactured goods ensure flexibility in production scheduling and utilization of resources, and inventories of finished products ensures flexibility in production scheduling and marketing.

By carrying inventories, a firm can address, to a large extent, demand and lead time uncertainties. The principle followed is that of carrying what we call a "buffer". Inventories can also ease out the flow of production when there are time lags in deliveries. Inventories may also help achieve some economies of scale in purchasing and help tide over the problems of seasonal variables. It follows from the above that there are several advantages to be derived from holding a large inventory such as economies in production and purchasing and flexibility in operations. However, there are several disadvantages and costs associated with carrying large inventories and that is why we must devote our attention to the question of inventory management.

When inventories are inadequate, a firm is unable to produce and sell. The cost of incurring shortages is the opportunity cost of not having an item in stock when demanded. Such a situation entails the possibility of the loss of sales or of backlogging. In either case, there are tangible and

intangible costs of not meeting the demand on time. When inventories are carried, there are certain costs involved and it is necessary for one to take these into account in planning for inventories.

- **Ordering costs:** When a purchase order is placed for the acquisition of inventories, certain costs are incurred, e.g., clerical and administrative salaries, rent for the space occupied by these departments, postage, telegram, telephone bills, stationery, etc. The ordering costs are directly proportional to the number of orders placed.

- **The cost of the material purchased.**

- **Carrying costs such as the following:**

(a) insurance charges for covering the risk of fire hazards, thefts, etc;
(b) rent of the floor space occupied, interest on funds borrowed for stocks;
(c) heating, lighting of the space occupied;
(d) indirect labour costs involved in storage, stocktaking, security, etc;
(e) material handing costs;
(f) cost of wastage and material losses in the stores;
(g) risk of obsolescence and deterioration and fall in prices of the inventories carried; and
(h) the opportunity cost of carrying inventories; which means had the money blocked in inventories been invested elsewhere in the business, it would have earned a return and hence the loss of return may be considered as an opportunity cost.

3.4 Economic Order Quantity (EOQ) Model

Several models have been developed for the purpose of inventory planning and control. The basic purpose behind such modeling is to arrive at the level of optimum investment in inventories. As will be evident from the discussion that follows, these models allow one to figure out the optimum lot size, i.e., the number of units that should be ordered each time.

There exist basically two kinds of models: deterministic and stochastic or probabilistic. The deterministic models are built on the premise that there is no uncertainty associated with the demand and replenishment or lead times.

The probabilistic models take cognizance of the fact that there is always some uncertainty associated with the demand pattern and lead times.

For the purpose of exposition, we shall now proceed to develop a deterministic model for arriving at the Re-order Quantity or the Economic Order Quantity (EOQ). This is an important concept in the purchase of raw material and in the storage of finished goods and in-transit inventories. We shall determine optimal order quantity for a particular item of inventory. In this exercise, we are going to arrive at the optimal order quantity of an item of inventory, given its forecasted usage, the ordering cost and the carrying cost. Ordering cost can mean purchase or production cost.

Let us assume that the usage of this particular item is known with certainty and that the usage is stationary or steady throughout the period of time being analyzed. In essence, what we are assuming is that if the usage is 5200 units a year, the usage every week is 100 nits. Goods are used evenly throughout the year. It is noteworthy that the EOQ model can be modified to take account of increasing or decreasing use over time. For the purpose of this exercise, such modifications are not being considered. We are assuming that the cost per order or the ordering cost, k, is constant regardless of the size of the order. As discussed earlier, k represents the clerical, administrative and other costs involved in placing an order for the purchase of raw materials. For finished goods inventories, the cost of ordering involves scheduling a production run and for in-transit inventories. It involves basically record keeping. Obviously, the total ordering cost is the cost per order times the number of orders placed.

The average holding cost or carrying cost per unit represents the cost of inventory storage, handling, insurance, etc, and the required rate of return on the investment in inventories. We are assuming that these costs are constant per unit of inventory per unit of time. Therefore, the total carrying cost for a period is the average number of units of inventory for the period times the carrying cost per unit.

We are also assuming that inventory orders are filled without delay, since out-of-stock items can be filled without delay, there is no need to maintain a safety stock or buffer stock.

Since the usage has been assumed to be steady and there is no buffer stock, the average inventory can be expressed as Q/2, where Q = quantity per order and this quantity ordered is assumed to be constant over the period. Let us also assume that the particular item in question is purchased, the total cost involved on this count is the cost per unit times the number of units purchased.

