CHAPTER 1

INTRODUCTION
Developing economies are confronted with the problem of inefficient utilization of resources available to them. Capital is the limited productive resource in such economies and proper utilization of these resources promotes the rate of growth, cuts down the cost of production and above all improves the efficiency of the productive system. The total capital of a country comprises fixed capital and working capital. Fixed capital investment generates production capacity whereas working capital makes the utilization of that capacity possible. Thus, the study of working capital occupies an important place in financial management.

Since fifties, there have been concerted efforts by theoretical economists to analyse the financial decisions of business firms within the context of equilibrium models of financial markets. While these models have been employed to analyse the long-term corporate investment and financial decisions, virtually no research has been conducted in an attempt to apply them to working capital decisions. It shows that the earlier emphasis of financial management was more on long-term
financial decisions. Working capital management which is concerned with short-term financial decisions appears to have been relatively neglected in the literature of finance. Even in recent years, major theoretical developments have been made with respect to long range financial decisions of the firm but research devoted to short-range or working capital decision making would appear to have been less productive.²

Funds are needed in every business for carrying on day-to-day operations. Working capital funds are regarded as the life blood of a business firm. A firm can exist and survive without making profit but cannot survive without working capital funds. If a firm is not earning profit it may be termed as 'sick', but not having working capital may cause it bankruptcy and closure over a period of time. In addition, working capital has acquired a great significance and sound position for the twin objects of 'Profitability and Liquidity'. It consumes a great deal of time to increase profitability as well as to maintain proper liquidity at minimum risk. Leslie R. Howard³ rightly pointed out that a deeper understanding of the importance of working capital and its satisfactory provision can lead not only to material savings in the economical use of capital but can also assist in furthering the ultimate aim of a business, namely, that of maximising financial returns on the minimum amount of capital which need to be employed.
All the above factors clearly indicate the crucial importance of working capital in the management of finance. Thus, need for skilled working capital management has become greater in recent years. Viewed in this perspective, the study devoted to working capital management may be a very rewarding one.

NATURE OF THE PROBLEM

The working capital management is the most critical problem in financial management. Most of the time financial executives are devoted towards managing the current assets and current liabilities which are the main constituents of working capital. Importance of working capital management stems from two reasons viz., (i). A substantial portion of total investment is invested in current assets and (ii) level of current assets and current liabilities will change quickly with the variation in sales. Hence, this study makes an attempt to analyse the size, composition, circulation of working capital and whether such an investment has increased or declined over a period of time. Knight⁴ pointed out that not only working capital components are interdependent on each other but also on net sales and profit. Hence, this study also makes an attempt to evaluate some of the linkages between the different components of working capital and their relationships with the variables like sales, value of output, earnings, cashflow, etc.
The mismanagement of working capital will lead to loss of profits in the short-run but it will ultimately lead to the downfall of the enterprises in the long-run. An excessive investment in working capital will lower the rate of return while inadequate investment will hamper the solvency position and growth thereby affecting the operation of business. The adequacy of working capital together with its efficient handling virtually determines the survival or demise of an enterprise. Thus this study attempts to determine the operational adequacy of working capital with the use of Bivariate Discriminant Analysis. In working capital analysis, the direction of change over a period of time is of crucial importance. It is, therefore, very essential for an analyst to make a study about the trend and direction of working capital. Not only that, analysis of working capital trends provide a base to judge whether the practice and prevailing policy of the management with regard to working capital is good enough or an improvement is to be made in managing the working capital funds. Hence, in this study, an attempt is made about the trend of the components of the working capital movements to provide a deep and broad base while examining the working capital management of the selected enterprise.

After determining the requirements of current assets, one of the important tasks of the financial manager is to select an assortment of appropriate sources of finance for the current assets. Normally, the current assets of a firm are
supported by a combination of long-term and short-term sources of financing. The short-term financing is less costly than long-term financing but the former is more risky than the latter. Thus the choice should naturally involve a trade-off between risk and return. Normally the excess of current assets over current liabilities should be financed by long-term sources. Precisely it is not possible to find out which long-term source has been used to finance current assets, but it can be examined as to what proportion of current assets has been financed by long-term funds. Therefore an attempt has been made in the study in this regard.

It is observed that different authors have approached the study of working capital management in different ways. The major inference of almost all the studies concerning approaches to working capital management centres around risk-return trade off. Based on these approaches, this study also attempts to develop an approach with the help of which risk-return analysis of working capital position can be conducted for the selected enterprises.

