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UTTAR PRADESH RAJARSHI TANDON OPEN UNIVERSITY

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MBA-3.3 3.1
Corporate Policies and Practices

SEVENTH BLOCK Case Studies



Indira Gandhi National Open University



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MBA-3.1
CORPORATE POLICIES
AND PRACTICES

Block

7

Case Studies

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Analysing A Case

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Nalanda State Small Industries Corpn. Ltd.

Case (1977, revised 1982), prepared by Prof. G.R. Kulkarni, Indian Institute of Management, Ahmedabad.

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Case (1976) prepared by Prof. K.R. Srinivas of Indian Institute of Management, Ahmedabad.

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Case (1988) prepared by Prof. O.P. Chopra, Faculty of Management Studies, University of Delhi.

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Case (1993) Prepared by Prof. M.L. Bhatia, SOMS, IGNOU and Dr. R. Srinivasan, Department of Management Studies, Indian Institute of Science, Bangalore.

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Case material has been prepared to serve as a basis for class discussion. Cases are not designed to present illustrations of either correct or incorrect handling of administrative problems.

ANALYSING A CASE

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1.1 WHAT IS A CASE

What is a case? A case is written description of an organisation (or any of its parts) covering all or some of its aspects for a certain period of time. It sets forth the events and organisational circumstances surrounding a particular managerial situation. Most cases contain information about the organisation's history, its internal operations and its external environment. Though there is no standard order of presentation, many cases include information about the industry, the competitive conditions, the products and markets, the physical facilities, the work climate, the skills and personality of managers, the organisational structure, together with the financial and quantitative data relating to production, marketing, personnel, and so forth. Cases may relate to profit seeking government or public service organisations.

Despite its known deficiencies, the case method is widely used by universities and professional institutes throughout the world, especially for imparting knowledge and developing skills in the area of corporate strategy or strategic management.

A good case places students in a realistic situation where they can practise making decisions. Though a case may contain plenty of information, in some cases running into several pages, there is no such thing as a truly complete case. Students often say (or complain) that they have too little information in the case. While this may be true, it should be appreciated that, many a time, managers in the real world too have information which can hardly be described as sufficient. In fact, a manager has far less opportunity for study and interaction with others as a student has. The managers cannot afford to delay making decisions until they are satisfied with the quality and quantity of available information. Such a time perhaps may never arrive. Like a real world manager, a student of corporate strategy must make a decision, making best use of whatever information is available and making assumptions about whatever is unknown or is not available.

1.2 OBJECTIVES OF CASE METHOD

The objectives of the case method are to:

- help you to acquire the skills of putting text book knowledge about management into practice. Managers succeed not so much because of what they know but because of what they do.
- get you out of the habit of being a receiver of facts, concepts and techniques and get into the habit of diagnosing problems, analysing and evaluating alternatives, and formulating workable plans of action.
- train you to work out answers and solutions for yourselves, as opposed to relying upon the authoritative crutch of the teacher/counsellor or a text book.
- provide you exposure to a range of organisations and managerial situations (which might take a life time to experience personally), thus offering you a basis for comparison in your working as a career manager.

Reading books, articles and listening to lectures alone cannot develop managerial skills. For most managerial problems, readymade answers do not exist, or perhaps cannot exist. Each situation is different, requiring its own diagnosis and evaluation before action can be initiated. Case studies allow *learning by doing* to occur. They stimulate the reality of a managerial situation and a manager's job. In a sense, cases are laboratory materials and offer a reasonable substitute for actual experience by bringing a variety of management problems and opportunities into the class room.

Students often ask their teacher/counsellor, "What is the right answer/solution?" If the discussion in the class concludes without clear answers or a clear consensus on what actually happened or what should/ought to be done, some students feel frustrated. While in some cases it would be possible for you and the counsellor to develop a consensus, in other cases it may perhaps not be possible. As in real world, hard answers to cases do not exist. Therefore, issues are discussed and various alternatives and approaches are evaluated. Usually, a good argument

can be made for more than one course of action. The important thing for students to understand in case analysis is that it is the exercise of *identifying, diagnosing, and recommending* that counts rather than discovering the "right answer". The essence of case analysis is to become skilled in the process of designing workable action plans through evaluation of the prevailing circumstances.

If case method rests on the principle of learning by doing, it all depends on you as to how much gain you can derive by making your own analysis and reaching your own decisions, and then participating in the class room in a collective analysis and discussion of the issues. Since a case assignment emphasises student participation, it is obvious that the effectiveness of the class discussion depends upon each student having *studied the case before hand*. A case assignment therefore requires conscientious preparation before class. You cannot expect to get much out of hearing the class discuss a case with which you are unfamiliar or not fully prepared for.

The pedagogical objective of case method is very much different from the usual teaching in the class room. Instead of the professor/instructor/counsellor, it is the students who do most of the talking. The counsellor/instructor's role is to solicit student participation and guide the discussion. The counsellor might begin by restating the questions given at the end of each case or he might even propose or frame some new questions, like: What is the organisation's strategy? What are the strategic issues and problems confronting the company? What is your assessment of the company's situation? Is the industry an attractive one to be in? Is management doing a good job? Are the organisation's objectives and strategies compatible with its skills and resources?

The students are expected to engage in discussion with each other, with the counsellor listening to them patiently and providing direction/guidance as and when required so that the whole discussion remains on the track. It is the students who carry the main burden of analysing the situation and then presenting and defending their analysis in the counselling sessions.

You should therefore not expect your counsellor to say: "Here is how to do it", "Here is the right answer", etc. Although you should do your own independent work and thinking, you should not hesitate to discuss the case with other students.

1.3 BENEFITS

The case method offers students an opportunity to communicate and convince their fellow students and their counsellors of the correctness of their viewpoints. This is analogous to the situation where a manager must persuade others to accomplish organisational purposes. The case analysis and discussion help the students in developing analytical, communication and interpersonal skills which are vital for success in management. The method also provides some opportunity to the students to relate their viewpoints with those of the others. While defending his own viewpoint, a student has also to develop an appreciation for the viewpoints held by others. Table-1.1 lists the management skills which are improved by case analysis.

Table 1.1 Action Skills Reinforced by Cases

1. *Think clearly in complex ambiguous situations.* Successful experiences with cases give students the practice and confidence necessary for clear intensive thinking in ambiguous situations where no one right answer exists. Since problems in management and administration are full of these situations. The skills are valuable to acquire.
2. *Devise reasonable, consistent, creative action plans.* Most cases require the student to detail a course of future action.
3. *Apply quantitative tools:* The management of modern organization demands the use of such quantitative tools and theory as net present value, ratio analysis, and decision tree analysis. Active employment of these techniques in actual situations requires more knowledge than one typically gains by introductory theory and problems. Cases give the student practice in using quantitative tools in these realistic situations.
4. *Recognize the significance of information.* Theories and observations of modern management have shown that managers sift through large masses of information, both formal reports and informal channels (the

"grapevine"). The manager's task of defining problems and their solutions demands the ability to classify information.

5. *Determine vital missing information.* Successful decision makers must know where and be able to determine when to seek more information. Cases give the student practice in solving problems with the information at hand in the case. In researching standard industry sources, and in identifying the missing information that is vital to the formulation of an action plan.
6. *Communicate orally in groups.* Both the in-class discussions of cases and small group discussions preceding class are an integral part of learning by cases. The ability to listen carefully to others, to articulate one's views, and to rapidly incorporate the views of others into one's position are all important skills for managers.
7. *Write clear, forceful, convincing reports.* Managers and their staffs have to express themselves in writing. The best way to improve one's writing skills is to write; hence, the usefulness of the case report.
8. *Guide students' careers.* Many students would benefit from a greater awareness of the day-to-day tasks and responsibilities of managers. The wide variety of actual situations described in cases gives students valuable knowledge about the functions of many job positions.
9. *Apply personal values to organizational decisions.* Modern industrial society forces managers to make decisions which trade among business profits, government expenses, and the welfare of individuals and the public. This area of ethics and social responsibility is important and problematic in a professional education. The process of stating and defending positions in case discussions sharpens a student's awareness and maturity in the subjective area of value and moral judgements.

Source : Edge, Alfred G. and Denis R. Coleman. *The Guide to Case Analysis and Reporting, Systems Logistics* : Honolulu, 1981, pp. 5-7.

1.4 ANALYTICAL TOOLS

There are a number of tools which have been found to be useful, both academically and professionally. These tools have been discussed in the various units of MS-11 (Corporate Policies and Practices). Among the more important ones are:

- SWOT Analysis
- Ratio Analysis
- Portfolio Analysis
- Checklist (Strategic audit)

SWOT Analysis

The first thing that an analyst should do in SWOT (strengths, weaknesses, opportunities and threats) analysis is to define the business of the organisation and identify the key factors for success. The student must evaluate the strengths and weaknesses in terms of the skills, resources and competencies of the persons within the company in the light of the key factors. The analyst then should see whether the internal capabilities match with the demands of the key factors so that the company will be able to exploit the opportunities and fight off the threats.

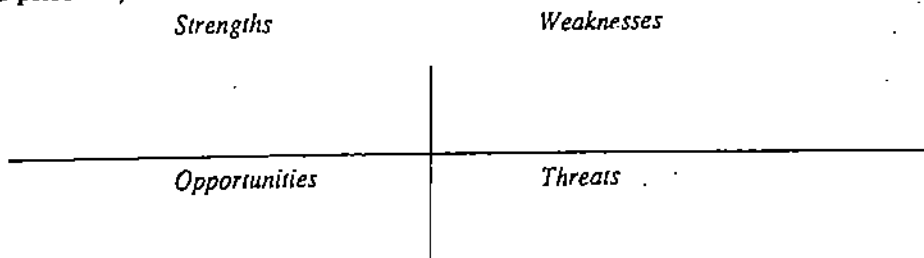
The SWOT analysis stands at the core of the strategic management. It will be apparent from the study of block 3 (MS-11) that the job of the organisational strategist is to capitalise on the organisation's strengths while minimising the effects of its weaknesses in order to take advantage of opportunities and overcome threats in the environment.

Threats and weaknesses are relative rather than absolute. Opportunities seldom simply arise. Many a time they exist in the environment and only need to be identified. For example, it is expected that a market might emerge in

the foreseeable future for the low cost home computers at least in the metropolises of India. A computer company which has the ingenuity and energy to make and market such an item will have the opportunity to become the dominant home computer maker for several years. Opportunity thus requires potential new initiatives. While most opportunities have to be sought, in some cases they have even to be created. R&D allows opportunities to be created. The main focus of the corporate strategist should be to identify additional opportunities, selecting the ones that are most promising and capitalising on them.

Like opportunities, threats also exist or emerge as a result of new developments, expected or unexpected. Threats become less severe if they are recognised and guarded against. Various strategic alternatives discussed in block 5 may help a company overcome or minimise the effect of threats. When a threat is recognised soon enough, it can often be converted into an opportunity.

SWOT analysis is a useful aid for generating alternatives. When it is carried out for the whole organisation it can become quite complex. To simplify the process, you may find it useful to list strengths and weaknesses, opportunities and threats in the following format (and separately for the functional areas of production, marketing, finance and personnel):



As an analyst, you might find it difficult to neatly classify much of what is of strategic importance into the above four categories. This is also true of the real world.

Ratio Analysis

Financial ratios are widely used for analysing and interpreting situations of strategic importance. The financial ratio analysis somehow gives the impression that only an economic view of business is being taken. Undoubtedly, human and social considerations are equally important. While ratio analysis is a valuable tool in revealing potential problems, it should not be used alone. Ratio analysis is just one of the many tools the strategic analyst has available in his kit for evaluating corporate performance.

Ratio analysis is discussed in Unit 11 of MS-4 (Accounting and Finance for Managers) and also, to an extent, in Unit 11 of MS-11. Computation of ratios in itself is not enough. You must relate the ratios to relevant bases, standards, norms, or benchmarks. The four bases which can be used are:

- Rules of thumb
- Historical data of the company
- Historical data of similar company(ies)
- Industry norms

Rules of Thumb: Some examples of rules of thumb are:

<i>Ratio</i>	<i>Rule of Thumb</i>
Acid Test/Quick Ratio	1:1
Current Ratio	2:1
Inventory Turnover Ratio	4:1
Gross Margin on Sales (General merchandise)	40%

It is best to think of each ratio as a conceptual measure rather than a technical one. Whether or not the rule of thumb will be appropriate for a particular company would depend upon its unique circumstances, nature of its business and nature of the industry the company is in. In certain cases cashflow analysis probably may be more useful than calculation of liquidity ratios.

Company's own Historical Ratios: For an analyst within the company, the company's own historical ratios provide a valid basis for comparison — perhaps a better basis than rules of thumb or industry ratios. Before relying on the past ratios of the company it should be seen that there has been no change in the accounting policy or practices. Otherwise past ratios become less valid.