Let

Average holding cost per unit	=	C
Total demand per week	=	D
Quantity per order	=	Q
The number of orders placed	=	D/Q
Cost per unit of the item purchased	=	P
Average inventory carried	=	Q/2
Cost per order	=	k
Then, total cost (TC) per week	=	k D/Q + PD + C Q/2

Where
KD/Q represents ordering cost
PD represents cost of purchase of the item in question, and
C Q/2 represents the holding cost or the carrying cost.

For an optimal solution, we need to minimize the total associated cost. We would therefore set the first derivative equal to O, and find out whether the second derivative is positive.

$$TC = KD/Q + PD + CQ/2$$

$$\frac{dTC}{dQ} = -KD/Q^{-2} + \frac{C}{2} = O$$

Therefore

$$KD/Q^2 = C/2$$
$$CQ^2 = 2KD$$
$$Q^2 = 2\,KD/C$$

Q * (or the economic order quantity)

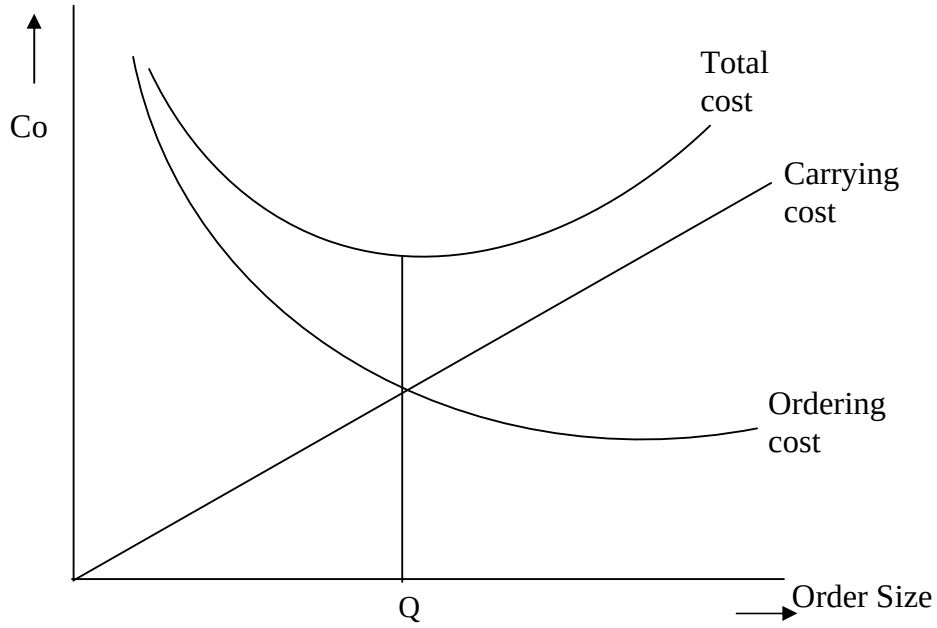
$$= \sqrt{\frac{2KD}{C}}$$

The EOQ model is useful in so far as it tells the amount to order and the best timing of our orders in the case of raw materials. With respect to finished goods inventories, it enables us to exercise better control over the timing and size of production runs. As a whole, this model provides a decision rule regarding the replenishment of inventories, the time and the amount to be replenished.

A graphical representation of the EOQ relationship appears in Figure B. In the figure, we plot ordering costs, carrying costs and total costs – the sum of the first two costs. We see that whereas carrying costs vary directly with the size of the order, ordering cost vary inversely with the size of the order. The total cost time declines at the first, as the fixed

cost of ordering are spread over more units. The total cost time begins to rise when the decrease in average ordering cost is more than offset by the additional carrying costs. Point x then represents the economic order quantity, which minimizes the total cost of inventory.

Figure B: EOQ Relationship



The EOQ formula taken up in this unit is a very useful tool for inventory control. In purchasing raw material or other items of inventory, the EOQ tells the amount to order and the best timing of our orders. For finished goods inventory, the EOQ enables us to exercise better control over the timing and size of production runs. In general, the EOQ model gives us a rule for deciding when to replenish inventories and the amount to replenish.