Lack of liquidity implies lack of freedom of choice as well as constraints on management's freedom of movement. If liquidity continues to be a problem, it may ultimately lead to bankruptcy. Thus, in the study of working capital management, one frequently occurring problem is to determine the short-term liquidity position which has been accomplished in this study. The investment decision in the current assets deals with a number of
problems from the working capital management point of view because the profitability and liquidity of the business very much depends upon the nature and style of current assets management. An appropriate level of current assets and current liabilities in the business enterprise determines the level of working capital affecting ultimately the firm's liquidity and solvency. To have higher profitability, the firms may sacrifice solvency and maintain a relatively low level of current assets. When the firms do so, their profitability will improve as less funds are tied up in the idle current assets, but their solvency will be threatened. In this study an attempt is made to study the association of profitability with the working capital ratios.

One of the important areas of working capital management is to study the nature of short-run behaviour of the demand for working capital and its components. The study of the demand for cash has been stimulated by Baumol, Tobin and Friedman. However, this study is not only limited to the study of the demand for cash but it has also been extended to the study of demand for inventories, receivables, gross working capital and net working capital as well.

The problem of working capital management, during inflation, also deserves due attention. In fact, working capital management involves, among other things, a comparative study of different ratios and the size of working capital during a certain spell of time, generally 5 to 10 years. Such comparative studies
which are based on the assumption of stable rupee value but meaningless in an inflationary economy. Therefore, an attempt has been made to use inflation accounting techniques in working capital management towards isolating the relative impacts of inflationary conditions and of efficiency in utilisation in the management of working capital.

NEED FOR THE STUDY

The management of working capital is of special importance in industries where it dominates the fixed capital. Sugar Industry is one such industry. From the point of view of the socio-economic development of the country, sugar industry is significant enough in terms of investment, employment, etc. The sugar industry has certain peculiar characteristics that force wider deviations from the established theory of financial management. As far as inventory is concerned, the sugar mills have to go on purchasing sugarcane during the season, crush the cane and produce sugar only to stock it, waiting for the government orders to release for sale throughout the year bit by bit. During the crushing season, the stock will be at its maximum, locking up of huge funds.

The sales function in sugar industry differs from that of other industries. Sugar is an essential commodity for mass consumption. The release of sugar is fully under the control of Union Government and the prices are partially under the control
of Union Government. The levy sugar accounts for 25 percent output, which is procured by government, at fixed prices worked out on the basis of statutory minimum cane price. It is only from the balance of 45 percent of output permitted for free sale, the factories have to make up the loss due to sugar deliveries to the Govt's P.D.S. In this situation, the management may maximise the return, by efficient sales planning of only free sugar. Furthermore, Indian sugar industry is one of the industries which has increasingly relied on bank credit to finance the working capital. The banks grant advances on the pledge of sugar stocks. The marketability of sugar frequently fluctuates according to demand and supply conditions. So, banks insist on some margin and the firm to that extent may find it unprofitable to retain finished sugar for longer period.

It is a common observation regarding the sugar industry that the management of working capital becomes less efficient due to holding huge inventories, lower turnover, loans and advances and their slow recovery, over-dependence on bank finances and holding large idle cash balances, etc. These problems have always highlighted the need for a comprehensive study in the field of working capital management.

RESEARCH QUESTIONS

Based on earlier studies the following questions have arisen, necessiating the present research.
1. What is the structure of working capital in the selected enterprises? Is there any significant change taking place over a period of time?

2. Is investment in current assets utilized effectively?

3. What is the pattern of financing working capital?

4. How can a discriminant analysis be useful in assessing the short term liquidity position of enterprises?

5. What is the impact of working capital ratios on profitability of enterprises?

6. Do transactions demand for working capital and its various components vary proportionately to changes in the volume of sales?

7. What is the relative impact of inflationary conditions on efficiency in utilisation in the management of working capital?

These are some of the important questions this study seeks to answer.

OBJECTIVES OF THE STUDY

The present study in general aims at making a comparative study of working capital management performances in co-operatives and private sector companies in the sugar industry of Tamil Nadu. The specific objectives of the study are;
1. To examine the structure, sources and utilisation of working capital and its components;
2. To estimate the risk-return analysis of working capital position;
3. To assess the liquidity position;
4. To assess the impact of working capital ratios on profitability;
5. To estimate transactions demand functions of working capital and its various components; and
6. To examine the impact of inflationary conditions on efficiency in utilisation of working capital in the selected units of the sugar industry in the state of Tamil Nadu.