In any case, a major change in any ratio should be a subject for investigation. It could either reveal some serious problem or could be explained away as essentially irrelevant. Further, a change in ratio could be due to several reasons. For instance, a decrease in inventory turnover could be due to any one or more of the following:

- deterioration in inventory control practices
- decrease in sales per average inventory item
- less effective marketing
- increased aggressiveness of competitors
- economic downturn
- purchase of inventory held previously on consignment
- increased stock of items with a slower turnover but a higher margin
- conscious effort on the part of the management to decrease stockouts and improve customer service
- purchase of additional inventory because of manufacturers' incentive sales plan
- anticipation of rapid economic upturn.

Similarly, a decrease in net profit on sales may result from:

- increased competition
- worsening marketing conditions
- conscious attempt by management to improve sales through price competition

A change in current ratio or asset turnover ratio may occur due to a change in financial policy, e.g., conversion of short term debt into long-term debt, or by leasing assets instead of buying them (or failing to replace them).

As stated earlier, financial ratios in general should not be used alone for decision making purposes but simply to identify areas of further exploration. It is possible for a management to keep the ratios within the expected or acceptable ranges while condition of the firm steadily worsens. In spite of the limitations, a company's own past financial data probably is the most dependable of all the bases.

Data from similar firms: No two companies are exactly alike, and it is hard to find financial ratios which are precisely comparable to those of the firm being analysed. Still it is possible to categorise most companies and to compare their ratios with those of the companies of similar size and in similar business areas. Some institutions and representative bodies of business in India have started the work of categorisation of companies and compilation of performance ratios.

In comparing the company's ratios with a similar firm (or firms) it should be checked whether there has been a change in accounting policy and practices in any of the two firms.

Industry Norms

As data on similar firms is often not available or is difficult to obtain, ratios of the firm can be compared with the industry ratios or norms which are relatively easily available. A set of ratios on various aspect of performance of companies are regularly compiled and published by some stock exchanges, private research bodies, industry associations, and economic and financial dailies.

Here, again, it should be seen that ratios are validly comparable, keeping in view the peculiar circumstances or features of the company.

A summary of key ratios, how they are calculated, and what they show is presented in Appendix I.

Portfolio Analysis

Units 10 and 11 of MS-11 dealt with various techniques of display matrices to accomplish the purpose of portfolio analysis. These techniques are particularly useful for analysing the strategies of diversified enterprises. The two widely used and accepted matrices are:

- BCG Matrix (Growth-share Matrix)
- Shell Directional Policy Matrix (DPM)

The BCG Matrix focuses on two variables: the rate of growth of the product-market area, and the market share in that area held by the firm relative to that of its largest competitor. The analyst must understand the steps involved and the implications of the BCG matrix as also the problems that arise from making it as a basis for strategic decision making. It should be borne in mind that the matrix is designed to be a guide in strategic decision making, and as such must be used in conjunction with managerial judgment.

The Shell Directional Policy Matrix, which is an outgrowth of the BCG matrix, takes into account a wider variety of circumstances relating to the firm and its market environment. The DPM analysis which takes fuller account of qualitative assessments as well as quantitative variables is a 3 x 3 matrix, contrary to 2 x 2 BCG or growth-share matrix. The Shell matrix has been widely adopted in practical business situations. Its prescriptions are more varied than those of BCG matrix.

Checklist (Strategic Audit)

A checklist, developed on a comprehensive basis, can also be a useful device for analysing a case. A comprehensive checklist is more or less synonymous with *strategic audit* which represents an integrated view of strategic management process in action and covers its key aspects. Strategic audit considers not only how objectives, strategies and policies are formulated but also how they are implemented, evaluated and controlled. "The strategic audit, therefore, enables a person to better understand the *ways* in which various functional areas are interrelated and interdependent, as well as the *manner* in which they contribute to the achievement of the corporate mission". Strategic audit is very useful for those people, such as the board of directors, who are interested in evaluating the performance of the company and its management.

Strategic audit may be conducted along the various questions contained in Appendix II. These questions are useful in analysing a complex case on corporate policy. Though not all-inclusive, the Appendix presents many critical questions needed to strategically analyse a business organisation. You may take this list as a *guide* for your analysis. Some questions (or even some areas) may be inappropriate in a particular case, while in some other case the questions may be insufficient for a complete analysis. However, each question in a particular area can be broken down into additional series of sub-questions. Strategic audit thus provides a systematic framework for analysis of complex cases.

Other Techniques

There are a number of other techniques and models, relating particularly to functional areas of marketing, personnel, finance, and production which are useful for strategic analysis.

Some of these techniques/models are:

- Break-even Analysis
- NPV Analysis

- Four Ps of Marketing
- Dupont System of Financial Control
- Six Functional Areas of Human Resource Management (HRM)
- Management Process and Model, i.e., planning, organising, leading, controlling, and coordinating
- Determination of competitive advantage
- ABC Analysis of inventory control.

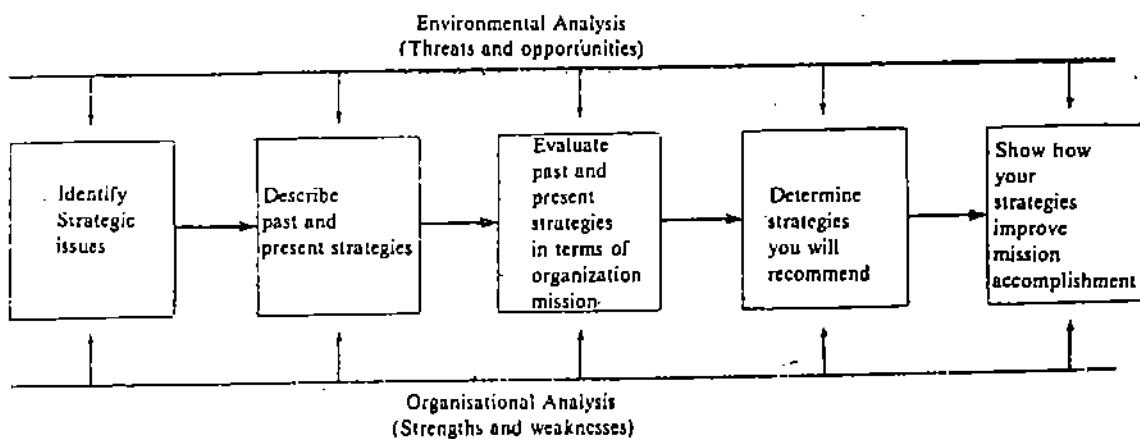
1.5 PREPARING A CASE

A case may be prepared for:

- Oral analysis for discussion (by individuals)
- Oral analysis for discussion (by groups)
- Written analysis (by individuals)
- Written analysis (by groups)
- Oral/written analysis and presentation (by individuals/groups)

What particular method would be followed in the counselling sessions would depend upon the thinking of the counsellor and other factors, including the nature of the company and the length of the case. For many students, this will be their first real exposure to case analysis. For facilitating your analysis, we have given or posed some questions at the end of each case. You may analyse the case along these questions and in the process follow the line of action as shown in Figure 1.1.

Figure 1.1 A Guide for Case Preparation



The counsellor may ask one of the students who has prepared the case to make a presentation on one of the questions. This can then be followed by an open discussion. After all the questions have been covered one by one, the case as a whole can then be thrown open for discussion. The counsellor toward the end can sum up the whole analysis and draw some conclusions. Whether the counsellor asks for oral discussion or written presentation, it is always advisable to prepare a written analysis. Apart from several other benefits, it will bring to the case a thoroughness which is generally not expected when you prepare for oral discussion.

While no standard procedure can be laid down, the following successive steps will be helpful for analysing the case (whether for oral discussion or written presentation):

- know the facts
- understand the environment of the organisation (external and internal)
- gather relevant information from outside sources, if necessary
- appraise and evaluate the environment
- consider and keep in mind the mission of the organisation, while making recommendations

A case is a technical paper. As such it deserves careful reading. A good approach is to read the case three times: once rapidly, scanning quickly any exhibits; a second time thoroughly and slowly, putting careful attention to the exhibits and making some notes about apparent organisational objectives, strategies, symptoms of problems, root causes, unresolved issues and the role of key individuals; and a third time rapidly again to reinforce the main points.

While analysing the case, try to look for issues beneath the surface. For instance, at first glance, the issue might appear to be whether or not there is ample demand for the product at the current selling price. On closer examination, you might find that it is the method of compensating or providing incentives to the sales force that is standing in the way of achieving higher sales volume.

To help diagnose the situation, put yourself in the position of the manager or managerial group portrayed in the case and get attuned to the overall environment facing the management. You may expect the case to contain several problems and issues rather than just one.

Sometimes a case may not contain all the information that you think is necessary for analysing the case. This may be particularly true with regard to data on external environment, competitors and industry characteristics. This often requires library research using business magazines, trade journals, company Annual Report, etc. While searching for information, it should be borne in mind that all facts are not equally important. A systematic approach to information gathering should be followed. Some sources from where you could gather necessary information are listed in Appendix III.

While analysing and recommending any course of action, you may always keep in mind the mission of the organisation. Ultimately, all aspects of strategic management must be related with the mission of the organisation. For ascertaining the mission of the organisation, you may attempt to answer this question: What is the organisation trying to do and for whom? In examining the mission of the organisation, you may consider from both descriptive and normative standpoints. Where necessary, you may not shy away from taking a normative view and evaluating management from an ethical or moral standpoint.

The arguments you make and the positions you take should be defensible and supportable with evidence (statistical data, calculations, etc.). Your objective should be to develop what you think is a pragmatic, advisable course of action that is based on a serious analysis of the situation. Someone else might have evaluated the same facts in another way and thus has a different "right" solution. While defending your own answer, you should also try to relate it with the answers of other participants and try to appreciate the reasons behind any difference. Though the case method is a group process, it does not imply conformity to group opinion. Sometimes one has to swim against the tide of majority opinion. In the practice of management there is always room for originality and unorthodoxy.

While discussing or arguing your point, you can assume that the other participants know the facts or what "the case says". Therefore rehashing the information should be held to the minimum except when you need to document, compare or support your position. Be as specific as possible in your comments and provide comparative data. Take for instance: the slight growth in market share from 10 per cent in 1985 to 11 per cent in 1986 was achieved during a general recession and in an industry growing at about 8 per cent annually. While analysing, recognise the distinction between facts and opinions given in the case.

Once you have thoroughly diagnosed the company's situation and weighed the pros and cons of various

alternative courses of action, you may decide on what the company should do to tackle the problems or improve its performance. Draw up your set of recommendations and prepare an "action agenda". This is the most crucial part of the analysis. Bear in mind that proposing realistic, workable solution is not the same as offering a hasty, or not a properly conceived possibility. Do not recommend anything you would not be prepared to do yourself if you were in the shoes of the decision maker.

1.6 WRITTEN PRESENTATION

We had earlier suggested that even where your counsellor has asked you to prepare your analysis for oral discussion in the class, it is advisable to analyse the case in writing. Your counsellor sometimes may specifically ask you to do a written analysis so that he could evaluate your analysis and provide you with some useful feedback. A written presentation is a more structured approach to case analysis. Just as there is no set formula for preparing a case for oral discussion, so there is no set procedure for a written case analysis either. If questions are given in the case, you may attempt your analysis based on those questions. In case no questions are given, you may attempt a comprehensive written analysis (without being unduly lengthy) on the lines suggested in Figure 1.1.

In written presentation you should avoid repetition, exaggeration and over-generalisation. If your analysis involves some important quantitative calculations, then you should use tables and charts to present the data clearly and efficiently. You can also use flowcharts and diagrams where appropriate. Use sub-headings to organise your report and put all your analysis in a logical sequence. It is not advisable to just tack the exhibits at the end of your report and let the reader figure out what they mean and why they have been included. Instead, cite some of the key numbers and summarise the conclusions (to be drawn from the exhibits) in the body of the text itself and refer the reader to the charts and exhibits for more detail. It goes without saying that your report should be properly organised and written in a communicative and persuasive manner.

While stating your recommendations, see that they are in sufficient detail so as to be meaningful. Simply making a statement like "the firm should improve its market position", or "the organisation should do more planning" is not enough. You must explain what you think must be done. You must say how your plan should be implemented. In other words, offer a definite agenda for action, stipulate a time-table and sequence for initiating actions, indicating priorities and suggesting who should be responsible for doing what.

1.7 WHAT AN EVALUATOR LOOKS FOR IN A CASE ANALYSIS?

The important elements that a counsellor (or evaluator) would generally look for in a case analysis are:

- care with which facts and background knowledge have been used
- ability to state problems and issues clearly
- use of appropriate analytical techniques
- evidence of sound logic and arguments
- consistency between analysis and recommendations
- ability to formulate reasonable and feasible recommendations for action.