Illustration

The usage of an inventory item during the year is estimated at 2000 unit. The ordering cost works out to N100/order and the holding cost is estimated at N10 per unit per year. The cost of the item, i.e., the purchase price is N1 per unit. By applying the EOQ model, we can directly arrive at the EOQ as follows:

$$Q^* = \sqrt{\frac{2\,(100)\,.\,(2000)}{10}} = 200 \text{ units}$$

SELF ASSESSMENT EXERCISE 1

Compare and contrast the following concept:

(a) Transaction motive and precautionary motive of holding inventory.
(b) Ordering cost and carrying cost.

SELF ASSESSMENT EXERCISE 2

(a) State the weaknesses of EOQ model.
(b) Given the following information, calculate EOQ:

D = 1600 units
K = N50
C = N1

4.0 CONCLUSION

In this Unit, we have discussed the nature and importance of inventory management as a component of working capital management, transaction, precautionary and other motives for holding inventories, and the process of formulating and operating a deterministic economic order quantity. EOQ model was also explained.

5.0 SUMMARY

In this Unit, we have discussed the nature and importance of inventory, management as a segment of working capital management. Various motives for holding inventories as well as the benefits and cost associated with maintaining inventories have been discussed. The process of designing and operating a deterministic economic order quantity model has been explained and illustrated.

6.0 TUTOR-MARKED ASSIGNMENT

Derive the EOQ formula.

7.0 REFERENCES/FURTHER READINGS

Van Horne, James C (1988). *Financial Management and Policy*. New Delhi: Prenctice-Hall of India.

UNIT 2 INVENTORY MANAGEMENT II

CONTENTS

1.0 INTRODUCTION

In this Unit, we shall discuss quantity discount, buffer-stock and order point aspects of inventory management. The unit closes with a discussion of selective inventory management techniques.

2.0 OBJECTIVES

In this unit, you should be able to:

i. explain how one can approach an uncertain situation;
ii. determine buffer stocks and reorder point; and
iii. use selective inventory management techniques.

3.0 MAIN CONTENT

3.1 Analysis of Quantity Discounts

There are occasions when a firm is able to take advantage of quantity discounts, provided the order size reaches a certain level. It is possible to analyze and decide on such cases.

Illustration

For instance, in the preceding example, we found that the usage per year is 2000 units, the holding cost per unit per year is N10 and the ordering cost is N100. Let us now consider what would be the solution if it was known that a quantity discount of 10% in price is available if the order size is raised to 250 units.

Solution

Whether or not the quantity discount should be availed of depend on an assessment of the cost and benefits involved. The saving resulting from the quantity discount = N1 x 0.10 x 2000 = N2000. The cost is the additional holding cost minus savings in ordering cost stemming from fewer orders being placed.

While the cost was CQ*/2 = 10 (200)/2 = N1000. The cost would now be Cq/2 = 10 (250)/2 = N1250.

Where q* = new order size
There would be a difference of N250.
The savings in ordering cost can be arrived at as follows:

Total ordering cost when 200 units are ordered each time
= 2000 (100)/200 = N100

Total ordering cost when 250 units are ordered each time
= 2000 (100)/250 = N800

Therefore, the saving in ordering cost would be (N1000 – N800)
= N200

Thus, while the saving in ordering cost would be N(1000-800) = N200, the escalation in holding cost would be N250, that is to say that, the net increase in cost would be N50.

In this particular instance, it would be advisable to avail of the quantity discount option because the saving of N200 exceeds the net increase in cost of N50.

3.2 Buffer Stock Decision

As was noted in Unit 17, most firms maintain some margin of safety or buffer stock. If they did not do so, they would run the risk of being unable to meet the demand for an item of inventory at a particular point in time. The cost of incurring shortages is the opportunity cost that one must take into account. When finished goods are in short supply, customers get irritated and a loss of business may result there-from. When raw material or in-transit inventories are in short supply, stoppage in production and resulting inefficiencies may crop up.

To decide on the level of buffer stock to be carried, a firm must balance the cost of stock out with the cost of carrying additional inventory. One

can assess this balance if the probability distribution of future usage is known.