OPERATIONAL DEFINITION OF CONCEPT

The concept of working capital has been a matter of great controversy among the financial experts. Working capital has two concepts - the total of current assets (gross concept) and the excess of current assets over current liquidity (net concept). Both these concepts of working capital have their own significance. If the objective is to measure the size and extent to which current assets are being used, 'gross concept' is useful; whereas in evaluating the liquidity position of an undertaking, 'net concept' becomes pertinent and preferable. Both the gross and net concept of working capital have been taken into consideration in the present study, as the main object of the
study is to measure the size and utilisation and to examine the liquidity position of the selected sugar industry of Tamil Nadu.

SAMPLING DESIGN

There are 31 firms in the sugar industry operating in Tamil Nadu of which 14 are under co-operative sector, 14 under private sector and 3 under public sector. Most of them are just a few years old for which data for the last ten years are not available. In order to select the units for the purpose of study, only those units which were established before 1980 and were having a crushing capacity of 2000 MT (per day) or more have been considered. There were 13 such units of which 6 are under co-operative sector and 7 are under the private sector.

Out of 6 units under co-operative sector, one namely Dharmapuri Co-operative Sugars has been excluded from the study because financial statements for the last ten continuous years could not be obtained. Out of 7 sugar units under private sector, two units namely, E.I.D Parry (Ltd) and Cavery Sugars have also been excluded from the study because these two units have composite financial statements. Thus, the ten units are available for the study (5 under co-operative sector and 5 under private sector) and to represent the sugar industry of Tamil Nadu as a whole.
**SOURCES OF DATA**

The necessary data on working capital and other related variables used in this study have been collected mostly from the annual reports of the selected units for the relevant periods. For analysing the working capital structure and its practices, certain information was collected through the various reports prepared by the various official committees. This information was supplemented with related information collected from the Indian Sugar Mills Association. All the published annual reports and accounts were collected personally from the head office of the units.

**TOOLS OF ANALYSIS**

In the course of analysis in this study, use of various accounting and statistical techniques has been made. Accounting technique includes Ratio Analysis, while among statistical techniques the arithmetic mean ($\bar{x}$), co-efficient of variation (C.V.), test of significance ('t'test), trend indices, simple growth rates, correlation co-efficient (r), co-efficient of determination ($R^2$), linear regression equations, analysis of time series, chi-square test and analysis of variance have been applied. In addition, multiple regression and discriminant analysis were also applied using financial ratio as variables. Econometric models used to describe the demand for working capital and its various components.
RATIO ANALYSIS

Ratio analysis is regarded as one of the best tools in analysis and comparing the time series accounting data of different firms. That is why it has been extensively used in the present study. Various ratios computed in order to analyse the size, composition and circulation of working capital and its various components (inventory, receivables, and cash) have been explained at the relevant places in different chapters. However, in this study the use of ratios has not been made in the course of analysis directly. To make the analysis and interpretation more precise and accurate, the values of $\bar{X}$, C.V and 't' have been computed from the ratios.

(i) ARITHMETIC MEAN ($\bar{X}$)

It gives a single value to describe the whole data. It has been obtained by adding the values of all observations and dividing it by the number of observations.

$$\bar{X} = \frac{\Sigma x}{N}$$

Where $\Sigma x$ - Sum of variables and N - Number of observations.

(ii) CO-EFFICIENT OF VARIATION (C.V)

It is used in problems which requires to compare the variability of two or more than two series. The series for which the co-efficient of variation is greater, is said to be more variable or conversely less consistent, less uniform, less stable
or less homogeneous. On the other hand, the series for which co-efficient of variation is less, is said to be less variable or more consistent, more uniform, more stable or more homogeneous. In ratio analysis of financial data, less co-efficient of variation in a ratio is taken to mean relatively better control of the management on that ratio.

\[ \text{C.V} = \frac{S}{\bar{X}} \]

Where 'S' is the standard deviation and \( \bar{X} \) is the mean ratio.

(iii) 't' TEST

Along with the \( \bar{X} \) and C.V values for each group of ratios, the values of 't' static have been computed in order to determine whether the mean of a sample (particular unit) deviates significantly from population (Industry) mean.

\[ t = \frac{\bar{X} - \mu}{S} \sqrt{N} \]

Where \( \bar{X} \) is the mean and S is the standard deviation of the sample with size N and \( \mu \) the population mean.