1.8 CONCLUSION

Case preparation and presentation is challenging as well as rewarding. As you develop and refine your skills (which are perhaps not as obvious as the knowledge gained in a lecture), you find that they apply to numerous situations in your professional and personal life. Remember that each case requires significant amount of time if you are really interested in making a good analysis. Without this, case analysis will not do much good to you.

Appendix I
A Summary of Key Financial Ratios, how they are Calculated, and what they Show

<i>Ratio</i>	<i>How calculated</i>	<i>What it shows</i>
Profitability ratios:		
1. Gross profit margin	$\frac{\text{Sales} - \text{Cost of goods sold}}{\text{Sales revenues}}$	An indication of the total margin available to cover operating expenses and yield a profit.
2. Operating profit margin	$\frac{\text{Profits before taxes and interest}}{\text{Sales revenues}}$	An indication of the firm's profitability from current operations without regard to the interest charges accruing from the capital structure.
3. Net profit margin (or net return on sales)	$\frac{\text{Profits after taxes}}{\text{Sales revenues}}$	Shows after tax profits per dollar of sales. Subpar-profit margins indicate that the firm's sales prices are relatively low or that its costs are relatively high or both.
4. Return on total assets	$\frac{\text{Profits after taxes}}{\text{Total assets}}$ or $\frac{\text{Profits after taxes} + \text{Interest}}{\text{Total assets}}$	A measure of the return on total investment in the enterprise. It is sometimes desirable to add interest or aftertax profits to the numerator of the ratio since total assets are financed by creditors as well as by stockholders; hence, it is accurate to measure the productivity of assets by the returns provided to both classes of investors.
5. Return on stockholders' equity (or return on net worth)	$\frac{\text{Profits after taxes}}{\text{Total stockholders' equity}}$	A measure of the rate of return on stockholders' investment in the enterprise.
6. Return on common equity	$\frac{\text{Profits after taxes} - \text{Preferred stock dividends}}{\text{Total stockholders equity} - \text{Par value of preferred stock}}$	A measure of the rate of return on the investment that the owners of common stock have made in the enterprise.
7. Earnings per share	$\frac{\text{Profits after taxes} - \text{Preferred stock dividends}}{\text{Number of shares of common stock outstanding}}$	Shows the earnings available to the owners of common stock.
Liquidity ratios:		
1. Current ratio	$\frac{\text{Current assets}}{\text{Current liabilities}}$	Indicates the extent to which the claims of short-term creditors are covered by assets that are expected to be converted to cash in a period roughly corresponding to the maturity of the liabilities.
2. Quick ratio (or acid-test ratio)	$\frac{\text{Current assets} - \text{Inventory}}{\text{Current liabilities}}$	A measure of the firm's ability to pay off short-term obligations without relying upon the sale of its inventories.

3. Inventory to net working capital	$\frac{\text{Inventory}}{\text{Current assets} - \text{Current liabilities}}$	A measure of the extent to which the firm's working capital is tied up in inventory.
Leverage ratios:		
1. Debt to assets ratio	$\frac{\text{Total debt}}{\text{Total assets}}$	Measures the extent to which borrowed funds have been used to finance the firm's operations.
2. Debt to equity ratio	$\frac{\text{Total debt}}{\text{Total stockholder's equity}}$	Provides another measure of the funds provided by creditors versus the funds provided by owners.
3. Long-term debt to equity ratio	$\frac{\text{Long-term debt}}{\text{Total stockholder's equity}}$	A widely used measure of the balance between debt and equity in the firm's long-term capital structure.
4. Times-interest-earned (or coverage) ratios	$\frac{\text{Profit before interest and taxes}}{\text{Total interest charges}}$	Measures the extent to which earnings can decline without the firm becoming unable to meet its annual interest costs.
5. Fixed-charge coverage	$\frac{\text{Profits before taxes and interest} + \text{Lease obligations}}{\text{Total interest charges} + \text{Lease obligations}}$	A more inclusive indication of the firm's ability to meet all of its fixed charge obligations.
Activity ratios:		
1. Inventory turnover	$\frac{\text{Sales revenues}}{\text{Inventory of finished goods}}$	When compared to industry averages, it provides an indication of whether a company has excessive or perhaps inadequate finished goods inventory.
2. Fixed assets turnover	$\frac{\text{Sales revenues}}{\text{Fixed assets}}$	A measure of the sales productivity and utilization of plant and equipment.
3. Total assets turnover	$\frac{\text{Sales revenues}}{\text{Total assets}}$	A measure of the utilization of all the firm's assets; a ratio below the industry average indicates the company is not generating a sufficient volume of business given the size of its asset investment.
4. Accounts receivable turnover	$\frac{\text{Annual credit sales}}{\text{Accounts receivable}}$	A measure of the average length of time it takes the firm to collect the sales made on credit.
5. Average collection period	$\frac{\text{Accounts receivable}}{\text{Total sales} \div 365}$	Indicates the average length of time the firm must wait after making a sale before it receives payment.
	or	
	$\frac{\text{Accounts receivable}}{\text{Average daily sales}}$	
Other ratios:		
1. Dividend yield on common stock	$\frac{\text{Annual dividends per share}}{\text{Current market price per share}}$	A measure of the return to owners received in the form of dividends.

2. Price-earnings ratio	$\frac{\text{Current market price per share}}{\text{Aftertax earnings per share}}$	Faster growing or less risky firms <i>tend</i> to have higher price-earnings ratios than do slower growing or more risky firms.
3. Dividend pay-out ratio	$\frac{\text{Annual dividends per share}}{\text{Aftertax earnings per share}}$	Indicates the percentage of profits paid out as dividends.
4. Cash flow per share	$\frac{\text{Aftertax profits} + \text{Depreciation}}{\text{Number of common shares outstanding}}$	A measure of the discretionary funds over and above expenses available for use by the firm.

Source: Thompson, Arthur A. Jr. and A.J. Stickland, III, *Strategy Formulation and Implementation* (3rd Ed.), Business Publication, Plasco (Texas), 1986, pp. 431-33.

Appendix II

Checklist for Strategic Analysis (Strategic Audit)

I Current Situation

- How is the company performing in terms of its stated objectives, or in terms of return on investment, overall market share, profitability trends, earnings per share, etc.?
- How does the performance of the company compare with the performance of its close rivals, similar companies, or industry as a whole?
- What are the company's current mission, objectives, strategies, and policies? Are they clearly stated? Are the objectives, strategies and policies consistent with each other, and with the internal and external environments?
- What are the short-term and long-term problems facing the company?

II Record of Performance

- What has been the record of the company in terms of profitability and financial performance?

III Corporate and Top Management

- What is the composition of the Board of Directors in terms of insiders, outsiders and part-timers, full-timers?
- What is the personality profile of top managers?
- Has the top management established a systematic approach to the formulation and implementation of strategy?
- What is the relationship between Board of Directors and top management?
- Does top management get enough time for strategic planning and decision making? What is their level of involvement?
- What values the corporate management believes in and practises?
- Has top management created a climate in which the needs of strategy are aligned with the corporate culture?
- Has top management effectively transmitted its vision down the line to lower level managers and employees?
- Is the top management sufficiently skilled to cope with likely future challenges?

IV Evaluation of Strategy

- What kind of corporate strategy does the company seem to be following?
- What is your assessment of the present corporate portfolio? Are the businesses in attractive (or potentially promising) industries?
- What is the competitive position and market standing of each of the company's businesses?
- What are the future prospects for each of the main businesses in the firm's portfolio?
- Does the portfolio of businesses seem well balanced (enough potential stars, not too many dogs or question marks, and a few cash cows, etc.) and how well is the portfolio being managed?
- Does the company have a competitive advantage? What factors are behind such advantage? How long this advantage is likely to continue? What can the company do or should do to strengthen or maintain this advantage?
- What kind of strategic alternatives the company has been following and why? Does the company need to have new thrusts? What new businesses or activities the company needs to add and what existing activities it needs to shed?
- What are the key success factors in the businesses of the company? To what extent has the company been able to bring about a match between the demands of key success factors and internal resources?
- What new strategic issues emerge in the light of the record of performance of the company?
- Will the strategic alternatives, that you recommend, solve the short-term and long-term problems?

V External Environment

- Which of the environmental factors — social, cultural, economic, political, legal, technological — are the most important at the present time and which ones could be in the next few years?
- Which of the external agents (parties) — competitors, suppliers, customers, labour unions, governments, trade associations, local community, and shareholders — are affecting the company the most and why? How can the adverse relationships be improved or the existing excellent relationships maintained, presently and in future?
- What important opportunities and threats do you see for different lines of business of the company (in the context of respective industry environments, etc.)?
- What is the structure of the industry (or industries) the company is in? Are there high barriers to entry or exit?
- What are the strategies, market standings and competitive strengths of market leaders and close rivals? What competitive shifts have been occurring and why?

VI Internal Environment

A Structure

- How is the company presently structured? Is the present structure consistent with current company objectives, strategies and policies?
- What changes are required in the structure? What would these changes imply?

B Corporate Culture

- Is the corporate culture in tune with the strategy? Are the organisation values, norms, attitudes and behaviours supportive of strategy?
- Do the employees have strong sense of what is expected of them?
- To what extent is the emphasis on result-orientation? Are targets fixed for groups and individuals?
- Does the present culture compose of shared values, beliefs and expectations?
- How is the present culture conducive to productivity, quality of performance, and adaptability to changing conditions?

C Human Resource Management (HRM)

- What are the company's current HRM objectives, strategies and policies? Are they clearly stated? Are they consistent with the company's mission, objectives, strategies, policies, and with internal and external environments?
- What is the human relations climate at the work place as indicated by turnover, strikes, grievances, quality of work life, etc?
- Is the performance of individuals and units of the organisation being evaluated in terms of agreed upon objectives?
- To what extent is the reward structure linked to actual strategic performance? What further can be done to improve the reward structure?
- Is there any resistance in any part of the organisation to the chosen strategy? If yes, why? What efforts are being made to overcome the resistance?
- What is the role of HRM manager in the strategy formulation and implementation?
- Are HRM managers using appropriate concepts and techniques in different facets of human resource management and development?

D Finance

- What are the company's current financial objectives, strategies, and policies? Are they consistent with the company's mission, objectives, strategies, policies, and with internal and external environments?
- How well is the company performing in terms of financial analysis, e.g., liquidity ratios, profitability ratios, activity ratios, leverage ratios etc.
- Are financial managers using modern accepted concepts and techniques of financial management?
- What is the role of financial manager in the strategic formulation and implementation process?

E Marketing

- Are the current marketing objectives, strategies, policies, and programmes consistent with the company's objectives, strategies and policies and with internal and external environments?
- What is the market position, marketing mix, and marketing performance?
- What is the role of marketing manager in the strategic formulation and implementation process?

- To what extent are the modern accepted concepts and techniques are being used to evaluate and improve product performance?

F Manufacturing

- What are the company's current manufacturing objectives, strategies, and policies? Are they clearly stated? Are they consistent with the company's mission, objectives, strategies, policies, and with internal and external environments?
- What are the manufacturing capabilities of the company in terms of plant facilities, type of production system, extent of mechanisation and automation, utilisation of capacity, etc.?
- What is the relationship between fixed and variable costs? How well are the operational activities being performed in the sphere of inventory control, material handling, etc.?
- What is the role of manufacturing/production manager in the process of strategy formulation and implementation?
- Are manufacturing managers and supervisors using the right concepts and techniques in terms of cost systems, quality control, inventory control, learning curves, safety programmes, value engineering, etc.?

G Research and Development (R&D)

- What are the company's current R&D objectives, strategies, and policies? Are they clearly stated? Are they consistent with company's mission, objectives, strategies and policies, and with internal and external environments?
- Is the company in high-tech, low-tech or medium-tech area?
- Is the company working in a relatively stable or fastly changing technological environment? If the latter case is true, how is the company equipped to face the situation? Is the company technologically competent?
- What facilities have been created or exist for basic and applied research?
- How well does the company's investment in R&D compare with the investment of similar companies?
- What is the role of R&D manager in strategy formulation and implementation?

VII Strategic Implementation and Control

- Is the organisation structure (including decentralisation and delegation) compatible with the strategy?
- Does each organisation unit know what it must do to implement and accomplish its part of the strategic plan?
- Are the activities of the functional resource segments coordinated into a cohesive whole and whether they are contributing in accomplishing corporate strategy?
- Does the organisation have the managerial skills and specialised expertise for carrying out its strategy?
- Have efforts been made to motivate managers and rank and file employees to accomplish strategy?
- Is the information on critical points regarding strategy available to top management on time?
- Are the policies and procedures supportive of strategy execution?
- Does the current information system provide sufficient feedback on implementation of strategies? Is the information provided timely?

