INTRODUCTION

Working capital has been described as the lifeblood of a business enterprise. It denotes the funds which are required for the day-to-day operations of the enterprise. It represents the capital invested in current assets viz., cash, receivables and inventory. In many business enterprises working capital forms a substantial portion of the total capital employed. Fixed capital in the form of productive facilities cannot be utilised fully without an adequate supply of motive power i.e. working capital. The amount of working capital in a business should be neither more nor less than what is required. Inadequate working capital means shortage of raw materials and other inputs resulting in under utilisation of machinery, ultimately leading to the failure of business and frustration of objectives through lack of funds. On the other hand, excess working capital may mean dormant, slow moving and obsolete inventories, excessive receivables and speculative tendencies because of surplus cash. Both excess working capital and inadequate working capital will impair the profitability and progress of a business enterprise. So the amount of working capital in an enterprise should be just adequate, neither more nor less than what is required.
Working capital management is the key area of financial management. It involves decisions regarding the amount and composition of current assets and the ways and means of financing these assets. These decisions involve achieving tradeoffs between liquidity and profitability. The profitability and liquidity of a firm are directly influenced by the way its working capital is managed. In the present day world of scarce resources, the success of an enterprise depends heavily on the successful management of working capital. Mismanagement of working capital can put into jeopardy the very survival of the firm. Therefore, it becomes imperative for the enterprise to pay special attention to the management of working capital.

The Electronics Industry, which has been selected for exploration in the present study, is the fastest growing industry in the world. It is as important for a nation's industrial infrastructure as steel and coal. It serves virtually every industry. It has an excellent employment potential. It enhances production, reduces costs and saves energy. It is a pollution free industry. At present electronics account for about 10 per cent of world-wide manufacturing. Electronics is the fourth largest industry in the world and may become the largest one by the turn of the present century.
In India too, during the last decade in particular, electronics has made significant contributions and brought about awareness among the people about its contribution in various spheres comprising domestic use, manufacture, education, management and entertainment. Since 1985, great emphasis has been laid on the development of the Electronics Industry in the country. A number of policy measures and schemes of liberalisation have been adopted by the Government of India for the development of the industry. In spite of all these incentives the Electronics Industry in India has not achieved the desired level of profitability (Appendix 1A). Although the industry has continued to grow quantitatively and qualitatively profitability is stagnant in general. Poor management of working capital is considered an important factor that is proving an obstacle in gaining the desired level of profitability.

Secondly, the Department of Electronics of the Government of India has set out an ambitious target of a threefold increase in the production of electronic equipment by the end of the Eighth five year plan. Consequent to this increase in production additional funds in the form of working capital will be required. Resources in a developing country like India are scarce. To ensure the optimum utilisation of available resources some guidelines need to be framed for the efficient management of working capital.
A number of research studies have been conducted in the field of working capital management during the last two decades. Some of these studies were of general nature while others were conducted at micro level, dealing with specific industries (Appendix I). However, a major limitation of these studies has been that conclusions drawn for a specific industry are relevant only for that particular industry for which the study was conducted. The problems of management of working capital vary in their dimension with regard to various industries, since each industry operates with different characteristics. Therefore, it is imperative to make a critical and detailed study pertaining to working capital management performances of individual industries.

It is pertinent to point out here that so far no study has been conducted to investigate the practices and performances of working capital management in the Electronics Industry in India. On realising the importance of proper management of working capital a study on 'Working Capital Management in the Electronics Industry in India' has been undertaken to fill up the vacuum. An attempt has been made in the present study to examine the working capital management performance of the industry and to suggest guidelines for the improvement of the same.
OBJECTIVES OF THE STUDY

The present study has been undertaken in respect of selected units of the Electronics Industry in order to:

(a) analyse working capital management performances;
(b) examine the pattern of financing of working capital requirements;
(c) study the management of various components of working capital, viz., inventory, receivables and cash;
(d) compare the public sector units with their counterparts in the private sector in respect of management of working capital and its components;
(e) suggest guidelines for improving working capital management.