If the calculated value of 't' exceeds the tabulated value, it indicates that the difference between \( \bar{X} \) and \( \mu \) is significant. If it is less than the table value, the difference between \( \bar{X} \) and \( \mu \) is not significant; hence, the sample distribution closely resembles the population distribution with mean \( \mu \).
SIMPLE GROWTH RATES

In order to see at what rate the growth has taken place in the working capital and its various components in relation to sales during the period under study, simple growth rates and average growth rates have been computed.

\[ g = \frac{Y_t - Y_{t-1}}{Y_{t-1}} \times 100 \]

Where \( g \) is the growth rate and \( Y_t \) and \( Y_{t-1} \) are the values of variable \( Y \) in time \( t \) (current year) and time \( t-1 \) (previous year) respectively.

TREND INDICES

In order to compute the index of change in a variable, the following formula has been used.

\[ I_t = \frac{Y_t}{Y_0} \times 100 \]

Where \( Y_t \) is the value of the variable in the year \( t \) for which the index is to be computed, \( Y_0 \) is the value of the variable in the base year. In order to measure the change in the relative proportion of various components of the working capital to the total, such indices have been computed.
ANALYSIS OF TIME SERIES

Time series analysis is used to detect patterns of change in statistical information over regular intervals of time. For the analysis of working capital of sugar industry of Tamil Nadu, the secular trend values are proposed to be computed by the method of least square at relevant places.

CHI - SQUARE TEST

The chi-square test is the simplest and most widely used non-parametric test in statistical work. Symbolically:

\[ \text{Chi - Square} = \sum (O-E)^2 / E \]

Where \( O \) refers to the observed frequencies and \( E \) refers to the expected frequencies. The calculated value of chi-square is compared with the table value of chi-square for given degrees of freedom at a certain specified level of significance. If at the stated level the calculated value of chi-square is more than the table value of chi-square, the difference between expected and observed values is considered to be significant, i.e., it could not have arisen due to chance factor. The technique of chi-square is applied for the analysis of working capital trend.

ANALYSIS OF VARIANCE

The analysis of variance has been developed specially to test the hypothesis whether the means of several
samples have significant difference or not. From this technique, one is able to determine whether the samples have the same mean as the population from which they have been drawn. The technique of analysis of variance is proposed to be applied for the analysis of working capital trends and liquidity analysis.

LINEAR REGRESSION ANALYSIS

To make future projections of dependent variables (such as working capital, inventory, and receivables) for a given value of independent variable (Sales) possible, the linear regression equation \( Y = a + bX \) has been used. Further, in this part of the analysis, the values of correlation coefficient \((r)\), coefficient of determination \((R^2)\) and 't' test have been computed in order to ascertain the closeness of relationship between dependent and independent variables.

THE DISCRIMINANT ANALYSIS

The use of ratio analysis to judge the liquidity position of the enterprises is not free from certain limitations. The limitations arise from the fact that the methodology is basically univariate; that is, each ratio is examined in isolation. Due to this, the financial analyst has to use his own judgement to assess the combined effects of two or more ratios. A linear multiple discriminant analysis has been applied in finance to problems involving more than two groups. Altman has applied the discriminant analysis in predicting bankruptcy but here it is
applied in operational adequacy of working capital and liquidity predication context. This study considers a simple case in which two variables $X_1$ and $X_2$ are used to discriminate between two groups - good and poor risks. The two variables used are networking capital in terms of monthly operational requirements ($X_1$) and net working capital in terms of monthly sales requirements ($X_2$) in the case of operational adequacy of working capital and also current ratio ($X_1$) and liquid ratio ($X_2$) in the case of liquidity assessment. Let

$$Z = aX_1 + bX_2 \quad \ldots (1.1)$$

be a linear combination of $X_1$ and $X_2$. The problem is to determine the values of 'a' and 'b' by means of past data and some criterion that proves 'Z' useful as an index for discriminating among members of the two groups. In this study, discriminant analysis has been performed for all the selected years. However, its limitation is that only two variables are being considered.

