CHAPTER - 1

INTRODUCTION
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### INTRODUCTION

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1.1.0 The perspective of the problem

1.1.1 The growth of public enterprises in India has been phenomenal - from the investment in central public enterprises of Rs.290 Million in 5 enterprises as on 1.4.51 to the investment of Rs.993150 Million in 244 enterprises as on 31.3.90. The plan-wise growth of investment in public enterprises from 1.4.51 to 31.3.90 is given below in Table 1.1 (1)

**Table 1.1**

<table>
<thead>
<tr>
<th>As on</th>
<th>Total Investment (Rs.in Million)</th>
<th>No.of Enterprises</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the commencement of the first Five year plan (1.4.51)</td>
<td>290</td>
<td>5</td>
</tr>
<tr>
<td>At the commencement of the 2nd Five year plan (1.4.56)</td>
<td>810</td>
<td>21</td>
</tr>
<tr>
<td>At the commencement of the 3rd Five year plan (1.4.61)</td>
<td>9480</td>
<td>47</td>
</tr>
<tr>
<td>At the end of 3rd Five year plan (31.3.66)</td>
<td>24100</td>
<td>73</td>
</tr>
<tr>
<td>At the commencement of the 4th Five year plan (1.4.69)</td>
<td>38970</td>
<td>84</td>
</tr>
<tr>
<td>At the commencement of the 5th Five year plan (1.4.74)</td>
<td>62370</td>
<td>122</td>
</tr>
<tr>
<td>At the commencement of the</td>
<td>155340</td>
<td>169</td>
</tr>
</tbody>
</table>
5th Five year plan (31.3.79)

At the commencement of the 6th Five year plan (1.4.80)
181500 179

At the commencement of the 7th Five year plan (1.4.85)
426730 215

As on 31.3.89 856280 238

As on 31.3.90 (i.e. at the end of the 7th Five year plan)
993150 244


This investment is partly in equity and partly in loan. There is a grave profitability problem which will be best understood if we analyse the following figures obtained from Public Enterprises Survey 1989-90.

1.1.2 The breakup of investment as on 31.3.90 is as follows:

Equity : Rs. 389570 Million
Loan : Rs. 603580 Million
Total : Rs. 993150 Million (2)

While these enterprises have net sales of Rs. 972956 Million, the overall capacity utilisation has not been satisfactory. The Capacity utilisation of earlier years were also not very good. The overall picture has been presented in Table 1.2 below showing the distribution of units achieved more than 75 % between 50 % and 75 % and below 50 % capacity utilisation. The comparative data of capacity utilisation for the previous two years is also given in Table 1.2 (3)
Table 1.2

Capacity utilisation in Public enterprises

<table>
<thead>
<tr>
<th>Units under production</th>
<th>1989-90</th>
<th>1988-89</th>
<th>1987-88</th>
</tr>
</thead>
<tbody>
<tr>
<td>surveyed</td>
<td>257</td>
<td>212</td>
<td>184</td>
</tr>
<tr>
<td>(a) Units which have recorded capacity utilisation of more than 75%</td>
<td>136</td>
<td>126</td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>(53%)</td>
<td>(60%)</td>
<td>(55%)</td>
</tr>
<tr>
<td>(b) Units where capacity utilisation has been between 50-75%</td>
<td>58</td>
<td>43</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>(23%)</td>
<td>(20%)</td>
<td>(24%)</td>
</tr>
<tr>
<td>(c) Units where capacity utilisation was less than 50%</td>
<td>63</td>
<td>43</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>(24%)</td>
<td>(20%)</td>
<td>(21%)</td>
</tr>
</tbody>
</table>

| 257 | 212 | 184 |

Source: Public Enterprises Survey 1989-90 Vol-1 (Page-14)

From the 1989-90 statistics which reveal that 53% of the units surveyed had the capacity utilisation more than 75%, 18% of the total number of units surveyed achieved 100% or more of the installed/targetted capacity during the year.