Illustration

Suppose the usage of an inventory item over a week is expected to be as follows:

Usage (in unit)	Probability
50	0.04
100	0.08
150	0.20
200	0.36
300	0.08
350	0.04
	1.00

Let us also assume an economic order quantity of 200 units per week, steady usage, 200 units in hand at the beginning of the period and three days' lead time required to procure inventories. We may further assume that since this lead time is known with certainty orders are placed on the fifth day for delivery on the eighth day or the first day of the next seven-day-week. Even if the firm carries no buffer stock, there will be no stock outs as long as the usage is 200 units or less. When usage exceeds 200 units, there will be stock out. When we know the cost per unit of stock out, we are in a position to calculate the expected cost of stock outs and compare this with the cost of carrying additional inventory. Normally, the stock out cost includes the loss of profit arising from the order not being filled, a valuation of the loss of business reputation and goodwill. Let us say we reckon that the stock out cost is N6 per unit and the average carrying cost per week is N1 per unit when we are in a position to figure out the expected costs associated with various levels of safety stocks.

Safety Stock Units	Stock out	Stock Cost (₦)	Probability	Expected Stock out Cost (₦)	Carrying Cost (₦)	Total Cost(₦)
150	0	0	0	0	150	150
100	50	300(6x50)	0.04	12 (0.4x300)	100	120
50	100	600	0.04	24	50	98
	50	300	0.08	24		
0	150	900	0.04	36		
	50	300	0.20	60	0	144

From the above table, it can be clearly seen that the optimal safety stock is 50 units since at that level the total cost is at its lowest.

However, some firms simply decide on a probability level of stock out acceptable to them and then decide on the level of safety stock. For example, if this firm had decided on accepting a probability of 10% stock out then it will maintain a safety stock of 50 units only. If however, the firm wished to accept a probability of only 5% stock out, then it will maintain a safety stock of 100 units. When it maintains a safety stock of 100 units, it will be able to meet all situations except the one where there is 4% probability of the usage being 350 units.

3.3 Determination of Order Point

We may define the optimal order point as that level of inventory at which we ought to place order for the economic order quantity. At this point, the usage of an item of inventory, allowing for stock out tolerance exhaust the existing inventory during the lead time required to procure new supplies. The order point is given by the following expression:

$$ROL = (D)(L) + F\sqrt{(D)(N)(L)}$$

where D stands for the demand or usage, L stands for the lead time necessary for the procurement of additional inventory, N is the average number of units per order and F is the stock out acceptance factor. If 50 unit were ordered during a period of time under 10 orders, N would equal 5. If it is assumed that usage or demand is distributed according to a Poisson distribution, for a 100% stock out acceptance, the acceptance factor would be 1.29.

Let us try to work out the order point in the following case:

Demand	=	100 units per work
Lead time	=	½ week
Number of unit per order	=	5
Acceptance stock out %	=	10
Then, order point	=	$(D)(L) + F\sqrt{(D)(N)(L)}$
	=	$(100)(½) + 1.29\sqrt{100(5)(½)}$
	=	$50 + 1.29\sqrt{250}$
	=	70 units.

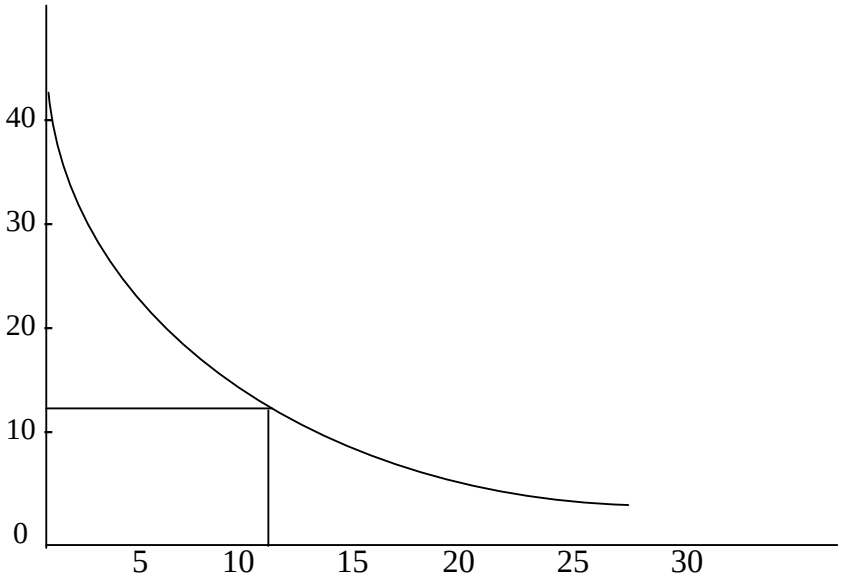


Figure 3.1H: Acceptable Stock out Percentage

The order point of 70 units includes a safety stock of 20 units. Had safety stock not been maintained the order point would have been 50 units or half of the requirement of 100 units per week. The basic advantage of the order point formula is that it minimizes the investment in inventory considering the acceptable level of stock out. In principle, this is like the two-bin system. A constant replenishment order is placed when the inventory reaches a critical level. It is as though when stock is used from the regular bin, an order for replenishment is placed. As will be evident from the foregoing analysis, the total costs are influenced by both the order point and the order quantity. Therefore, a well designed inventory control system must take both of these into account.