ECONOMETRIC MODELS

In this study, econometric models are used to describe the demand for working capital and its various components by Tamil Nadu sugar industry. The demand for working capital has been viewed in a way similar to the demand for cash and inventories. Following Keynes, it is assumed that there are three motives for holding working capital: (i) the transaction motive; (ii) the precautionary motive; and (iii) the speculative
motive. Other things remaining the same, transactions and precautionary working capital balances are both similar functions of the volume of sales and therefore are treated as a single variable. For convenience, the demand for 'transactions and precautionary working capital balances' henceforth will be referred to as 'transactions demand for working capital'. Having established the motives for holding working capital, the next step is to specify the variables which influence them. The decisions about the aggregate amount of working capital and its various components to be held may be regarded as subject to wealth constraint. In this study, wealth is defined in terms of sales \((S)\). As a first approximation to the theory, the function may be written as

\[
Y_1 = f(S) \quad \ldots \quad (1.2) \\
Y_2 = f(S) \quad \ldots \quad (1.3) \\
Y_3 = f(S) \quad \ldots \quad (1.4) \\
Y_4 = f(S) \quad \ldots \quad (1.5) \\
Y_5 = f(S) \quad \ldots \quad (1.6)
\]

Where

\(Y_1\) - Real cash.  
\(Y_2\) - Real Inventories.  
\(Y_3\) - Real receivables.  
\(Y_4\) - Real Gross Working Capital.  
\(Y_5\) - Real Net Working Capital.  
\(S\) - Real Sales.
In an empirical investigation, equations (1.2) to (1.6) take the following form.

\[ Y^* = K b_0 u \] ........................... (1.7)

where \( Y^* \) denotes \( Y_1 \) to \( Y_5 \). Taking the logarithm of this equation (1.7) gives

\[ \log Y^* = \log K + b \log S + u_i \] ............ (1.8)

So far the opportunity cost of working capital to enterprises has been ignored. A review of the empirical works on the demand for cash and inventories suggests that the opportunity cost of capital should be included as an explanatory variable in the models. Therefore, the opportunity cost of working capital and its various components measured by the short-term interest rates of Indian Commercial Banks (\( i_2 \)), has been included in the models. Equations (1.2) to (1.6) can now be stated as

\[ Y^* = f(S, i_2) \] ............................... (1.9)

Similarly, equation (1.7) takes the form

\[ Y^* = K b_1 i_2 b_2 e^u \] .......................... (1.10)

Taking the logarithm of this equation (1.10) gives

\[ \log Y^* = \log K + b_1 \log S + b_2 \log i_2 + u_i \] ... (1.11)

where \( b_1 \) and \( b_2 \) are elasticities of \( Y^* \) with respect to the explanatory variables of the models. The above models assume the reasonable a priori hypothesis of

\[ \frac{\delta y}{\delta S} > 0 \text{ and } \frac{\delta y}{\delta i_2} < 0 \] ............... (1.12)
PERIOD OF STUDY

The data for the ten units relate to the ten year periods from 1982-83 to 1991-92. However, in 1987-88, all the selected units prepared their annual reports for 18 months period due to change in the accounting period from April to March instead of October to September.

LIMITATIONS OF THE STUDY

(i) In order to make a study on working capital management more fruitful, it is essential that data should be of frequent time intervals. But, such type of weekly or monthly data could not be obtained and due to this the study has been forced to use the annual data which are available in profit and loss accounts and balance sheets. The use of annual data in this study is thus likely to make the conclusions somewhat less valid and less reliable.

(ii) This study does not cover all the sugar industries of Tamil Nadu. Therefore, it implies that the conclusions drawn are of a tentative nature and firm generalisation should be avoided for the entire sugar industries.

(iii) Similarly, each selected unit does not represent the entire industry in which it falls. But it does represent largely its industry groups.

(iv) As the area of this study is limited to the co-operative and private sector companies, the public sector companies are not included.
However, it is hoped that these limitations do not undermine either the scope of the study or the analysis and the inferences.

CHAPTER SCHEME

The study has been organised into six chapters, each devoted to some aspects of the study of working capital management.

Chapter I - deals with the introduction, nature of the study, importance of the study, selection of samples, methodology, and limitations of the study.

Chapter II - deals with the profile of sugar industry in India and Tamil Nadu.

Chapter III - deals with the various approaches to the study of working capital management by financial executives, theorists and academicians.

Chapter IV - deals with the structure, sources and utilization of working capital and its components of the selected enterprises.

Chapter V - deals with the empirical analysis of working capital such as assessment of liquidity, impact of working capital on profitability, estimating demand for working capital and inflationary effect on working capital.

Chapter VI - Summarises the findings and draws the conclusion.
REFERENCES


6. For different opinions on the concept of gross working capital see.,


7. For definitions of Working Capital in the sense of net concept see,