1.1.3 The government, as investor is concerned with the post tax profit that are available to compensate against the capital provided. The gross profit of all the central public enterprises have shown an increase of Rs. 205051.1 Million from Rs. 85722.2 Million in 1988-89 to Rs. 106227.5 Million in 1989-90, an increase of 23.92%. The profit before tax also registered an increase of Rs.8767.5 Million compared to the previous year, (from Rs.44048.6 Million in 1988-89 to Rs.52816.3 Million in 1989-90) which means an increase of 19.90%. After taking into account the tax provision of Rs. 14999 Million, the net profit for the year works out to Rs. 37817.3 Million against Rs.29935.3 Million for
the year 1986-89, showing an increase of Rs.7882 Million, or 26.33% \(^{(4)}\)

1.1.4 Out of this profit only Rs.3112.1 Million were disbursed by way of dividend ie. it is less than 1\% of the equity. The bulk of the investment of Rs. 389570 Million in equity has come from the borrowed funds of the central Government. Assuming the average rate of interest of borrowing as 10\%, the total interest liability comes to around Rs. 38957 Million against which dividend income is 3112 Million only resulting in net deficit of Rs.35845 Million which has to be made good by additional taxation. So it is logical that there should be some search for the reasons which had lead to this situation.

1.1.5 The thinkers on financial management like Charles W.Gerstenburg, O Donnell, John L, and Goldberg, Milton's etc. in their books \(^{(5, 6)}\) mentioned that in a business a good amount of losses may be due to improper management of working capital."Though many other financial and non-financial problems do exercise their influence on the profitability of the undertakings, financial analysts have come to opine that it is the imprudent management of working capital that does not permit a business enterprise either to earn plausible rates of return on the capital employed or compels them to sustain continual losses." \(^{(7)}\). When working capital is varied relative to sales without corresponding change in production, the profit position is effected. Furthermore, if the flow of funds, created by the movement of working capital through the various operational process is interrupted, the turnover of working capital and return on investment decreases. It is important therefore, for management
to pay particular attention to the planning and control of working capital. (8)

1.1.6 The predominance of inventories in the working capital management puts forward the question - have these public enterprises been managing the inventories efficiently? There has been a constant complain regarding the extensive neglect in the area of inventory management in the public enterprises. "The profitability of a business depends upon the turnover of working capital and that in turn depends to a large measure upon turnover of inventory." (9)

1.2.0 Inventory Management in Public Enterprises and the Present Study

1.2.1 There is a common criticism that inventories of public enterprises are not being managed properly. Therefore, we like to make a detailed study of inventory management in order to identify whether there are some facts in that criticism. If management of inventory appears to be unsatisfactory, then we have to ascertain how grave is the situation. Inventory being a major component of working capital may create idle investment in the latter. Working capital management therefore calls for proper inventory management, other factors remaining constant. This study will also try to identify why in spite of so many operations research models available today for scientific inventory management and access to modern gadgets like computers of different forms, the inventory is not reducing appreciably.

1.2.2 A macrolevel study considering the inventories of all the public enterprises has first been attempted, but that tells us only the state of affairs and does not help us to reach any
conclusion, because of the diversities of the type of industries, and diversities in the size and structure of the organisations. Looking objectively, inventory is not a function of ownership, it is a function of technology. So a second level study of public enterprises is found necessary, keeping in view the similarity of technology. Bureau of public enterprises (BPE) in their annual survey of public enterprises divided all the public enterprises in three categories (10) as given in Table 1.3

**Table 1.3**

**Categories of Public Enterprises**

<table>
<thead>
<tr>
<th>Category</th>
<th>Type of Enterprises</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Enterprises under construction</td>
<td>11</td>
</tr>
<tr>
<td>II</td>
<td>Enterprises producing and selling goods</td>
<td>160</td>
</tr>
<tr>
<td>III</td>
<td>Enterprises rendering services</td>
<td>73</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>244</strong></td>
</tr>
</tbody>
</table>

Source: Public Enterprises Survey 1989-90 Vol-1 (P-384)

In this study we have excluded the enterprises under construction and also the enterprises rendering services, because their average inventory carrying is very low (11). So we have considered enterprises which are producing and selling goods. Again category II covers the largest number of industries. That also has become one of the reasons for concentrating on industries coming under category II.