- Is the top management well informed about the progress regarding strategy implementation? Are communication channels working well, up and down? Are controls and reporting systems adequate?
- Have the necessary support systems been established for successful implementation of strategy?
- Is the organisation responsive to changing condition? Is it supportive of innovation?
- Are top management's leadership style and skills adequate for the situation? Do key managers have right personalities to implement strategy successfully?
- Does the strategy have any "unique" requirement that must be given special attention in implementation?
- Will the change in strategy require major overhaul of the implementation machinery or just fine-tuning of the existing systems, practices and norms?
- How hard and how fast implementation should be pushed?
- Have adequate control measures, including standards, been developed and communicated to all concerned?
- What policies should be developed to guide effective implementation?

Appendix III

SOURCES OF INFORMATION (only illustrative list)

Directories/Data Books

Bombay Stock Exchange Directory
 CIER's Industrial Data Book
 Kothari's Encyclopaedia
 Survey of Indian Industry (Hindu)
 Times of India Directory

Business Magazines/Journals (including Annual numbers)

Business World
 Business India
 Fortune India
 Commerce
 Journal of Industry and Trade (GOI Publication)
 Reserve Bank of India (RBI) Annual Reports
 RBI Bulletin
 Business Update
 India — A Reference Manual (GOI Publication)
 Publications of Industry and Trade Associations (FICCI, ASSOCHAM, ATIRA, CEI, etc.)

Economic and Financial Dailies

Economic Times
 Financial Express
 Business Standard

Others

Company Annual Reports
 Chairmen's Speeches,
 Economic Surveys (presented in Parliament every year)

NALANDA STATE SMALL INDUSTRIES CORPN. LTD.

The Nalanda State Small Industries Corporation Limited (NSSIC) was incorporated in 1960 with a subscribed capital of Rs. 3 million. The State Government of Nalanda contributed 40 per cent of this equity (Rs. 1.2 million) and the remaining 60 per cent (Rs. 1.8 million) was contributed by over 1100 small scale industrialists in the State.

The NSSIC was one among a series of SICs set up by several state governments as a sequel to the recommendations of a Committee appointed by the Government of India to suggest ways and means of improving the prospects of small scale industries in India. One of the recommendations was that each state should have a Small Industries Corporation which should pay special attention to the problems of small industries. The more important objects as enumerated in the Memorandum of Association of NSSIC were as follows:

- (i) "To aid, counsel, assist, project and promote the interests of small industries in the state and to provide technical and managerial assistance;
- (ii) "To provide such industries with means and assistance in the procurement of raw materials, machinery, equipment, tools and appliances, etc;
- (iii) "To arrange for the purchase and sale of raw materials, finished goods, tools, appliances etc., on cash or on credit, or on hire or hire purchase system, or on commission basis, as agents or otherwise of small industries;
- (iv) "To procure coke and coal and arrange for their distribution among small industries".

The objects also included opening of sales depots for marketing of products of small scale industries, guiding them in product development, research, coordination with large and medium scale industries and so on. As business progressed, NSSIC altered its memorandum to include manufacturing also as an object, in furtherance of the basic object of promoting the interests of small scale industries in the state of Nalanda.

BUSINESS OPERATIONS

(i) Procurement of Iron and Steel

Iron and Steel was in short supply throughout the sixties and early seventies. Distribution and prices of all forms of finished and semifinished iron and steel products were controlled by the Central Government. As is usual in times of acute scarcity, a flourishing black market had come to exist in such products outside the system of control and regulation.

From the very beginning of its business operations, NSSIC established contacts with the Joint Plant Committee, which was entrusted by Government with the task of making allocations of steel produced by all public and private sector steel plants in the country, to those who were found to satisfy the eligibility criteria laid down by Government. NSSIC secured recognition for itself as an agency for procurement of steel on behalf of a distribution among those SSI's considered eligible to receive the same from the JPC, in the state of Nalanda. Initially, procurement and distribution were limited to SSI's in Nalanda; but in course of time NSSIC began to distribute this raw material among SSI's as well as non-SSI's since Government had not specifically directed that the distribution was to be limited only to SSI's. The Corporation management claimed that its primary objective was to be a viable and profitable enterprise over and above everything else. Thus the Corporation's trading activity in Iron & Steel grew from Rs. 3.6 million in the first year of operation to Rs. 139.7 million in 1974. The three broad categories of trading under this head were (i) Pig iron (ii) Sheets and (iii) Structurals. Exhibit I gives details of the trading activity under these heads during 1972, 1973 and 1974.

(ii) Other trading activities

The Corporation also took up procurement and distribution, among small industries, of coal and coke, cotton yarn, ball bearings, and other miscellaneous raw materials and parts, some of which were imported. During 1974 the Corporation's turnover in each of these items was as follows:

Coal and coke	Rs. 18.0 million
Cotton yarn	Rs. 0.1 million
Bearings	Rs. 2.2 million
Other items	Rs. 27.3 million
	<u>Rs. 47.6 million</u>

Case (1977, revised 1982), prepared by Prof. G.R. Kulkarni, Indian Institute of Management, Ahmedabad.

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(III) Non-trading Activities

- (a) The Corporation had decided that it would operate a hire purchase scheme for supply of machinery to small industries. This activity did not make much progress because the Corporation failed to make arrangements with the state government or some other suitable agency for an organised supply of softloans to finance their activity. As a result, the total value of machinery supplied on hire purchase in 1974 was only Rs. 0.45 million. It is worth mentioning that commercial banks in the country were nationalised in 1969. They were directed by Government to set apart a specified part of their credit authorisations for lending to weaker sections of the economy, including particularly small scale industry. Since banks had no experience of such lending they were on the look out for assistance from academicians and practitioners in formulating viable strategies for such business diversification.
- (b) The Corporation had evolved a scheme for important assistance to SSIs under which SSIs holding valid import licenses were allowed to channel their imports through the NSSIC, thereby saving them procedural and other time consuming formalities. This scheme could not take off because imports as such dwindled over the years and the availability of softloans to finance this activity also did not improve.
- (c) The third scheme of the Corporation to provide SSIs with assistance in marketing their products to Government departments, for tendering in response to DGS & D* notices was a failure from the beginning itself, because of so called "poor response from SSIs".

FINANCIAL POSITION

In 1974, over 95 per cent of the Corporation's gross revenue came from the trading activities described in (i) & (ii) above. Total trading sales were Rs. 187.7 million and the gross profit on trading activities was Rs. 12.1 million. Interest amounted to Rs. 2.7 million, depreciation and development rebate came to Rs. 0.9 million. The net profit before taxes, but after interest and depreciation was Rs. 2.89 million.

The subscribed capital was raised in 1973 from Rs. 3 million to Rs. 5.3 million and, in the process, Government came to acquire more than 51 per cent of the total equity of the Corporation. Under the Companies Act, the existing shareholders have a right to participate in new capital issues on a pro rata basis. However, private shareholders in NSSIC were on the whole, disinclined to contribute to the new issue of Rs. 2.3 million. Since it was felt that additional capital was needed for the growing requirements of the Company's business, Government was sounded as to whether it would like to contribute an amount, over and above its right to 40 per cent, which may represent the amount not picked up by the SSI shareholders. Government felt that having regard to the importance of the Corporation's objectives and the full control it would get over its management, if its share in equity were to exceed 51 per cent, it could agree to such a proposal. One of the unintended effects of this move was that the Corporation employees asked for and obtained Government scales of pay and allowances which were higher than those offered by the Corporation earlier. As a result of the combined effect of substantial recruitment in 1973 and 1974 to carry out the growing trading activity and increase in pay scales and allowances due to revision, the salary, wage and establishment bill went up from Rs. 2.3 million in 1972 to Rs. 5.1 million in 1974. The staff strength itself went up from 310 to 500 during this period. Exhibit II gives the Income statement and Balance Sheet as at the end of 1972, 1973 and 1974.

THE CRISIS OF 1975

From December 1974, a situation of glut started emerging in the iron and steel market. In May of 1975 the Joint Plant Committee of steel mills declared that all types of steel except forging quality steel and plates would be freely available. Even the latter were freed in November of 1975. Steel companies started door to door selling and no order was considered small for being directly met by the steel companies' own distribution system. Sales depots were opened at different centres in Nalanda by steel mills and even retail distribution responsibility was assumed by the steel companies themselves.

In 1975, NSSIC's iron and steel trading turnover plummeted to Rs. 130 million and in 1976 it was not expected to reach even Rs. 50 million. Margins, which were of the order of 7 per cent to 10 per cent in 1974 and earlier years came down to around 5 per cent in 1975 and around 2 per cent in early part of 1976.

A similar situation had arisen in coal and coke, yarn and other trading activities of the Corporation. The Corporation suddenly found itself in a terrible predicament. Immediate strains were evident in its financial position.

* DGS & D : Director General of Supplies and Disposals, a central procurement and disposal agency of the Central Government, which arranges, inter alia, for purchase of most of the stores and materials needed by Government departments.

First, cash in-flow dwindled. Second, HSL and TISCO, the two major steel companies reduced credit from 21 days to 7 days. Third, steel was now in the buyers market. And fourth, the Corporation had to resort to heavy borrowings to finance its mounting working capital requirements.

FUTURE PLANS

The Corporation was worried as to what it should do to find work for its staff. Should it take up procurement and distribution work for other raw materials such as industrial alcohol, a controlled item, which would involve allotment of quotas, record keeping etc. ? Should it take up other distribution work not requiring more allotments of quotas but involving active marketing? Could it do so?

Around 1970 the then Finance Minister of the Central Government had publicly announced that if any state level small scale oriented industrial undertaking were to consider taking up scooter manufacture, so as to give a stimulus to the ancillary industry in the small scale sector, Government would consider such a request favourably. The Corporation had therefore applied for and obtained a license for manufacturing 3600 scooters per year and accordingly had already set up a manufacturing facility in a nearby suburb. The Corporation had hopes of developing its own model, without collaboration or technical assistance, depending entirely on small industries in Nalanda, which it was hoping to develop as ancillaries.

The scooter manufacturing facility was set up in 1972. Little progress had been made until 1975. In spite of increasing attention to this activity since 1974, when further investment in plant and machinery were made, the losses from this activity alone were approximately Rs. 200,000 per month in 1976. Some other state small industries corporations had also set up scooter manufacturing divisions and not much progress had been made by many of these until 1976. Meanwhile Scooters (India) Ltd., a public sector company with a licensed capacity of 100,000 scooters per annum had already started production in Lucknow and two other State Corporations had entered into collaboration agreements with Scooters (India) Ltd., for scooter manufacture within their respective states. There were well established scooter manufacturers in the private sector also, one of whom claimed to be the World's number one in the not too distant future.

The Managing Director wondered whether it would not be appropriate to hasten scooter manufacturing in Nalanda and thereby enable the Corporation to come out of the difficulties. He was aware of the need for substantial additional resources.

Questions: -

- 1 Discuss the problems being faced by the Corporation.
- 2 What are the causes of these problems?
- 3 Discuss deficiencies, if any, in the corporate strategy of the corporation responsible for its present state.

Nalanda State Small Industries Corporation
Exhibit 1
Details of Trading Activity Iron & Steel-1972 to 1974

	1972		1973		1974	
	Rs. Mil.	'000Mt	Rs. Mil.	'000Mt	Rs. Mil.	'000Mt
Pig Iron Sales	32.2	66.0	41.3	76.4	76.0	89.2
Add: Closing stock	2.0	4.2	1.1	1.7	2.4	3.1
Less: Purchases	29.8	64.9	37.5	74.1	69.7	90.8
Less: Op. stock	2.3	5.4	2.0	4.2	1.1	1.7
Gross Profit	2.1	-	2.9	-	7.6	-
Sheets Sales	24.4	9.4	21.9	7.0	26.8	7.2
Add: Closing stock	3.0	1.5	4.9	1.6	5.3	1.4
Less: Purchases	20.5	7.8	20.9	7.2	23.3	7.0
Less: Opening stock	5.4	3.0	3.0	1.5	4.9	1.6
Gross Profit	1.5	-	2.9	-	3.9	-
Structurals Sales	14.1	11.2	28.7	20.4	36.9	21.5
Add: Closing stock	2.0	1.6	8.2	5.7	4.8	3.0
Less: Purchases	11.6	12.1	31.6	24.5	29.8	18.8
Loss: Opening stock	1.0	0.7	2.0	1.6	8.2	5.7
Gross Profit	3.5	-	3.3	-	3.7	-

Nalanda State Small Industries Corporation Ltd.
Exhibit II
Income Statement and Balance Sheet as at end of 1972, 73 & 74

(Rs. Million)

	1972	1973	1974
Sales of Trading Goods	80.3	132.6	187.7
Sales of Hire Purchase Goods	0.2	0.3	0.5
Sales of Scooters	0.1	0.2	0.0
Total sales	80.6	133.1	188.2
Income under Hire Purch			
Service charges & Interest	0.1	0.1	0.1
Income under Import			
Aastor Scheme	0.2	0.2	0.3
Closing Stock	9.1	16.3	15.7
Miscellaneous Receipts	0.2	0.1	0.2
Total	90.2	149.8	204.5
Opening Stock	10.0	9.1	16.3
Purchases of Trading Goods	73.1	131.8	175.0
Purchases of H.P. Goods	0.3	0.3	0.5
Raw mat. & components	0.6	0.3	0.1
Consumed			
Store and spares	0.3	0.3	0.2
Total	74.3	132.7	175.8
Salaries, Wages, Estab. Exp.	2.3	3.5	5.1
Rent, Rates & Taxes	0.3	0.5	0.8
Interest	1.0	1.5	2.7
Appreciation & Dev. Rebate	0.7	0.8	0.9
Provision for Tax	1.0	1.1	1.8
NET profit for year	0.6	0.6	1.1
Total	90.2	149.8	204.5

Nalanda State Small Industries Corpn. (R)
Exhibit II (contd.)