It is equally important to mention that inventory management, besides the quantitative and economic analysis of the kind described above, also involves other considerations. For instance, when the market is a highly competitive one and customer behaviour is by and large unpredictable, it may be necessary to carry a somewhat higher level of inventories so that selling opportunities are not missed. Constraints may be imposed on the management of inventories by governmental restrictions, e.g. imported parts and components.

As has been indicated earlier, there exists the risk of obsolescence and deterioration when inventories are carried. It is advisable for every organization to assess the risk in framing inventory policies. The level of inventory carried also depends to some extent on the anticipation of price escalation resulting from scarcity or other forces given the conditions obtaining in our country. It may be difficult to use the EOQ

model for planning inventories of a large number of raw materials, stores and spare parts. Imported items come in sizes and in bulk; one has to depend on government agencies which take a national view of the situation rather than the firm's point of view. Because of these and similar factors, it is not unusual to find inventory holding to be larger than the optimum level. It is however, true that if the factors discussed above are taken into account, and inventory models are made use of, it is possible to ensure efficient inventory management.

3.4 Selective Inventory Management Techniques

Selective inventory management techniques such as the A-B-C analysis or the analysis of U-E-D or the F-S-N analysis can help introduce efficiency. The logic behind this approach is that in any large number are usually have significant few and insignificant many.

Under the F.S.N. analysis, goods are classified into fast-moving, slow-moving and non-moving categories.
Under the V-E-D analysis, goods are classified into vital, essential and desirable categories.

Under the A-B-C analysis, goods are classified into most expensive A; next most expensive B; and less expensive C.

Obviously, a firm can according to the circumstances obtained in it use a combination of these techniques to control and monitor inventories and to achieve the goal of working capital management.

SELF ASSESSMENT EXERCISE 1

Select a small-scale or medium-scale manufacturing organization in your environment. Collect consumption data on 200 inventory items. Classify these into V-E-D, F-S-N and A-B-C categories as far as possible.

SELF ASSESSMENT EXERCISE 2

To reduce production start up costs, M. A. Sani Truck Company may manufacture longer runs of the same truck. Estimated savings from the increase in efficiency are N260, 000 per year. However, inventory turnover will decrease from 8 times a year to 6 times a year. Cost of goods sold are N48 million on an annual basis. If the required rate of return on investment in inventories is 15%, should the company instigate the new production plan?

4.0 CONCLUSION

Quantity discount, buffer stock and order point aspects of inventory management have been discussed. The unit also discussed the selective inventory management techniques, i.e., F.S.N, V.E.D and A.B.C.

5.0 SUMMARY

In this Unit, other important dimension of inventory management, namely: quantity discount, buffer stock etc., have been discussed. This Unit closes with a discussion of selective inventory management techniques.

ANSWER TO SELF ASSESSMENT EXERCISE 1

Inventories after change	=	N48 million/6	=	N8 million
Present inventories	=	N48 million/6	=	N6 million
		N2 million		
Additional inventories			=	N2 million
Opportunity cost	=	N2million x 0.15	=	N300, 000

The opportunity cost is greater than the savings. Therefore the new production should not be undertaken.

6.0 TUTOR-MARKED ASSIGNMENT

Describe the selective inventory management technique.

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UNIT 3 PAYABLE MANAGEMENT

CONTENTS

1.0 INTRODUCTION

A substantial part of purchases of goods and services in business are on credit terms rather than against cash payments. While the supplier of goods and services tend to perceive credit as a lever for enhancing sales or as a form of non-price instrument of competition, the buyer tends to look upon it as a loaning of goods or inventory. The supplier's credit is referred to as accounts payable, trade credit, trade bill, trade acceptance, commercial draft or bill payable depending on the nature of credit provided.