1.2.3 Enterprises producing and selling goods have further been divided into thirteen cognate groups considering basically their similarity in technology. The inter-group comparison again
does not lead us to any conclusion because of the diversities of technologies. So in the second level study out of this thirteen cognate groups "Steel" has been chosen for studying the behaviour of inventory over the years.

1.2.4 The question may arise, why "Steel"? The fact is that the economic growth of a developing country like ours largely depends on the production of iron and steel. A large sum has been invested in the public sector for the development of this industry since the beginning of the second five year plan (12). Steel Industry in India is regarded today as one of the most prestigious industry. The growth of the Iron and Steel Industry is indeed essential because of the multiple use of iron and steel in the industrial and agricultural development of the country. Again the characteristic feature of the steel industry in India is that it has a competitive structure. In the private sector, The Tata Iron & Steel Company (TISCO) located at Jamshedpur is also a major iron & steel producing industry in India. So a comparison of the performances of steel industry in public enterprises and TISCO will reveal how effectively and efficiently the inventory is managed in public enterprises.

1.2.5 As on 31.3.1990, eight enterprises in public sector are engaged in the cognate group "steel" and out of these eight enterprises, Steel Authority of India Ltd. (SAIL) takes the lion share (13). Again SAIL covers about 60% of the market share of total Iron and Steel Industry in India (14). This fact also has prompted us to study in detail the inventory behaviour in SAIL, which will give some insight at the microlevel also.
The determinants of inventory level

The inventory level depends on many factors. At the outset it may appear that inventory should have some relation with consumption or sales, but there are continuous criss-cross economic currents flowing in a business and these have significant impact on the inventory level. Out of many such facts the following may be cited as characteristically important (15):

2. Operation cycle.
3. The risk taking attitude of the management.
5. Product policy.
6. Trend, seasonality and cycle.
7. Credit terms.
8. Miscellaneous.

Nature of Business: In the agriculture based industry like cotton, jute etc raw materials may have to be purchased during the harvesting season only. So during that period the inventory level will be high, which will be reduced in the subsequent period.

Operation Cycle: A bread making unit manufactures and sells his products daily, so he may manage the inventory with lesser level, but a distillery unit, which keeps its products for longer time as a part of processing will have to make high investment on inventory.

The risk taking attitude of the management: Since the impact of shortages cannot be calculated correctly and that may be an excuse to cover inefficiency, the management usually try to operate as "shortages are not allowed" ie. the manufacturing
process should not stop due to non availability of input materials. But in reality, it has been found that there are plenty of stoppages of manufacturing process due to failure of power, break down of machines, interfacing problems etc. The inventory level can be substantially reduced provided management agrees to take the calculated risks of shortages.

**Growth and expansion of the business:** It is obvious that with the growth and expansion of the business there will be more consumption and more sales so the level of inventory also will be high. But a characteristic fact is that the increase in inventory level precedes the growth or expansion and quite often not proportionately. This is due to the teething troubles and nonstabilisation of the expanded units.

**Product Policy:** The company may decide the production plan varying with the output requirement of the product or may decide to have a constant rate of production, which may result in building finished goods inventory at times. So a trade off between fluctuation of production schedule or enlargement of stock, keeping constant rate of production decides the level of inventory.