Hypotheses of the Study

The study has been undertaken to test the following hypotheses:

(1) There is over investment of working capital in the industry.
(2) Over investment is mainly in inventory and receivables.
(3) The industry is making excessive use of bank finances to meet its working capital requirements.
(4) The performance of the private sector in working capital management is better than that of the public sector.
METHODOLOGY

Scope of the Study

The present study on 'Working Capital Management in Electronics Industry in India' covers both the public and the private sector units. The study is based on a representative sample drawn from the industry. The study covers the following units:

Public Sector:

(i) Indian Telephone Industries Limited (ITI)
(ii) Bharat Electronics Limited (BEL)
(iii) Electronics Corporation of India Limited (ECIL)
(iv) Instrumentation Limited (IL)

Private Sector:

(i) PEICO Electronics & Electricals Limited (PEICO)
(ii) HCL Limited (HCL)
(iii) National Radio & Electronics Company Limited (NELCO)
(iv) SAMTEL (INDIA) LIMITED (SAMTEL (INDIA))
(v) Samtel Color Limited (SAMTEL COLOR)

In the private sector SAMTEL (INDIA) LTD. and Samtel color Ltd. are under the same management but these are two separate companies, maintaining separate accounts.
Further, the concept of gross working capital, which implies total current assets, has been taken in the present study to examine the performances of management of working capital and its components. The term 'net working capital' has been used to represent the excess of current assets over current liabilities.

The study covers a period of six years, from 1985-86 to 1990-91. As a result of the policy measures adopted by the Government, the Electronics Industry in India has made remarkable progress with the inception of the Seventh five year plan. The year 1985 is taken as a terminal point in the history of growth of the Electronics Industry. That is the reason for restricting the study to this period.

Selection of Sample

The present study is based on a sample drawn from the large scale units in the industry. The sample covers four units of the public sector and five units of the private sector. Two of these units i.e. Samtel color and SAMTEL (INDIA) are under the same management. The following factors were taken as criteria for the selection of the sample:

(i) The sample units should represent all the product groups in the industry.

(ii) Only units with an annual turnover of more than Rs. 100 crores were taken for the selection of the sample. In
the case of SAMTEL (INDIA) Ltd. and Samtel Color Ltd., their combined turnover was considered for this purpose.

(iii) Availability of relevant data also guided the selection of the sample.

The sample constitutes more than 50 per cent of the production level in the industry. A brief profile of the units selected for study is presented at the end of this chapter.

Sources of Data

The annual published reports of the companies were the major source of data for the study. These reports were thoroughly scanned to draw forth the relevant data required for the study. Figures were restructured to classify the current assets and current liabilities according to the latest guidelines issued to the scheduled commercial banks by the Reserve Bank of India for assessment of working capital requirements (Appendix VII).

In addition to secondary data, primary data pertaining to the practices and procedures adopted by the sample units for the management of working capital was collected through a questionnaire (Appendix VIII). The response to the questionnaire was not encouraging particularly from the
private sector units. However, some relevant information was extracted through discussion with the concerned executives of these units.

Sources of data pertaining to information on the Electronics Industry in India include:

(a) Annual reports of the Department of Electronics, Government of India.

(b) Electronics Information & Planning, a monthly journal published by Information, Planning and Analysis Group of the Department of Electronics, Government of India.

(c) Newspapers.

Data Analysis

Both accounting and statistical techniques have been used to analyse the data. Among the accounting techniques ratio analysis has been extensively used for the study of working capital management performances. In order to make the analysis precise and accurate ratio analysis has been combined with statistical techniques such as mean, coefficient of variation, test of significance ('t-test) and trend indices. Besides these values of coefficient of correlation (r) and coefficient of determination (r^2) have been computed and applied for studying the relationship of sales with working capital and its components.
Limitations of the Study

1 The dates of closing the accounts of the companies selected from the private sector were not uniform. HCL Ltd. close their accounts on 30th June, while Samtel Color Ltd. close their accounts on 31st July. NELCO shifted its accounts closing from calender year to financial year after 1983 and PEICO switched over to finance year from calender year after 1987. While analysing the data, the impact of closure of accounts on different dates was ignored.

2 The balance sheet reflects the financial position of an enterprise only on the last day of the accounting year; it may not hold true for the remaining part of the year. Since for an external analyst, monthly or quarterly information regarding the financial position is difficult to obtain, the present study is based on the figures of the annual reports. Hence the conclusions drawn in the study should be viewed in the light of this limitation of data.

3 One of the companies selected for the study, PEICO, produces lighting products in addition to electronic equipments and components. But the contribution of lighting products towards sales is not so substantial so as to make PEICO lose the essential characteristics
of an electronics company. The combined figures, as given in the published financial statements, have been used in this study while analysing the performances of this unit.