(Rs. Million)

Particulars	1971	1972	1973	1974
Paid up Capital	2.8	2.9	4.7	5.2
Reserves	2.1	2.5	2.8	5.6
Secured Loans	4.6	7.7	13.3	16.9
Unsecured Loans	1.2	1.5	1.4	3.0
Current Liabilities & Provisions	10.7	18.1	27.9	25.0
Total	21.4	32.7	50.1	55.7
Fixed Assets	1.5	1.9	2.4	6.5
Inventories (Raw Materials and finished products)	10.6	12.7	18.0	20.1
Debtors	2.9	7.9	6.6	9.6
Advances	4.2	6.4	15.2	17.0
Cash	2.2	3.8	7.0	2.5

HINDUSTAN TRACTORS LTD. (AR)

Pashabhai Patel, Chairman of Hindustan Tractors Ltd., Baroda, was wondering what options he had as he reviewed the performance of the company during the year ended March 31, 1972. The production (375 tractors) amounted to less than 20 per cent of the peak achieved in 1968, and formed only 13 per cent of the installed capacity. Operations in 1971-72 had resulted in a loss of Rs. 81 lakh and a turnover of Rs. 1.88 crore. It was the fourth consecutive year of deficit. Cumulative losses at the end of March 1972, at Rs. 1.18 crore, exceeded paid-up capital of Rs. 1.00 crore. No preference or equity dividends had been paid for three years, secured and unsecured loans, at Rs. 4.52 crore, were fully stretched, and the company had defaulted on payments to fixed depositors (Exhibit 1).

It would be quite sometime before the upward revision in statutory price fixed by the Government of India in February 1972 helped the company financially. While the picture was gloomy, closing down the plant was not an easy option; Pashabhai was aware of the importance the government gave to increasing the production of tractors, an essential commodity, and of the continued demand for tractors in the country. The government had, in fact, appointed a committee under section 15¹ of the Industries (Development and Regulation) Act, 1951, to investigate into the fall in production of Hindustan Tractors.

Ownership and Background of the Company

Pashabhai Patel & Co. Private Ltd. (a predecessor of Hindustan Tractors Ltd.) was formed in September 1946 for the import, sale, and service of tractors, ploughs, bulldozers, and other farming and earth-moving equipment. As plans for entry into manufacture took shape a new company, Tractors and bulldozers Private Ltd., was formed in 1959 and became the successor company to Pashabhai Patel & Co. Private Ltd. It was in turn converted into a public limited company in 1964 with Pashabhai & Co. as the managing agents.² In February 1965, equity shares of Rs. 50 lakh were issued to the public. Pashabhai Patel, his relatives and friends held about 50 per cent of the equity in 1972. The Life Insurance Corporation of India, the Unit Trust of India, nationalised banks and insurance companies held 35 per cent of the equity. The Life Insurance Corporation held almost 100 per cent of the preference shares issued in 1968.

The company changed its name to Hindustan Tractors & Bulldozers Ltd., in 1965 and to Hindustan Tractors Ltd., in 1967. When the managing agency system was abolished in 1970, brothers Chandrakant and Indrakant, who were members of the Board of Directors earlier, became its Managing Directors.

Pashabhai Patel

The company was founded by Pashabhai Patel, businessman-cum-politician, a relative of Sardar Vallabhai

¹ The Central government could have an investigation made of any scheduled industry or undertaking under Section 15 if it was of the opinion that (a) production had unjustifiably fallen or was likely to fall, or (b) there was or likely to be an avoidable deterioration in quality, or (c) there was or likely to be an unjustifiable rise in price, or (d) an undertaking was being managed in a manner detrimental to public or industry interests. Based on, or even during such an investigation, the government could issue under Section 16, directives on production, price, distribution, or on any other relevant aspect.

² Pashabhai Patel and Co., were associated with other companies making earthmoving and construction equipment and tractor parts. One such company, the Hindustan Earth Movers Private Ltd., was located on adjacent land leased from Hindustan Tractors Ltd., at Viswamitri in Baroda, and supplied several components.

Hindustan Tractors had financed construction Equipment Co. Pvt. Ltd., with Rs. 12.4 lakh. It became an associate of the managing agents in May 1965. Although the money was repaid by March 1966, the company directors had contravened Sections 295, 369, and 370 of the Companies Act, 1956.

Case (1976) prepared by Prof. K.R. Srinivas, Indian Institute of Management, Ahmedabad.

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Case material has prepared to serve as a basis for class discussion. Cases are not designed to present illustrations of either correct or incorrect handling of administrative problems.

Patel and a close associate of Mahatma Gandhi. Pashabhai left Baroda college in 1921 in response to Gandhi's call for non-cooperation. He was intrigued by an imported tractor he saw at the Baroda model farm of Maharaja Sayajirao. He started repair of tractors and later their import, sales, and service. A forceful person, and considered an outstanding salesman, Pashabhai pioneered the use of tractors in remote villages

Pashabhai believed in direct action whether in politics or business. He was arrested and put to jail for two years when he withheld the payment of tax of Rs. 1.9 lakh in protest against the imprisonment in 1943 of Mahatma Gandhi, Nehru, and Sardar Patel. The government sealed the premises and the business was halted. Pashabhai paid up the amount after the release of the leaders and on the advice of Mahatma Gandhi. In 1963, he was involved in another tax inquiry and admitted tax evasion. A Parsi lady, relieved from the Company's service because of some quarrel with him, had complained about this tax evasion to Feroze Gandhi, a member of Parliament. An enquiry was made when Feroze Gandhi sent the complaint to Morarji Desai, the then Finance Minister.³ The inquiry ended with a compromise between Pashabhai and the Income Tax Department.

In 1967 Pashabhai was elected to the Lok Sabha from Baroda on a Swatantra Party ticket. He continued as chairman of the company.

Organisation

The company was run by Pashabhai Patel and his relatives (Exhibit 2). There were very few non-family members in executive positions.

Nagindas, a brother, was the first to join Pashabhai. Chandrakant and Indrakant joined in 1940 after a spell of training in USA, in the manufacture, sale, and service of tractors. Rameshchandra Patel, sales manager, and Niranjani Patel, foundry manager, both nephews of Pashabhai, joined the company in 1954. They had earlier undergone training with Vickers-Armstrong in UK, and Allis-Chalmers in USA. Rashmikant Patel, the joint works manager, another nephew joined the business after obtaining a B.Sc. (Tech.) degree.

Family relationships were more important in practice than formal titles or organizational boundaries. The position of Pashabhai in both the Patel family and in the business was a dominant one. Sales, Purchase, finance, government relations, and production were handled by family members. S. T. Suji, works manager, was one of the few non-family executives. Pashabhai, a shrewd judge of opportunities and people, had contacted Suji in 1967 within three days of his leaving Premier Automobiles Ltd., Bombay, where he had worked for 22 years.

Pashabhai was farsighted in his understanding of the role of tractors. His early attempts to make a plough failed but he had a keen business sense and was ahead of many in starting its manufactures in India. He travelled many countries, saw many tractors, met with many farmers around the world before picking on the Zetor 50 h.p. tractor for manufacture.

Entry into Manufacture

In 1960, the Tractors and Bulldozers Private Ltd., entered into a technical collaboration with Motokov, a Czechoslovakian state-owned foreign trading corporation, and with Zavody Jana Svermy, a Czechoslovakian state enterprise. The agreement provided the company exclusive rights to manufacture and assemble 50 h.p. Zetor super tractors, a model that had proved popular with Indian farmers when imported in 1961. The Czech company was to provide technical know-how, drawings of tools and fixtures, and necessary components on nine months credit, and to train personnel sent to Czechoslovakia at the Indian company's expense. In return the Indian company was to pay the Czech party a royalty of five per cent, subject to Indian taxes, of the net ex-works (as of Brno, Czech.) selling price of components manufactured in India. The price of a Zetor Super 50 was fixed at £ 700 in 1964. The Indian company had rights to export to Nepal, Burma,⁴ Singapore, Thailand, and other South East Asian countries.

The agreement required Hindustan to buy at least 50 per cent of the value of 1000 tractors in the first year, 30 per cent in the second year, and 20 per cent for the next eight years.*

³ Morarji Desai, *The Story of My Life*, Vol. 2 (Delhi: Macmillan Company of India Ltd., 1974), pp. 205-206.

⁴ Burma had a manufacturing unit for Zetor 50 h.p.

Production of 50 h.p. tractors started in February 1963. Manufacturing facilities had been established for 50 h.p. while the company was mainly an assembler of 35 h.p. tractors. The collaborators helped in the assembly operations also. Both the licensed and installed capacities had been increased over the years. At the peak production of 1967-68—1,194 50 h.p. tractors and 838 35 h.p. tractors—the utilization of installed capacity was over 70 per cent (Exhibit 3).

In 1968, Hindustan Earth Mover Pvt. Ltd., a sister concern obtained an import licence for 100 crawler tractors of 100 h.p. and 50 of 50 h.p. They were imported at a cost of Rs. 1.27 crore from 14 October Rudnan, a Yugoslavian firm with whose collaboration Hindustan Earth Movers had plans to manufacture track type crawler tractors.

Production

The Hindustan tractors had over 1,200 parts, some highly specialized. The 50 h.p. tractor weighed nearly 2.7 tons. The majority of the components were brought from ancillary units. Hindustan made a larger proportion of components than other tractor manufactures. It was the only unit to make its own engines and several castings. The final operation was an assembly of different types of items—ferrous and non-ferrous machine castings, carbon and alloy-steel machine forgings, sheet metal fabricated parts, and rubber, instrumentation, and electrical items. Direct materials cost ranged between 80 and 90 per cent of the total ex-works cost depending on volume and make. Hindustan was the smallest of the five producers in 1972.

Mr. Suji, works manager, a soft-spoken production engineer, thought highly of Hindustan Tractors:

Our 50 h.p. tractor is sturdy and a little overweight. The modern tendency is to cut weight and direct material costs. But our tractors have a 50 per cent longer life. I have seen 12-year old tractors in use and have tasted our 50 h.p. engines up to 60 h.p. without any difficulty. In this business, procurement of raw materials and imported and local components and their availability on time are critical.

After I joined Hindustan in 1967, I introduced a work order system, worker efficiency cards, and an industrial engineering department. Data on materials consumed and labour time used were supplied to the Planning Section. Systematic costing and planning have, however, lagged partly due to high turnover and frequent changes in planning engineers.

In 1962, the company set up a captive foundry. We have a modern machine shop with a capacity for sophisticated operations. We subcontract to units in Bombay, Calcutta, and Madras. We are the only automobile unit in the state, and there are no ancillary units in Gujarat.

Plant and machinery were good but poorly maintained. In 1971-72 only Rs. 19,000 had been spent on machinery repairs as against Rs. 2.4 lakh in 1967-68.

Purchase Policies

Nearly 300 of the 1,200 parts and components of Hindustan tractors were made at Hindustan, a proportion somewhat higher than that of competitors. Hindustan Earth Movers Private Ltd., a sister concern, supplied nearly 140 items. For the other parts, Hindustan had about 150 suppliers located at Bombay, Madras, and Calcutta. For some items there was only one supplier. For many others, splitting the small-volume specialized orders among suppliers was expensive. The tools for making the parts customarily belonged to the suppliers although they were paid for by Hindustan. The company had developed and encouraged several ancillary units.