**Trend, Seasonality and Cycle:** Trend seasonality and cycles are important, if the product demand shows a rising trend. The inventory level also should be increased, provided the production and sales are geared up to avail the opportunity. The cyclical and seasonal changes will have to be managed by building the corresponding inventory level.
Credit terms: A favourable credit terms increases the sales. As a result finished good inventory level may come done, but it may lead to increase in debt burden. So depending upon the market condition, management will have to take decision on credit terms, which in turn will have impact on finished goods inventory. Again non-availability of adequate credit for purchasing materials forces the management to keep the inventory levels slim.

Miscellaneous: Apart from the above, inventory may be affected by:

* Organisation for inventory management
* Purchasing policies and performance
* Methodologies followed for receiving and inspection of materials.
* Stores management
* Inventory control techniques.

An in-depth look at the genesis and the growth of public sector enterprises and further for the public sector iron and steel industry will help us in analysing, whether the environment was congenial for proper inventory management or not. In view of the above background, we now formulate the objectives of the present study in the following section.

1.4.0 Objectives of the study

1.4.1 General: To ascertain the practice of inventory management in the Public Sector in general and "Steel" in particular and based on the findings to suggest a methodology for determining the ideal inventory level so as to measure how effectively inventory is being managed in public enterprises.
1.4.2 **Specific:** More specifically, we would like to examine the following issues:

* Does the perspective development of public enterprises reveal that there are some environmental factors which might have affected the inventory decisions in the case of public enterprises?

* Can the history and development of Public Sector Steel Industry in India unfold some truth, why the inventory of SAIL is high?

* Is the traditional approach to inventory management correct? Inspite of a number of Operations Research (OR) models for inventory management available, why the reduction in inventory is still not that effective?

* What is the present state of affair of inventory management in the public enterprises groupwise, companywise and componentwise?

* If the diversities of the companies in public enterprises stand as a constraint in coming to any conclusion, can we determine the ideal inventory level for the technologically similar industries coming under the group "Steel"?

* What is the inventory management picture of SAIL in comparison with the calculated ideal inventory level? How is SAIL's performance in inventory management in comparison with TISCO?
* What would have been the impact of excess inventory on profitability of SAIL?
* Can we suggest improvement of performance of SAIL keeping in view the state of its inventory management?

1.5.0 Methodology

1.5.1 Sample Selection: Empirical studies have been conducted by collecting sample data at the following three levels:

* A macro study of inventory management considering all the public sector enterprises as such.
* A study of inventory management considering the public sector enterprises coming under different groups and a detailed study of the group "Steel".
* A micro level study of inventory management for the public enterprise - SAIL.

1.5.2 Collection of data: Data have been collected both from primary and secondary sources. Primary sources are mainly the Annual Reports of SAIL and TISCO, while the secondary sources are the Public Enterprises Surveys done by Bureau of Public Enterprises, Government of India.

1.5.3 Period of Study: At the macro level study 1988-89 and 1989-90 data have been taken. Because of diversities, studies of longer duration will not lead us to any conclusion but we need to know the present state of affairs - so we have studied for two years and at the micro level 10 years data upto 1989-90 have
1.5.4 Processing of data: Data collected from primary and secondary sources have been processed using traditional accounting and statistical measures.

1.6.0 Plan of the study

1.6.1 The present study analyses the inventory management of the public sector enterprises in three levels as mentioned above. In order to study inventory in these three levels, some conceptual and contextual clarifications are required, those have been dealt in first few chapters and the empirical study and conclusions have been done in last four chapters. The entire study has thus been divided into eight chapters including introduction as follows:

1.6.2 Management of inventory is very much dependent on the attitude of the management and their approach to all financial decisions. So the genesis and the growth of the public sector enterprises along with their objectives and policies form an important part of the study. This gives an idea about the set up in which the Chief executives of public sector enterprises have been operating and what would be their approach to the financial decisions including inventory. This has been covered in the second chapter.