PLAN OF THE STUDY

The study has been divided into eight chapters, including the present one.

Chapter 1 is an introduction to the study which spells out the importance and relevance of research undertaken. Besides highlighting the objectives of the study it deals with the hypotheses, methodology and limitations of the study. A brief profile of the sample units has also been incorporated in this chapter.

Chapter 2, Working Capital Management - An Overall View, contains the conceptual framework of working capital, operating cycle concept, types of working capital, composition of working capital, factors affecting working capital needs, principles of working capital management, financing of working capital and a brief resume of Dahejia, Tandon and Chore committee reports.

Chapter 3, Working Capital Management - An Overall Analysis, deals with the evaluation and examination of performances and practices of working capital management.
along with the financing pattern of working capital. This chapter has three segments. Section I of the chapter deals with the evaluation of size and liquidity of working capital, efficiency of working capital, composition of working capital and growth of working capital in relation to sales. Sec. II deals with the financing pattern of working capital, while Sec. III reviews the practices of working capital management.

Chapter 4, Inventory Management, presents an analysis of the size, composition, holding period and growth of inventory in Sec. I. Further, Sec. II of the chapter contains the inventory control techniques adopted by the sample units.

Chapter 5, Receivables Management, deals with the size of receivables, efficiency of receivables management and growth of receivables in Sec. I. The credit and collection policies and practices of the sample units are incorporated in Sec. II of this chapter.

Chapter 6, Cash Management, reviews the size of cash balances, variations in cash balances, composition of cash balances, adequacy of cash, relationship between sales and cash balances in Sec. I and cash planning and practices adopted by the sample units in Sec. II.
Chapter 7, Other Current Assets, looks into the relative significance of other current assets in the working capital of the sample units.

Chapter 8, the concluding chapter, spells out the findings and suggestions of the study.

In addition to the above chapters, the study contains VIII appendices. Appendix I relates to the list of important studies in the field of working capital management. Appendix II deals with operational definitions of the concepts used in the study. The profile of the Electronics Industry in India is given in Appendix III. The data used for the present study is given in the appendices IV to VI. Appendix VII contains an extract from the guidelines of the R.B.I. for classification of current assets and current liabilities. Appendix VIII comprises of the questionnaire.

PROFILE OF THE UNITS SELECTED FOR STUDY

Indian Telephone Industries Limited

Indian Telephone Industries Ltd. was the first public sector electronics unit in India set up in 1948 and started as a departmental undertaking to the Posts and Telegraphs Department, presently Department of Telecommunications, to produce and supply telecommunication equipment. It was incorporated as a company in 1950 at Bangalore with 100
employees and with a capacity to manufacture 0.25 lakh lines of switching equipment and 0.25 lakhs telephones per annum. Today Indian Telephone Industries Ltd. has grown into a multi unit organisation with factories established at various locations throughout the country. The company has its units at Bangalore (Karnataka), Naini (Uttar Pradesh), Srinagar (J&K), Rae Bareli (Uttar Pradesh), Palghat (Kerala) and Mankapur (Uttar Pradesh).

Indian Telephone Industries Ltd. is operating in the communications sector and it is in fact one of the few companies in the world which manufacture the entire range of equipment for telecommunications.

The authorised capital and paid up capital of the company as on March 31, 1991 were Rs. 100 crores and Rs. 88 crores respectively. The company's sales during the year 1990-91 were Rs. 978.46 crores and it earned net profits of Rs. 36 crores. The number of employees as on March 31, 1991 was 32215.

Bharat Electronics Limited

Bharat Electronics Ltd. (BEL) was established by the Government of India under the Ministry of Defence in the year 1954 at Bangalore. Presently it is the country's
premier electronics manufacturing organisation having operating units located at Bangalore (Karnataka), Ghaziabad (Uttar Pradesh), Pune (Maharashtra), Machilipatnam (Andhra Pradesh), Panchkula (Haryana), Kotdwara (Uttar Pradesh), Taloja (Maharashtra), Madras (Tamil Nadu) and Hyderabad (Andhra Pradesh).

Since its inception BEL has achieved progressive self-reliance in the designing, development and production of radio communication, radar, broadcasting (sound and television) equipment and electronic components. BEL meets the bulk of the electronic equipment needs of the Indian Defence Services, Para Military organisations and other Government users like All India Radio, Doordarshan, etc. The company has a very wide product range and manufactures more than 350 different products. It plans to diversify into other areas such as medical electronics, computer peripherals, systems engineering and turnkey operations, installation, maintenance and repair of defence equipment.