The extent to which this "buy-now, pay later" facility is provided will depend upon a variety of factors such as the nature, quantity and volume of items to be purchased, the prevalent practices in the trade, the degree of competition and the financial status of the parties concerned. Trade credits or payable constitute a major segment of current liabilities in many business enterprise and they primarily finance inventories which form a major component of current assets in many cases.

2.0 OBJECTIVES

The objectives of this unit are:

- to explain the significance of payables as a source of finance
- to identify the factors that influence the payable quantum and duration
- to highlight the advantage of payable and provide hints for effective management of payable.

3.0 MAIN CONTENT

3.1 Payables: Their Significance

Payables constitute a current or short-term liability representing the buyer's obligation to buy a certain amount on a date in the near future for value of goods or services received. They are short-term deferments of cash payment that the buyer of goods and services is allowed by the seller. Trade credit is extended in connection with goods purchased for resale or for processing and resale, and hence excludes consumer credit provided to individuals for purchasing good for ultimate use and installment credit provided for purchase of equipment for production purposes. Trade credit or payable serve as non-interest bearing source of funds in most cases. They provide a spontaneous source of capital that flows in naturally in the course of business in keeping with established commercial practices or formal understandings.

3.2 Types of Trade Credit

Trade credits or payable could be of three types: open accounts, promissory notes and bill payable.

Open Account

Open account or open credit operates as an informal arrangement wherein the supplier after satisfying himself about the credit worthiness of the buyer, despatches the goods as required by the buyer and send the invoice with particulars of quantity despatched, the rate and total price payable and the payment terms. The buyer records his liability to the supplier in his books of accounts and this is shown as payables on open account. The buyer is then expected to meet his obligation on the due date.

Promissory Notes

The promissory note is a formal document signed by the buyer promising to pay the amount to the seller at a fixed or determinable future time. Where the client fails to meet his obligation as per open credit on the due date, the supplier may require a formal acknowledgement of debt and a commitment of payable by a fixed date. The promissory note is thus an instrument of acknowledgement of debt and a promise to pay. The supplier may even stipulate an interest payment for the delay involved in payment.

Bills payable

Bills payable or commercial drafts are instruments drawn by the seller and accepted by the buyer for payment on the expiry of the specified duration. The bill or draft will indicate the banker to whom the amount is to be paid on the due date, and the goods will be delivered to the buyer against acceptance of the bill. The seller may either retain the bill and present it for payment on the due date or may raise funds immediately thereon by discounting it with the banker. The buyer will then pay the amount of the bill to the banker on the due date.

3.3 Determination of Trade Credit

1. Size of Firm

Smaller firms have increasing dependence on trade credit as they find it difficult to obtain alternative sources of finance as easily as medium or large-sized firms. At the same time, larger firms that are less vulnerable to adverse turn in business can commence prompt credit facility from supplier, while smaller firm may find it difficult to sustain credit worthiness during periods of financial strain and may have reduced access to credit due to weak financial position.

2. Industrial Categories

Different categories of industries or commercial enterprises show varying degree of dependence on trade credit. In certain lines of business, the prevailing commercial practices may stipulate purchases against payable in most cases. Monopoly firms may insist on cash on delivery. There could be instances where the firm's inventory turnover every fortnight, but the firm enjoys thirty days credit from suppliers, whereby the trade credit not only finances the firm's inventory but also provides part of the operating funds or additional working capital.

3. Nature of Product

Products that sell faster or which have higher turnover may need shorter credit term. Products which have slower turnover take longer to generate cash flows and will need extended credit terms.

4. Financial Position of Seller

The financial position of the seller will influence the quantities and period of credit that he wishes to be extended. The weak suppliers will have to be strict and operate on higher credit terms to buyers. Stronger suppliers, on the other hand, can dictate stringent credit terms but may

prefer to extend liberal credit so long as the transactions provide benefits in excess of the costs of extending credit. They can afford to extend credit to smaller firm and assume higher risks. Suppliers with working capital crunch will be willing to offer higher cash discount to encourage early payments.

5. Financial Position of the Buyer

Buyer's credit worthiness is an important factor in determining the credit quantum and period. It may be logical to expect large buyers not to insist on extended credit terms from small suppliers with weak bargaining power. Where goods are supplied on a consignment basis, the supplier provides extra finance for the merchandize and pay commission to the consignee for the goods sold. Small retailers are thus enabled to carry much larger levels of stocks than they will be able to finance by themselves. Slow paying or delinquent accounts may be compelled to accept stricter credit terms or higher prices for products to cover risk.