1.6.3 Again since the study encompasses inventory management of Steel Authority of India Ltd (SAIL), the growth of the integrated steel plant in India has also been analysed. This is important because we often compare the inventory management of SAIL with that of similar integrated steel plant in the private
sector, The Tata Iron & Steel Company (TISCO). Today SAIL and TISCO are two giant public sector and private sector organisations in the steel industry. So the development of steel industry both in private sector and public sector is required to be discussed in some what details which will help us in understanding the environment within which both these enterprises have been operating over the years. This has been dealt in the third chapter.

1.6.4 Though there is no confusion regarding the distinction between working capital and fixed capital, in the financial and accounting world, but there seems to be no unanimity in the concept of working capital amongst its users. There are two classification or concepts in working capital—"Net working capital" and "Gross working capital". The latter is referred to total of all Current Assets and the former, as the difference between Current Assets and Current Liabilities" (16 & 17). So a conceptual analysis of working capital along with its different structural determinants is very essential. Inventory forms an important part in both the considerations. This has been covered in the fourth chapter. Some mathematical approaches to inventory management models have also been discussed in this chapter.

1.6.5 The empirical studies have started from chapter five onwards. The fifth chapter deals with the inventory management in public sector enterprises. In the sixth chapter, the inventory management of the public sector enterprises coming under the group "Steel" has been dealt at length and in this chapter the methodology for calculating the ideal inventory has been
developed. The seventh chapter deals with the inventory management for the public sector enterprise - Steel Authority of India Ltd (SAIL). A comparison of inventory management of SAIL with that of TISCO has also been attempted in this chapter. In addition some suggestions for improving the inventory management of SAIL have been given. In the eighth chapter, along with summary of findings, an analysis has been made on the financial impact of the excess inventory in SAIL. The study ends with a few suggestions.

1.7.0 Limitation of the study

1.7.1 This study is based on the data provided in public enterprises survey reports. Firstly, inventory management is considered for all the public sector enterprises, then it is analysed for the public sector enterprises coming under the group steel and, lastly, the inventory management for the public sector steel industry, SAIL. In each of the analysis the treatment is not based on homogeneous data. There are host of diversities and wide range of enterprises have been considered. Even at the SAIL level also, it is the sum total of inventory figures for different steel plants having different product, different work flow and different kind of inventory control methods and practices. Inspite of these limitations, keeping in view the nature of the study, it can be said that the present study throws some light on the state of inventory management over the years in public enterprises specially in the industries coming under the group "steel". The analysis has been done keeping in view how top level management may look at the problem.
of inventory. The methodology developed and suggestions made in the study, thus will be helpful to improve control over the inventories in the Steel Industry in particular and in the public sector in general.

1.8.0 Collateral Studies

1.8.1 In the Indian context very few publications are there on inventory in public sector enterprises but number of studies have been conducted in the area of working capital management where there are reference on inventory management. The early worth mentioning endeavour was by National council of Applied Economic Research (NCAER)(18) to study the structure of working capital in Indian Economy with special reference to fertilizers, cement and sugar to analyse to what extent the working capital had been utilised effectively and efficiently. The study revealed that a huge amount of money is locked up in most of the industries as working capital and there is ample scope to economise it. For inventory management it has been mentioned that good accounting and costing system should be introduced so that scientific inventory control techniques may be used. Ram Kumar Mishra (19) in his study selected six companies for studying the problem of working capital. These are:

1. Fertilizer Corporation of India Ltd.
2. Hindustan Steel Ltd.
3. Heavy Electricals Ltd.
4. National Coal Development Corporation Ltd.
5. National Mineral Development Corporation Ltd.
6. Instrumentation Ltd.
1.6.2 The study of working capital management in selected public enterprises has revealed that the inprudent management of working capital had been greatly responsible for the losses borne by them. The turnover of the current assets employed by these undertakings had been both very low and stagnant and the rate of net profit on the same ran in the negative. Thus public enterprises completely missed the efficiency of the use of working capital which happens to be the most important condition for the running of a business enterprise with profits. In the case of inventory accumulation he concludes that the reasons are both internal and external. "Internally, uncongenial organisation, defective inventory management and the lack of proper inventory control" were indentified as main reasons. Externally, the lack of critical experiences, in running such plants, local conditions, paucity of indigenous and imported supply, lack of small industries, transport bottlenecks, delays in foreign exchange and issue of import licences led, the management to play safe and hold high stocks.