The geographical distance between the factory and the suppliers posed several problems of cost, delivery, and quality co-ordinations. The company maintained high inventories of raw materials, components, and work-in-process whose value was in excess of sales since 1969-70. Strikes and power cuts at supplier factories, marked conditions and availability of items, such as tyres and batteries, affected Hindustan's operations. Quality problems on forgings were severe. In spite of high inventories, completion of tractors was often delayed for want of critical items, and this resulted in high in-process inventory.

Hindustan was dependent on the Czechoslovakian collaborators for the supply of some 12 critical items such as the crank and cam shaft, connecting rod, crown wheel, and pinion. There were no Indian suppliers for these items.

Indigenization

Although the pace of indigenization had been slow in the industry, Hindustan had kept in line with other

manufacturers in import substitution. For the 50 h.p. tractors, Hindustan manufactured or had local suppliers in 1970-71 for items equivalent to 85 per cent of the c.i.f. value of a completely imported tractor against the target of over 90 per cent set by the Government of India (Exhibit 4). The Tariff Commission had noted that Hindustan had resorted to the import of components outside the CKD packs so that the actual number of components deleted was less than the apparent number in CKD packs. In 1966-67, Hindustan had imported components worth Rs. 633 outside the CKD packs for 50 h.p. tractors on a c.i.f. value of Rs. 7,323 for each pack.

The managing director, Chandrakant Patel, commented on the import of components outside the CKD packs as follows:

It was done only once and represented only a small percentage of the pack value. Components had to be imported as an indigenous supplier had failed to deliver the goods at the last minute.

Personnel and Industrial Relations

The company employed 1845 workers when in peak production in 1968. Pashabhai handled most of the personnel matters. He was a hard driving man and had not recognized any union. Wage rates at Hindustan were lower than those of other companies in the area. Most of the workers were temporary and their turnover was high. Unskilled workers from neighbouring villages would gain experience and quit without notice when they got better jobs.

Supervisory turnover was also high although the wage disparity in their case was not as large. Supervisor left if they could not get along with the family member particularly Pashabhai or meet their expectations. Pashabhai rewarded those he liked and those who put up with his ways.

The unrecognized union was led by Sanat Mehta, member of the Praja Socialist party, the Gujarat State Legislative Assembly and a prominent politician. The Engineering Wage Board recommendation, which would have increased wage scales by nearly 50 per cent for the workers, had not been implemented by the company.

An illegal one-day strike in October 1970 on a dispute regarding payment of bonus was followed by a lock-out that lasted 35 days. Chandrakant Patel described the strike as follows:

The strike was politically provoked by Sanat Mehta's union for reasons best known to them. The management was very firm and when the workers realised their mistake, they quickly approached Pashabhai and requested him to allow them to work. They signed an agreement with the company not only apologizing for the strike, but accepting all the conditions including no salary for the lock-out period and unconditional resignations of their ringleaders.

The company retrenched 560 workers in May 1971, mostly unskilled workers in the foundry and machine shop. They were paid 15 days retrenchment compensation, one month's salary for every year of service, and privilege leave salary.

In 1972 morale was low and there was no work for many as quite a few production departments had been partially or wholly closed down.

Financial Policies

Pashabhai was worried about the serious financial stringency of the company. Pashabhai considered the government's price control to have crippled the company. Several of the risks he had taken with the expectation of an early increase in tractor prices had proved very costly. Even maintaining the already low production volume had become difficult. Work in several production departments had been stopped.

The company had a hypothecation limit from the State Bank of India of Rs. 95 lakh against the security of raw materials, components, finished goods, and other inventory. The bank had also sanctioned a limit of Rs. 225 lakh for opening letters of credit to foreign countries. The bankers had taken personal guarantees from Pashabhai and his brothers in addition to the hypothecation of all moveable assets before granting these limits.

Secured loans were more than three times the equity and the interest burden had nearly tripled from Rs. 18 lakh in 1969-70 to Rs. 53 lakh in 1971-72. The directors had foregone their salaries and the board members their sitting fees in view of the continuing losses of the company. Labor was paid on time though the increase recommended by the Engineering Wage Board had not been implemented, and bonus payments had been delayed.

Supplier credit had been stretched to the limit domestically, and there were occasional defaults on letters of credit opened by the bankers and in payment of royalties to collaborators. The company's accounts with the bankers had become irregular. Some of the fixed depositors were threatening to file suits for liquidation proceedings.

Most normal financial sources, including the director's own, were exhausted. Pashabhai was seeking cash credits from the State Bank of India, the company's bankers, who were now insisting on guarantees from the state government or financial institutions.

Industry Profitability

The Industry profitability was generally lower than the average for all industries. Gross profits as a percentage of capital employed was 5 per cent for the tractor industry in 1969-70 as against an average of 9.9 per cent for all industries (Exhibit 9). The industry's performance was affected severely in 1970-71 because of a sharp rise in the cost of raw materials and components while tractor prices remained fixed at an earlier level. Several units went into the red. The industry's reliance on external sources of finance was high-owned funds formed only about a third of the total capital employed.

Tractor and Farm Equipment Ltd., in spite of its larger volume, had suffered losses (Rs. 35 lakh on a turnover of Rs. 5.4 crore) in 1970-71. International had not slipped into the red yet but its gross profits had declined from 10 per cent of capital employed to 6.7 per cent in 1970-71, and profits after tax had dropped from Rs. 63 lakh in 1969-70 (sales Rs. 9.7 crore) to Rs. 4.2 lakh in 1970-71 (sales Rs. 11.4 crore).

Hindustan's profitability was the poorest but Pashabhai was hopeful that Hindustan would turn the corner in view of the substantial price increase of February 1972. But the immediate problems of turning the company around were overwhelming.

Questions

- 1 What internal and external factors have been responsible for the deterioration in performance of the firm?
- 2 Do you think as a CEO Pashabhai has failed in proper discharge of his duties?

EXHIBIT 1 HINDUSTAN TRACTORS LIMITED

Balance Sheet

(Amount in Rs. Lakhs)

		As on March 31							
		1965	1966	1967	1968	1969	1970	1971	1972
ASSETS									
Fixed Assets									
Land & Buildings		29.6	35.7	39.3	42.1	43.5	44.0	44.1	44.1
Plant & Machinery		45.7	78.1	95.1	149.9	170.3	170.4	170.4	170.1
Others		5.1	6.4	6.6	8.8	12.4	13.2	13.5	12.1
Acc. Depreciation		23.1	32.6	42.6	54.4	37.1	47.3	57.0	66.9
Net Fixed Assets		57.3	87.6	98.4	146.4	189.1	180.3	171.0	160.4
Machinery to be installed		25.0	16.3	22.3	22.1		37.1	41.0	41.0

Current Assets

Raw Materials & Comp.	56.8	107.1	191.7	223.2	234.0	254.1	223.4	190.3
Work-in-progress	37.7	7.7	14.2	30.9	28.7	39.8	57.2	50.1
Stock in transit	18.4	30.7	1.2	28.0	39.0	110.4	6.0	6.1
Trading & Fin. Goods	5.2	10.1	14.6	9.2	7.0	43.4	90.4	51.7
Tools, Jigs & Stores	11.8	14.3	22.8	27.6	30.8	38.3	34.8	28.4
Inventories	129.9	169.9	244.5	318.9	339.5	486.0	412.8	325.6
Accounts	35.0	42.7	41.5	38.0	42.7	49.1	31.8	44.9
Cash & Bank Balance	34.6	3.7	52.7	3.2	5.4	9.0	5.6	4.6
Earnest deposits and others	3.2	17.3	18.6	10.1	15.2	17.2	22.7	16.5
Advance tax payments	17.5	25.1	54.7	62.5	66.8	66.8	69.5	73.3
Current Assets	220.2	258.7	412.0	432.7	469.6	628.1	542.3	465.9
Other Assets	2.1	2.1	0.2	1.0	0.9	0.9	1.1	0.9
TOTAL ASSETS	304.6	364.7	532.9	582.2	659.6	846.4	755.4	668.2

LIABILITIES

Share Capital: Equity	36.7	69.8	70.0	70.0	70.0	70.0	70.0	70.0
09.5%-cum. Preference Reserves	25.5	38.5	38.5	53.1	60.0	27.8	(38.0)	(17.6)
Short-term Loans								
From Banks	17.1	54.4	29.1	75.4	90.7	104.4	343.4	310.0
From Directors & others	2.7	0.3	0.7	0.5				
From Public (Fixed deposits)	-	-	-	19.3	43.6	61.9	60.3	49.1
From Dealers	6.5	6.7	5.2	5.0	15.8	-	-	92.5
From Others	18.2	2.6	13.6	5.8	20.4	84.7	75.1	
Current Liabilities								
Acceptances	128.8	101.2	270.7	187.6	164.9	276.7	7.9	5.0
Sundry creditors	28.2	25.5	30.8	54.4	70.9	90.4	103.9	107.1
Customer balance	7.4	6.9	3.9	3.7	9.3	25.5	27.8	41.1
Tax provisions	24.1	39.7	47.7	52.7	55.5	55.5	55.5	55.5
Unpaid dividend	6.0	11.2	8.8	10.2	11.3			
Employees' Bonus	3.2	4.2	5.9	4.5	4.2	3.0	2.8	2.8
Others	0.2	3.7	8.0	10.0	13.0	16.5	16.7	22.4
TOTAL LIABILITIES	304.6	364.7	532.9	582.2	559.6	846.4	755.4	668.2

HINDUSTAN TRACTOR LIMITED

Profit & Loss Account

(Account in Rs. Lakhs)

	Year ended March 31							
	1965	1966	1967	1968	1969	1970	1971	1972
Sales (including spare parts), net of excise	204.0	321.5	405.7	387.5	442.4	431.9	290.5	188.3
Consultation and service	5.0	4.6	4.6	5.1	2.0	2.0	20	2.0
Materials consumed	137.2	227.8	318.5	267.5	349.2	361.1	246.7	155.6
Wages and Salaries	21.5	24.1	28.6	33.8	36.9	37.2	34.2	29.0
Manufacturing Expenses	6.7	5.9	9.3	13.3	18.2	20.1	20.1	12.5
Gross Profit (Loss)	43.6	68.3	53.9	79.0	40.1	15.5	(3.1)	(6.8)
Admin. & Gen. Exp ^s .	12.1	15.0	17.5	24.6	24.7	21.5	17.6	11.2
Mg. Agents' remuneration		3.0	1.9	3.0	0.5	0.5		
Interest	4.8	2.5	6.1	6.8	13.0	18.2	37.2	52.8
Depreciation	4.7	9.7	10.4	16.2	8.1*	10.1	10.1	10.1
Operating Profit (Loss)	22.0	38.1	18.0	27.4	(6.2)	(35.0)	(68.0)	(80.9)
Donations		0.3	0.2	0.2	0.6	0.1	neg.	neg.
Other Income (Expense)	4.8	1.9	(1.4)	2.9	24.9*	2.9	2.2	1.3
Pretax Profit (Loss)	26.8	39.7	16.4	30.1	18.1	(32.2)	(65.8)	(79.6)
Tax Provision	13.7	15.5	8.0	4.5				
After-tax Profit (Loss)	13.1	24.2	8.4	25.6	18.1	(32.2)	(65.8)	(79.6)
Prof. Dividend				2.6	2.8			
Equity Dividend	6.0	11.2	8.4	8.4	8.4			
Retained Earnings	7.1	13.0		14.6	6.9	(32.2)	(65.8)	(79.6)