6. Degree of Risk

Estimate of credit risk associated with the buyer will indicate what credit policy to be adopted. This risk may be with reference to buyer's financial standing or with reference to the nature of the business the buyer is in.

7. Cash Discount

Cash discount influences the effective length of credit. Failure to take advantage of the cash discount could result in the buyer using the funds at an effective rate of interest higher than that of alternative sources of finance available. By providing cash discount and inducing good credit risks and the desire to pay within the discount period, the supplier will also save on the costs of administration connected with keeping records of dues and collecting overdue accounts.

8. Nature and Extent of Competition

Monopoly status facilitates imposition of tight credit terms, whereas intense competition will promote the tendency to liberalize credit. Newly established companies in competitive fields may more readily resort to liberal trade credit for promoting sales than established firms which are more formal in deciding on credit policies.

9. Cost of Credit

Billing method can vary. The payment of invoices may be stipulated as a number of days after the date of the invoice or after the receipt of the goods. In instances of seasonal business, when the supplier wishes to induce customers to acquire and hold inventories in advance of the peak sales period, he may resort to dating. The supplier under this arrangement extends longer duration credit to the buyer and allows him to pay for the goods when the peak period sales pick up. In some cases, a series of despatches affected during a period, say, a month, are bunched together or for invoicing and the credit term is reckoned from the invoice date.

When the credit does not cover cash discount for early payment, the trade credit is considered to be a cost-free source of financing for the buyer, it is not uncommon for some of the buyers to delay payments beyond the due date, thus extending the period of use of cost free trade credit. Trade credit is a built-in source of financing that is normally linked to the production cycle of the purchasing firm. If payments are made strictly in accordance with credit terms, trade credit can be regarded as a cost-free, non-discretionary source of financing. But where the buyer takes the privilege of delaying payment beyond the due date, it assumes the form of discretionary financing and if this becomes a regular feature, resulting in delinquency, trade credits will cease to be cost-free. The supplier may stop credit or may charge a higher price for the product, to cover the risk. The supplier may offer cash discount for payment within a specified number of days after the invoice or after the receipts of goods. Generally, such concessions for expedited settlement are given to select customers on informal basis. Where the aim is to induce earlier payment wherever possible, cash discounts are provided for in the credit terms. The quantum of discount offered will vary for different categories of business and clients.

Cash discount is to be distinguished from the other categories of discount that may be offered by the seller, namely, the trade discount and the quantity discount. The trade discount is a reduction from the channel of distribution. Quantity discount are given when purchases are made in sizeable lots. When the cash discount is allowed for payment within a specified period, we can compute the cost of credit. For instance, if 30 days credit is offered with the stipulation of a 2 percent cash discount for payment within 10 days, it means that the cost of deferring payment by 20 days is 2 percent. If payment is made 20 days earlier than the due date, 2 percent of the amount due can be saved which amounts to an attractive annual saving rate of 36.7 percent.

Stretching trade credit or account payable results in two types of costs to the buyer. One is the cost of cash discount foregone and the other is the consequence of a poor credit rating. The contention that there is no explicit cost to trade credit if the payment is made during the discount period or if the payment is made on the due date when no cash discount is offered is not totally tenable. The supplier who is denied the use of funds during the credit period may bear the cost fully or pass on part of it to the buyer through higher prices. This will depend on the nature of demand for the products. If the demand is elastic, the supplier may opt to bear the cost himself and refrain from charging higher prices to recover parts of it. The buyer should satisfy himself that the burden of trade credit is not unduly loaded on him through disguised price revisions.

Repeated delinquency and deterioration in credit reputation do involve an opportunity cost though it is difficult to measure. Some suppliers may be more tolerant to delayed payments at some times than on other occasions. A policy of delayed payment is bad business practice and in the long run can prove very expensive or may even lead to freezing of credit source. Credit reputation is a precious asset that needs to be reserved with utmost care. The long run policy should be to avail discounts, if offered, utilize credit periods to the full and discharge obligations on schedule.

The following formula can be used for determining the effective rate of interest or return:

The Effective Rate of Interest (R) is given as:

R = (360/D (100 – C),

where

R = annual interest rate for the use of funds

C = cash discount

D = number of extra days the customer has the use of supplier's Funds

Let us take an illustration.