Authorised capital and paid up capital of the company stood at Rs. 85 crores and Rs. 80 crores respectively as on March 31, 1991. During the year 1990-91 its annual sales were Rs. 724 crores and it earned a net profit of Rs. 34 crores. The total manpower employed in the company as on March 31, 1991 was 19357.
Electronics Corporation of India Limited

The Electronics Corporation of India Ltd. (ECIL) with its registered office at Hyderabad in Andhra Pradesh was incorporated on April 11, 1967 as a Government of India enterprise under the Department of Atomic Energy. Its main aim was to promote and develop industrial electronics with indigenous know-how and to attain self sufficiency in atomic energy programmes. The company has its production units at Tirupati in Andhra Pradesh and Aurangabad in Maharashtra.

The company is operating in all the sectors of production of electronic items viz., consumer electronics, components, control systems and instruments, computers, communication systems, military systems, etc. In order to compete internationally ECIL has adopted a strategy of ensuring ISO 9000 standard for its manufactured products and in the next two years it hopes to qualify substantially in the international market.

Authorised capital and paid up capital of the company stood at Rs. 50 crores and Rs. 44.22 crores respectively as on March 31, 1991. The company’s sales during the year 1990-91 were to the tune of Rs. 259 crores and its suffered a net loss of Rs. 10.38 crores. The number of employees as on March 31, 1991 was 7892.
Instrumentation Limited

Instrumentation Limited was set up at Kota (Rajasthan) in March 1964 to meet the requirements of instrumentation and control systems in the key sectors of the economy such as thermal power plants, steel plants, fertilizer plants, refineries, etc.

The company has its production units at Kota, Palakkad and Jaipur. It also has a subsidiary company at Jaipur in the name of Rajasthan Electronics and Instruments Ltd.

The present product range of the company comprises of a sophisticated electronic and pneumatic range of instruments, gas analysers, control panels and control disks, process control valves, safety relief valves, railway signaling and telecom products. The company proposes to diversify into the field of defence electronics.

Authorised capital and paid up capital of the company stood at Rs. 20 crores and Rs. 18.72 crores respectively as on March 31, 1991. The sales of the company amounted to Rs 124 crores during the year 1990-91 and it suffered a net loss of Rs. 6.22 crores. The total manpower employed in the company at the end of March 1991 was 4136.
PEICO Electronics & Electricals Limited

PEICO Electronics & Electricals Limited was incorporated as a private company at Calcutta on 31st January 1930. It was converted into a public company on 31st October 1957. The company was established with technical collaboration from N.V. Phillips, Netherlands. It has its registered office at Calcutta, head office at Bombay, and factories at Calcutta, Bombay and Pune.

The paid up capital of the company as on March 31, 91 stood at Rs. 33.32 crores. During the year 1990-91, the company's gross sales were to the tune of Rs. 564.22 crores and it earned a net profit of Rs. 28.73 crores. At present the company's major area of operations is consumer electronic products. In addition to this the company is also manufacturing professional electronic products and systems, electronic components and lighting products. The total manpower employed in the company at the end of 1990-91 was 7901.

HCL Limited

HCL Ltd. was incorporated on April 17, 1986 as a public limited company at New Delhi which took over Hindustan Computers Limited, Hindustan Reprographics Limited, Hindustan Instruments Limited and Indian Computer Software Company Limited by way of amalgamation. After the joint venture
agreement with Hewlett Packard (a U.S. based company) in November 1991, it became HCL Hewlett Packard Limited. The company is presently known as HCL Hewlett Packard Limited. It has factories at Noida (U.P.) and Madras (Tamil Nadu).

The paid up capital of the company as on March 31, 1991 stood at Rs. 14.83 crores. Its gross sales during the year 1990-91 were to the tune of Rs. 243.59 crores and it earned a net profit of Rs. 6.40 crores.

HCL Hewlett Packard Ltd. is at present India's largest computer manufacturing company. Before the joint venture agreement with Hewlett Packard in November 1991 the company was also engaged in the manufacture of plain paper copiers, EPABX systems, PC based telex systems, electronic teleprinters, test and measuring instruments. But after November 1991 Reprographic division, Communication division and Instruments division were vested in the new company, HCL Limited.