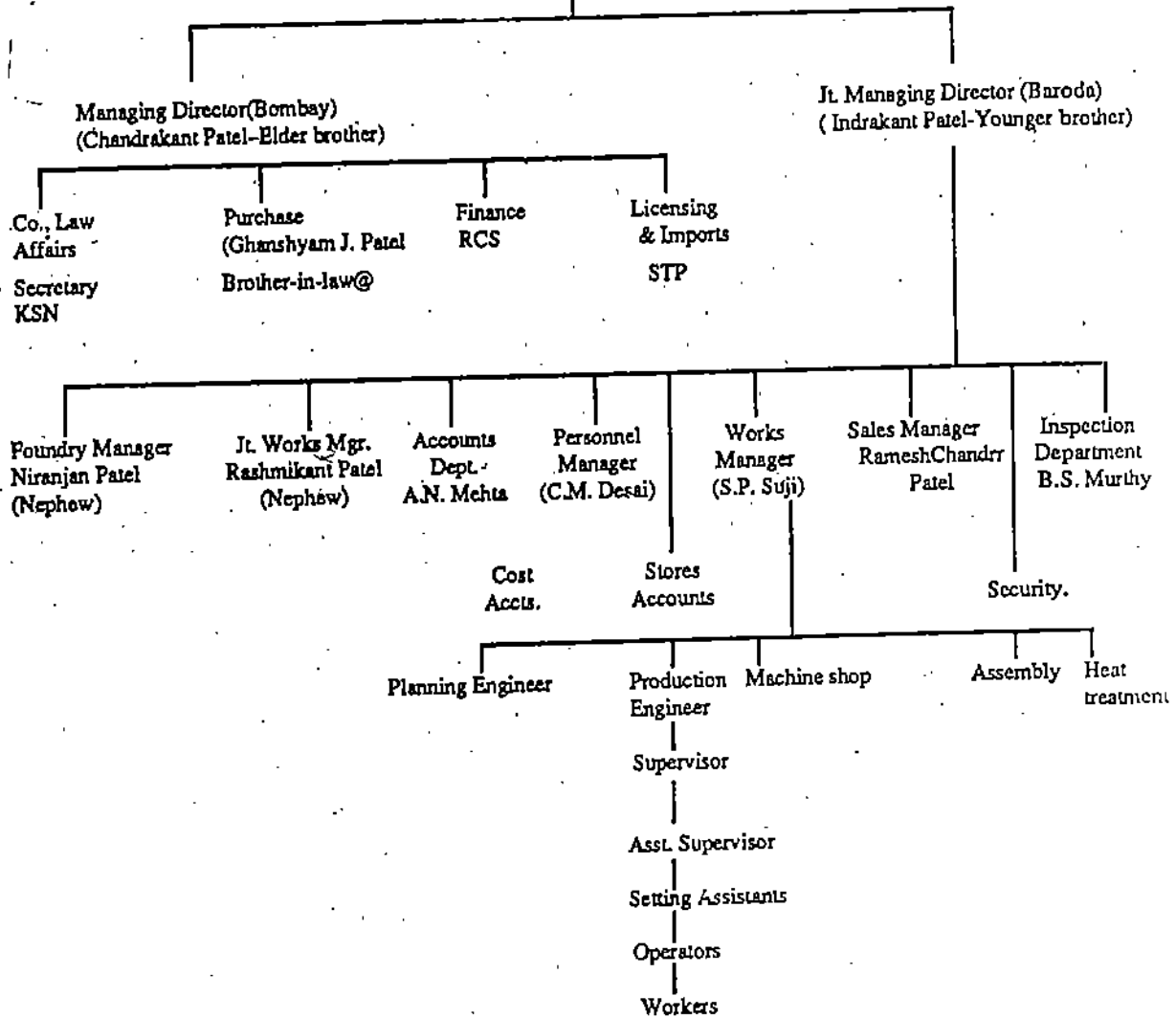
* Company switched from written down value to straight line depreciation; excess depreciation of previous years written back was Rs. 25.3 lakh. Depreciation for 1968-69, on the basis of written down value would have been Rs. 17.6 lakh. Under the straight line method it was Rs. 8.1 lakh.

EXHIBIT 2

HINDUSTAN TRACTORS LIMITED

Partial Organisation Chart

Chairman (Pashabhai Patel)



As of 1972

*Relations to Pashabhai Patel

@ Only relative as defined under Sec.VI Companies Act, 1956.

EXHIBIT 3

HINDUSTAN TRACTORS LIMITED

Hindustan's Tractor Output and Capacity

Annual Capacity (Single shift)

	Out put		Licensed		Installed	
	50 h.p.	35 h.p.	50 h.p.	35 h.p.	50 h.p.	35 h.p.
1963-64	395	380	1000	1000	500	-
1964-65	541	1302				
1965-66	1043	370				
1966-67	1032	773				
1967-68	1192	838	5000	2000	1800	1000
1968-69	1159	832				
1969-70	1143	514				
1970-71	745	446				
1971-72	22	355				

EXHIBIT 4

HINDUSTAN TRACTOR LIMITED

Some Information on various Tractor Manufacturers

Particulars	Major Manufacturers*			
	TAFE	International	Eseorts	Hindustan
Year of production	1961	1965	1966	1963 (50 h.p.) 1965 (35 h.p.)
Collaboration	Massey-Ferguson of Canada (equity: 49% & tech.) using Perkins engines of Simpson & Co. Ltd., Madras a sister	International Harvester Co., U.K. (equity, Loan, and techn.)	1 Motoimport, Warszawa, Poland (tech.) for 37 h.p. using 3 cyl. air-cooled engines of Kirloskar, Poona,	Motokov & ZavodyJana Svermy, Czechoslovakia (tech.)

*In addition to these four, Eicher Tractors India Ltd., Faridabad, made about 1,000 27 h.p. tractors in 1971-72 and Hindustan Machine Tools Ltd., Bangalore, a public sector enterprise, produced 1,600 25 h.p. tractors during 1971-72 in collaboration with Motokov of Czechoslovakia.

		concern		2 Ford Motor Co., USA (Fin. and techn.) for 45/ 40 h.p.	
Important content (%)				<u>35 h.p.</u>	<u>50 h.p.</u>
1966	68	60	54	50	62
1969	78	67	62	50	80
Annual Licensed Capacity (No.)	7,000 (35 h.p.)	10,000 (35 h.p.)	7,000 (27 & 37 h.p.)	2,000	5,000
Installed capacity (No.) (1971-72)	7,000	10,000		1,000 <u>35 & 50 h.p.</u>	1,800
Production					
1967-68	4,087	2,901		2,556	2,646
1968-69	3,275	4,001		5,625	2,219
1969-70	2,818	4,403		7,833	1,665
Growth plans		Step up to 20,000 (letter of intent)		Set up unit to make 16,000 engines on designs bought from the Polish	
Other activities of the group to which the company belong	Auto engines pistons, etc.	Jeeps, Elevators, chemicals etc.	Agri. implements, motor-cycles, pistons, railway equipment etc.	Construction and earth moving equipment	

EXHIBIT 5

HINDUSTAN TRACTORS LIMITED

Total Availability of Tractors

Year	Production	Imports	Additions during the year	Cumulative number in use	mortality *
1960-61	--	2,586	2,586	31,015	--
1961-62	880	2,997	3,877	34,349	543
1962-63	1,414	2,616	4,030	37,815	564
1963-64	1,983	2,349	4,332	41,540	607
1964-65	4,323	2,323	6,646	47,255	931
1965-66	5,796	1,939	7,735	53,966	1,024
1966-67	8,816	2,591	11,407	63,776	1,597

* Derived figures.

1967-68	11,394	4,038	15,432	77,047	2,161
1968-69	15,437	12,397	27,834	100,984	3,897
1969-70	17,101	12,801	29,802	126,614	4,172
1970-71	19,535	16,679	36,214	157,758	5,070
1971-72	16,535	16,000	32,535	185,738	4,555

Source: *Demand for Tractors*, (Delhi: National Council of Applied Economic Research, 1974).

EXHIBIT 6

HINDUSTAN TRACTORS LIMITED

Tariff Commission's Estimates of Cost: 1967-68

(In Rupees per tractors)

Particulars	35 h.p.			50 h.p.	
	TAFE	International	Escorts *	Hindustan	Hindustan
Estimated Production (Nos.)	4,803	2,500	1,860	800	1,800
<u>Direct Materials</u>					
CKD pack	5,724	3,625	4,905	9,036	7,593
Components & raw materials:					
Imported	86	2,071		638	1,167
Local	10,764	7,360	9,175	2,929	8,096
Materials Cost	16,574	13,056	14,080	12,603	16,856
Direct Labour	97	300	97	84	397
Factory overhead	783	1,529	542	238	953
Depreciation	346	817	84	96	553
Write-offs	51	580	18	45	452
Admin. overheads	132	64	173	80	307
Royalty	170	322	43	18	196
Total	18,153	16,678	15,037	13,164	19,714

Source: Tariff Commission, Government of India,
Report on the Fixation of Prices of Agricultural Tractors,
Bombay, 1967.

* The horsepower of Escorts tractors is 37.

EXHIBIT 7

HINDUSTAN TRACTORS LIMITED

Prices of various Makes of Tractors

(In Rupees)

	35 h.p			50 h.p	
	TAFE	Inter- national	Escorts	Hindustan	Hindustan
At start of production (Date)	14,450 (Early '62)	16,380 (Feb. '65)	15,400 (Mid '66)	12,500 (Early '65)	17,500 (Mid. '64)
Pre-1966	15,906	19,835	-	13,350	18,850
Post-devaluation	20,821	19,927	17,300	17,250	23,785
Selling prices statutory* (Early/Mid.1967)	20,838	20,900	19,500	16,110	21,880
Tariff Commis- sions' recommenda- tions(Oct.1967) **	21,270	20,230	17,690	15,680	23,370
Statutory prices *** (Mid.1968)	21,140	19,570	17,910	15,750	22,350
Sept. 1971	24,190		17,470	17,470	24,900
Sept. 1972	2		24,100	24,100	32,900

Source: Tariff Commission Report, 1972, and company records.

* Prices fixed by Government of India, based on a cost investigation by the Cost Accounts Branch, Ministry of Finance, include excise freight expenses, and cost of the following accessories: hydraulic lift, three-point linkage, power take-off, head, tail, and plough lights, tool set and electric horn. Where any accessory was not standard, statutory rebates were to be given.

** Ex-works, consumers to be charged extra for packing, freight, and insurances, estimated at the time to average Rs. 215 for TAFE, Rs. 157 for International, Rs 211 for Escorts, Rs. 128 for Hindustan 35 h.p., and Rs. 205 for Hindustan 50 h.p. Includes dealer's commissions and selling expenses.

*** F.O.R. destination, including packing, freight and insurance, selling expenses and dealer's commission.

EXHIBIT 8

HINDUSTAN TRACTORS LIMITED

Indigenization Targets & achievement

Year	Target Set* for indigenization		Achieved Indigenization	
	% 50 h.p.	% 35 h.p.	% 50 h.p.	% 35 h.p.
1962-63	50	-	42.5	-
1963-64	70	50	42.5	-
1964-65	80	50	42.5	17
1965-66	80	65	59.2	24
1966-67	80	50 (revised)	61.8	24
1967-68	over 90	58 (revised)	79.5	50
1970-71	over 90	over 90	85.0	57

EXHIBIT 9

HINDUSTAN TRACTORS LIMITED

Financial Profitability of Selected Units

(Rs. in lakhs)

Particulars	International		Hindustan		TAFE		Total	
	1969-70	1970-71	1969-70	1970-71	1969-70	1970-71	1969-70	1970-71
Sales (Rs.)	967	1,356	416	264	812	976	2,195	2,196
Gross Profit as & of sales	9.4	5.6	-3.3	-11.2	3.4	-5.9	4.8	0.5
Capital employed (Rs.)	902	1,142	778	680	421	538	2,101	2,366
Owned funds as % of capital employed**	46 10.1	46 6.7	16 -1.8	9 -1.6	60 6.6	40 -6.3	38 5.0	31 0.6

Source : The Economic Times, June 24, 1972.

*Targets set by the Directorate General of Technical Development, Ministry of Industrial Development and Company Affairs.

**Of the c.i.f. value of a completely built-up imported tractor.
The average for all industrial was 9.9 in 1969-70 and 11.2 in 1970-71.

THE RAJ VARDAN ENTERPRISES (RVE)

INTRODUCTION

By end 1987, the two questions facing the management of The Raj Vardan Enterprises (RVE) were : will we be able to work together as partners? If yes, then what should be our growth strategy?

RVE was an outcome of a long and fruitful association of four friends. Initially two business activities were identified : domestic marketing of chemicals and manufacturing of industrial gloves for exports. It began its operations in Calcutta in 1985. The initial trial orders for exports, were subcontracted to some local manufacturers. Within three months, however, the company bought manufacturing facilities for industrial leather gloves for Rs. 5 lakh. It also became distributor for Calcium Carbonate, a by-product of a leading paper manufacturing plant of east India. By 1986, RVE achieved a sales turnover of Rs. 200 lakh. But, the sales declined to Rs. 90 lakh in the first nine months of 1987.

One of the promoters of RVE was the managing director of Mehta Sales Corporation (MSC), a medium sized chemical distribution firm with an annual turnover of around Rs. 15 crore. Mehta Sales had acquired the exclusive rights of exporting the gloves of RVE.

The sudden decline of sales in 1987 affected the morals of other promoters, namely the other three, who were not associated with the Mehta Sales Corporation. RVE's vulnerability and survival became the major issues. The business relationship of Mehta and RVE. came under heavy suspicion. At this point of time, an outside management consultant was hired to suggest ways and means to restore promoters' confidence and suggest a long term plan for the prosperity of RVE.