Illustration

A firm wants to hold additional inventory but does not have the cash to finance it. If the credit term is 2 percent discount for payment within 10 days with 60 days credit period, and the bank rate is 9 percent, should the firm take the discount?

If the discount is not taken, by the 10^{th} day, the effective rate of interest on the remaining 50 days will be:

2/98 x 360/50 = 14.7 percent

But the bank rate is 9 percent only. Therefore, it is advisable to take the discount offered, even if it involves utilizing bank borrowing for effecting early payment for availing the cash discount.

3.4 Advantages of Payables

(a) Easy to obtain

Payable or trade credit is readily obtainable, in most cases, without extended procedural formalities. During periods of credit crunch or paucity of working capital, trade credit from large suppliers can be a boom to small buyers.

(b) Suppliers assume the risk

Where the suppliers have the advantage of high gross margins on other products, they would be able to assume greater risks and extend more liberal credit.

(c) Informality

In trade credit, there is no rigidity in the matter of repayment on scheduled dates, occasioned delays are not frowned upon, it serves as an extendable convenient source of unsecured credit.

(d) Continuous Financing

Even as the current dues are paid, fresh credit flows in as further purchases are made. It is a continuous source of finance. With a steady credit term and the expectations of continuous circulation of trade credit backing up repeat purchases, trade credit does in effect, operate as long-term source.

3.5 Effective Management of Payables

The salient points to be noted on effective management of payable are:

- Negotiate and obtain the most favourable credit terms consistent with the prevailing commercial practice pertaining to the concerned product line;

- Where cash discount is offered for prompt payment, take advantage of the offer and derive the savings there-from;
- Where cash discount is not provided, settle the payable on its date of maturity and not earlier. It pays to avail the full credit term;
- Do not stretch payable beyond due date, except in inescapable situations, as such delays in meeting obligations have adverse effects on buyer's credibility and may result in more stringent credit terms, denial of credit or higher prices on goods and services procured;
- Sustain healthy financial status and a good track record of past dealing with the supplier, such as would maintain his confidence. The quantum and the terms of credit are mainly influenced by suppliers assessment of buyer's financial health and ability to meet maturing obligations promptly;
- In highly competitive situation, suppliers may be wiling to stretch credit limits and period. Assess your bargaining strength and get the best possible deal;
- Avoid the tendency to divert payables, maintain the self-liquidating character of payables and do not use the funds obtained there-from for acquiring fixed assets. Payable are meant to flow through current assets and speedily get converted into cash through sales for meeting maturing short-term obligations;
- Provide full information to suppliers and concerned credit agencies to facilitate frank and fair assessment of financial status and associated problems. With fuller appreciation of client's initiative to honour his obligations and the occasional financial strains which he might be subjected to for a variety of reasons, the supplier will be more considerate and flexible in the matter of credit extension; and
- Keep a constant check on incidence of delinquency. Delays in settlement of payable with reference to due dates can be classified into age group to identify delays exceeding one month, two months, three months, etc. Once overdue payables are given priority of attention for payment, the delinquency rate can be minimized or eliminated altogether.

SELF ASSESSMENT EXERCISE 1

You are to arrange to meet the finance executive of an enterprise that procures a wide range of materials from different sources and ascertain:

1. What forms of credit is the firm obtaining?
2. Which of these forms is most economical from the purchasing firm's point of view and why?
3. How does the company organize itself to negotiate effectively with the suppliers?

SELF ASSESSMENT EXERCISE 2

How does a finance manager determine trade credit?

4.0 CONCLUSION

Payable management explains the significance of trade credit or payable as a source of working capital finance. This unit closes with hints for effective management of payables.

5.0 SUMMARY

Payable or trade credit is a self-liquidating, easy to obtain, flexible source of short-term finance. Buyer's credit reputation, as reflected in evidence of his willingness and ability to meet maturing obligations will determine the quantum and period of credit he can command. Factors like competition, nature of the product and size of the supplier's firm also influence terms of credit, besides relevant commercial practices or conventions. It will be prudent to take advantage of cash discount facilities when available and avoid over-stretching payables by frequent delays in payments. If good credit relations are maintained with suppliers, payables can be a ready and expanding source of short-term finance that will correspond to the need of a growing firm. Payables are not altogether cost-free, but if managed well, the cost can be substantially lower than the alternative sources of short-term finance.

7.0 REFERENCES/FURTHER READINGS

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