**National Radio & Electronics Company Limited**

National Radio & Electronics Company Ltd. was incorporated on 31st August 1940 at Bombay as a private limited company and converted into a public limited company on 28th May 1949. The company has four factories, two at Bombay and one each at Nasik and Thane.
The paid up capital of the company as on March 31, 1991 stood at Rs. 6.97 crores. During the year 1990-91 its gross sales were to the tune of Rs. 159.91 crores and it earned a net profit of Rs. 1.21 crores. At present the company is manufacturing consumer electronic products as well as industrial & professional electronic products.

**SAMTEL (INDIA) LIMITED**

SAMTEL (INDIA) LIMITED was incorporated for the manufacture of T.V. picture tubes. The company has its works at Bhiwadi in dist. Alwar (Rajasthan).

The paid up capital of the company stood at 4.99 crores as on March 31, 1991. The gross sales of the company were to the tune of Rs. 63.83 crores during the year 1990-91 and it suffered a net loss of Rs. 4.89 crores. The company is a leading manufacturer of black & white T.V. picture tubes.

**Samtel Color Limited**

Samtel Color Limited was incorporated on May 15, 1986 at New Delhi. It was promoted by SAMTEL (INDIA) LTD. as its subsidiary company for the manufacture of colour T.V. picture tubes. The company entered into agreement with Mitsubishi Electric Corporation (MELCO) of Japan for the supply of equipment and technical know-how. The company's plant, located at Dadri in district Ghaziabad, became
operational in May 1988. Then onwards the company ceased to be a subsidiary company of SAMTEL (INDIA) LIMITED.

The paid up capital of the company stood at 21.99 crores as on March 31, 1991. Its gross sales were Rs. 231.98 crores during the year 1990-91 and it earned a net profit of Rs. 29.42 lakh in the same year.

Samtel Color Limited is the leading colour T.V. picture tube manufacturing company in India. During the year 1990-91 the company manufactured 6,09,680 colour picture tubes.
### Appendix 1A

**Rate of Return on Total Assets**

(EBIT/Total Assets)  
(in percentages)

<table>
<thead>
<tr>
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<th></th>
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</thead>
<tbody>
<tr>
<td>ITI</td>
<td>7.74</td>
<td>8.66</td>
<td>9.45</td>
<td>8.79</td>
<td>8.27</td>
<td>8.88</td>
</tr>
<tr>
<td>BEL</td>
<td>8.50</td>
<td>7.63</td>
<td>6.41</td>
<td>6.17</td>
<td>6.31</td>
<td>7.24</td>
</tr>
<tr>
<td>ECIL</td>
<td>10.44</td>
<td>8.36</td>
<td>6.00</td>
<td>4.08</td>
<td>4.05</td>
<td>1.11</td>
</tr>
<tr>
<td>IL</td>
<td>8.63</td>
<td>7.75</td>
<td>7.44</td>
<td>7.83</td>
<td>7.48</td>
<td>7.66</td>
</tr>
<tr>
<td>PUBLIC SECTOR</td>
<td>8.32</td>
<td>8.29</td>
<td>7.96</td>
<td>7.38</td>
<td>7.15</td>
<td>7.51</td>
</tr>
<tr>
<td>PEICO</td>
<td>9.76</td>
<td>5.32</td>
<td>8.74</td>
<td>5.25</td>
<td>8.78</td>
<td>13.99</td>
</tr>
<tr>
<td>HCL</td>
<td></td>
<td>21.47</td>
<td>13.60</td>
<td>15.10</td>
<td>13.50</td>
<td>15.10</td>
</tr>
<tr>
<td>NELCO</td>
<td>8.02</td>
<td>7.80</td>
<td>9.03</td>
<td>10.01</td>
<td>11.72</td>
<td>8.19</td>
</tr>
<tr>
<td>SAMTEL (INDIA)</td>
<td>15.86</td>
<td>18.34</td>
<td>21.38</td>
<td>19.98</td>
<td>2.43</td>
<td>Negative</td>
</tr>
<tr>
<td>SAMTEL COLOR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.47</td>
</tr>
<tr>
<td>INDUSTRY</td>
<td>8.61</td>
<td>8.39</td>
<td>8.40</td>
<td>7.44</td>
<td>7.58</td>
<td>8.52</td>
</tr>
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</table>

Source: Computed from Appendix VI.