1.6.3 Laxmi Narain (20) studied the performance of Central Government Public Enterprises during 1972-73 to 1975-76 and came to the conclusion that for all the running organisation there is an all round fall in profits eg. rate of return on capital invested fell from 7.6 to 5.3 during 1974-75 to 1975-76 and during the same period rate of return on capital employed declined from 8.9 to 7.9. Regarding inventories his observation was that although public enterprises have decreased their inventories with reference to sales, lot more is needed to improve the financial working of the enterprises.
1.8.4 R S Chadda (21) studied the inventory management practices of Indian companies. He mentioned that the advanced countries like USA have been using sophisticated O R techniques for inventory management and we should also use them.

1.8.5 B S Sharma (22) studied the problems of financial planning in Indian Public Sector. His emphasis was mainly on projects. But while measuring the financial performances he studied the art of working capital management of the units he covered in his study. His observations were that in terms of adequacy, working capital tended to be high in the enterprises studied.

1.8.6 Nalini Ambegaonkar (23) studied the working capital requirements and availability of bank credit for 16 years period for the Indian processing and manufacturing industries. The worth mentioning part of it was the study of the growth of inventory in relation to the growth of output.

1.8.7 S C Bardia (24) analysed the problems of working capital with a case study of Iron and Steel Industry in India. Along with a critical study of inventory management, he studied the other components of working capital management.

1.8.8 K V Rao (25) in his study of management of working capital of public enterprises concluded "Though many other financial and non-financial problems do exercise their influence on the profitability of the undertakings, financial analysts have come to opine that it is the imprudent management of working capital that does not permit a business enterprise either to earn plausible rate of return on the capital employed or compels them to sustain continual losses."
1.8.9 Ashim K Mukherjee's (26) study covers twenty manufacturing public sector undertakings owned wholly or partly by the Central Government during the period 1974-75 to 1978-79. He studied critically the management of structural determinants of working capital eg. inventory, receivable, cash and other assets.

1.8.10 Several authors like R Prakash (27), S R K Rao (28), Om Prakash (29), A R Palit (30), M L Mongia (31), and N K Gupta (32) discussed the different facets of problems of managing inventory in public enterprises in their articles. Committee on public undertakings (33) also looked critically the materials management practices in public enterprises.

1.8.11 The above studies do not make any attempt to scrutinize the effectiveness with which inventories are managed in the public sector in general and steel industry in particular. Accordingly, impact on the performance of public enterprises due to efficient or otherwise management of inventories can not be determined. In addition to these, the case of inventory management of SAIL has not been considered taking the totality of the situation in any study made so far. Its efficient management particularly with reference to inventory holding has tremendous impact on economic development of the country. The present study therefore has its relevance in this respect also.

1.8.12 The study may be justified from another point of view also. During 1973, it was observed that inflation was galloping and it touched an unprecedented increase of 31% in price line during the year. Reserve Bank of India (RBI) wanted to bring
about a change in the lending system and in July 1974 a study group was formed under the Chairmanship of P.L. Tandon, the then Chairman of Punjab National Bank. The Committee submitted its report in June, 1975 (34). The report consists of some norms of inventory which we shall discuss later in chapter 4. After implementing Tandon Committee Report RBI observed that desired results were not forthcoming. So in the year 1979 RBI appointed an another Committee under the Chairmanship of K B Chore, Chief Officer RBI (35). Chore Committee submitted its report in December 1980. After the recommendations of the Tandon and Chore Committee, it has become all the more important to ensure efficient management of inventories. The present study, is a modest attempt in this respect too.
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