RVE : The State of Affairs in 1987

In 1987, the activities of RVE included manufacturing of industrial leather gloves and marketing of Calcium Carbonate. The leather gloves were exported by Mehta Sales Corporation (MSC) and RVE was not permitted to market gloves on their own, neither in India nor abroad. Both the product lines were the brain child of Pranav Choksi, the managing director of MSC. In his drive to promote a professional company, he associated with his three friends : Dhiren Mehra (an engineer cum MBA), Milind Gupta (a chartered accountant) and Sanjay Roy (an ex-captain from the Indian Army). He was hopeful that the background of his friends would not only provide an image of a professional company, but would also help in creating a 'professional work' culture from day one.

All the four partners had excellent rapport and very old social ties. Formation of RV was seen as a reinforcement of their past relationship. But within two years, the poor performance of RV surfaced the differences in their viewpoints for managing RV. At the root, was the relationship between RV and MSC. The three partners (Dhiren, Milind and Sanjay) felt that RV has always been considered as a group of outsiders by the executives of MSC. It was their feeling that only Pranav was genuinely interested in the welfare of RV. In their own assessment, Pranav, by virtue of the business relationships, was under the influence of people who were not interested in the growth and prosperity of RV. The fear was that one day this may affect RV adversely. It was their feeling that in spite of no business relationship, RV was seen as a charitable organisation of MSC and was being forced to perform many activities of no direct interest to RVE. When a family member of Pranav's (who was Pranav's business associate in MSC) wanted to see the monthly reports of RV, the partners felt encroachment in RV's affairs by the outsiders.

Unfavourable terms of sharing the profits between MSC and RV, misperception on the part of the MSC's executives that partners of RV do not believe in being part of the MSC family, also created an environment of suspicion and mistrust. In short, the business relationship and distortions in perceptions had become major demotivators, preventing the three partners to contribute their best.

In spite of the differences with MSC, all the three partners were unanimous in their opinion towards Pranav. He was indispensable. RV without an active involvement of Pranav was not acceptable to them either.

Pranav was of the view that there were both "pluses" and "negatives" in RV's relationship with MSC. Some negative points were :

Case (1988) prepared by Prof. Sharad Sarin of XLRI, Jamshedpur.
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- lack of ego gratification of other partners
- at times, it may cramp the working style of others, as it has to conform to the work culture of MSC
- RV's growth plans may have to be sacrificed in the larger interest of MSC. For examples RV would never be allowed to manufacture sodium dichromate; a chemical needed in leather tanning as MSC was thinking of setting up a similar manufacturing facility. The partners of RV had to accept this and MSC had already decided to be in the business of chrome chemicals, even though it was not in the leather business.

On the positive side, according to Pranav, were the benefits of a larger organisational base, easy and timely availability of finances, risk minimisation as RV could always lean on MSC, and reaping of benefits through MSC's goodwill in the market place.

Pranav felt that instead of questioning, the partners of RV could play a major role in the growth of MSC. A healthy and larger MSC was in their own interest. Working for MSC's growth could provide them with challenges and excitement of creating a professional organisation.

Besides the tricky issue of the 'partnership', the performance of RV was disturbing. The company was facing working capital shortages. The shortage prevented the achievement of the sales targets of Rs. 300 lakh for the year 1987. The company had borrowed nearly Rs. 25 lakh, out of the total requirement of Rs. 30 lakh, at a very high interest rate of 20% per annum. On the other hand, the company had failed to utilise its full limits granted by the bank. The three partners were of the view that the present tie up with MSC has deprived them or availing the limits against hypothecation of the finished goods. RV could not apply for this facility as MSC had obtained the same for the gloves. This, however, allowed MSC to borrow money against the finished leather gloves. This money, however, was never paid in time. MSC, according to the partners was at the root of the working funds crises.

The growth alternatives and the aspirations

In spite of low morals and motivation, the partners were keen for the growth of RV. Considerable thought and energy were being spent in clarifying their growth objectives and plans. Their keenness was obvious from the fact that except for Pranav, the other three were completely dependent on RV. A good performance of RV was a must for their welfare.

Each partner had some views on the 'growth'. To Dhiren, growth signified different things for different activities. To him, 'corporate growth' meant growth in corporation's capital base, sales turnover, scales of operations and in allied activities. His preference was for one large company with divisionalised set-up. He knew that this growth pattern was not the best from the viewpoint of the 'tax savings', but it was almost a necessity if RV wanted to become a well-known professional organisation. At personal level, Dhiren was keen to widen his experience, enhance his social status and increase and stabilise his income.

To Milind, a sales turnover of Rs. 5 crore, with a net profit after tax of Rs. 25 lakh per annum by end of 1990, was a minimum must. He was keen to diversify and even out the fluctuations due to the vicissitudes of the market place, especially in case of Calcium Carbonate. The pattern of ownership, i.e., Single Organisation, was not his major worry. He did not mind many small organisations to achieve the profit objectives for a comfortable living of the partners.

First, Sanjay was keen to resolve the basic issue: whose growth? RV's or MSC's? He was keen to separate the growth patterns which Pranav may have for MSC from those which may be more appropriate for RV. He did not want RV to be constrained by the plans of MSC. He desired a sales turnover of Rs. 8 crore by 1995 by expanding the gloves business and by diversifying into similar lines like lime and lime stones. Dhiren had good experience in lime and lime stone quarrying and marketing.

Pranav's concept of growth was through sharing of prosperity by creating many small companies like RV. He felt that there is an upper limit to one's desire of earning for self-consumption. He wanted RV to become a mother unit, similar to MSC, promoting many other smaller units. It was his view that the Indian tax structure would never permit any individual to become wealthy through honest means and afford a comfortable living. The only honest option is to have substantial fringe benefits. These in turn could come from many smaller organisations, rather than one large organisation. This growth pattern, according to Pranav, was also in tune with the socio-political environment, which favoured the development of small scale sector. Pranav believed that growth could not be achieved by spreading the limited resources too thin. Prioritisation: existing knowledge and experience and potentiality of the existing business should be taken into account before entering into new areas. He also believed that a close control is needed by partners in

managing the business. He, however, felt that in partnership, the concept of control through majority shareholding is not valid. He in his own words was cherishing a dream of "Concentrate-Bang-Become Big" route for Dhiren, Milind and Sanjay. He, however, felt that the attitude of extra possessiveness for RV by the three partners may prevent them to become big. He desired a sales turnover of Rs. 10 crore by 1992 through the gloves and 'trading' business.

Realising that the situation in RV needed immediate strategic corrections, a management consultant was appointed to suggest a comprehensive plan to put RV on smooth rails for its long term survival and prosperity. In order to suggest a meaningful corporate plan, the consultant conducted a "SWOPT" Analysis.

THE SWOPT ANALYSIS OF THE CONSULTANT

RV as I see it and as I would like to see it

In its two and half years of operations, RVE seems to have achieved a great deal. Starting with an equity of Rs. 5 lakh, its turnover of Rs. 200 lakh in 1986, is a performance par excellence. However, it appears that much more can be achieved with the kind of resources which RV has. Based on personal interviews with the partners, my own SWOPT (Strength, Weakness, Opportunities, Problems and Threats) analysis as well as my comments are as under:

Strengths

- A very competent team of four professionals.
- The very name 'RV' signifies the impersonality attached to any single individual's name or family. Scope, thus, exists to work for the company rather than to glorify the name of a family.
- A manufacturing base for leather gloves and physical facilities in terms of office space, equipment and machinery (though old).
- Good contacts of partners with business world.
- Self generated export business and hence first hand knowledge of the foreign buyers and the markets.
- A very close and harmonious social relationship between partners indicative of a similar social status of all the partners.
- Each partner capable of managing the business of its own and each one of them very strong in some specific areas. Thus a positive synergistic effect possible for the entire group.
- Presence of both domestic and export markets in RV's market mix enables knowledge of both the markets.
- Availability of a pool of experience and information through its association with MSC.
- Product line, at least the one associated with leather has a tremendous growth potential, both in international and domestic markets. (The task force on leather has set a target of Rs. 100 crore for leather by the end of 1992 as against Rs. 662 crore for 1986-87 for exports.)
- Capacity to raise more funds, both in emergency as well as in normal circumstances i.e., during expansion or diversification.
- Honesty and boldness amongst partners to criticism and accept criticism.

Weakness

1 RV's size: To my mind this appears to be a major weakness in case of RV. Unlike other small scale organisations, where only one entrepreneur manages the show, RV has three working entrepreneurs. It cannot remain as a small scale organisation. It has to grow big and utilise fully the entrepreneurial talents available to it. The present size is not optimum and this is leading to under-utilisation of the time of the directors. The whole working of RV has to be reorganized to utilise the 'human resources' available to RV.

2 RV's Product Portfolio: Though so far RV has been able to generate sales of RS. 200 lakh from only two lines, but the lines have very narrow product-market scope and could prove vulnerable in the long term. A balanced portfolio could be one which would enable RV to generate sufficient funds to achieve its growth and the present objectives. Lack of 'systems' appears to be another weakness of RV. Today, whatever

information (mainly financial) is generated, appears to be an end in itself. Further, it is being generated because it has to be generated. Thus, the most important aspects of 'systems' to aid in decision making, advance alarming, forecasting, control, etc., are missing. This would require development of attitude, skills and a way of working. The entire organisation and not the directors alone, have to be reoriented to develop a culture for systematic working. Creation of this culture at this stage is very important as only this would enable a better growth of RV. If not introduced today, corrective actions would prove very expensive at a later date when gaps would start surfacing between the 'operations' and 'work attitude'. Important is to arrive at a balance between 'persons based operations' and 'systems based operations' and the time to act is 'now'. For example, there is a need for periodic review, and hence the generation of monthly concept reports. There is a need to develop budgets and monthly cash flow statements. There is a need to develop reports, which would consider the various lines as different profit centres. There is a need to develop corporate plans and hence to develop strong market and marketing information systems. There is a need to develop corporate plans and hence to develop strong market and marketing information systems. There is a need to coordinate production between two units and subcontracting, and there is a need to manage materials as raw materials today from 80% of cost in case of gloves, and 98% in case of Calcium Carbonate. Heavy reliance on borrowed funds could cause a serious financial problem for RV. The financial position has deteriorated in 1987 to the extent that RV seems to be having a negative working capital. It not only means reduction in profits due to heavy interest burden, but it may also mean shortage of working funds for day-to-day operations. My apprehension is that in the near future, unless finished goods are liquidated earlier, RV would face serious working funds problems and would be forced to borrow more money from outside at very high interest rates and become vulnerable.

3 Different expectations of partners appear to be another weakness, which at times can cause serious working problems. It is therefore imperative to arrive at goal congruence for RV, irrespective of the individual aspirations of the partners. More professional and 'impersonal' attitude may prove beneficial for the entire organisation and hence for its partners too.

4 Another weakness appears to be a wide gap between the skills and competence of partners and the permanent staff of RV. To my mind, work may stop the day the partners are away. As mentioned earlier, RV cannot be allowed to continue as a small scale organisation. It has to grow and it has to have a proper team to manage its operations. Whereas Directors have to devote more and more time on strategic and external issues, the people employed have to be developed, such that they can be delegated with more authority and responsibility to manage internal operations competently. RV cannot and should not, glorify for all times to come, in the competencies of its directors. In fact, much more could come when Directors would be able to develop a competent team of working executives and ultimately play a directional role.

5 Minus Mehta Sales Corporation (MSC), RV seems to have no image of its own. Though this is a very useful association, it need not imply that RV cannot and should not have its own corporate image. All four partners are convinced that RV is a different concept than any other company so far floated by Mehtas. In fact, one of the biggest assets, which of course has come more because of a chance, is the name RV itself. This name, devoid of any personality or family, should become a symbol of a professional house. Thus, attempts should be made to project and create a good corporate image for RV. How this can be done needs thinking and discussions amongst partners.

Problems

Problems could be both due to internal weaknesses of the organisation as well as due to exogenous factors beyond the control of an organisation. Whatever may be the cause, they need to be known in the first place and then solutions have to be found to solve them. To my mind, the following appear to be RV's problems:

- Uncertainty of its future, especially of its relationship with Mehta and its associates. This uncertainty has to be removed at the earliest, as otherwise it might lead to a strange paradox; MSC becoming both an asset and a liability for RV.
- Low motivation of directors because of the incongruous relationship.
- Low profitability and inability to generate surpluses to create a sound equity base.
- Low productivity reflected in the decline of sales/assets ratio for 1987. Thus, whereas it was 35 for 1986, it has come down to 19.52 for the first nine months of 1987.
- Lack of working funds.
- Low flexibility and lack of choice in case of Calcium Carbonate business, as the principal can supply only one grade and has limited capacity.
- Increasing leather costs and inability to pass the higher costs to the buyers.

- Labour problems for want of raw material at times.
- Except for one partner, no other partner seems to have a specific area of responsibility.
- Lack of competitive advantage as market share is only 6.6 per cent in the total exports of gloves from India.
- Partners are not fully conversant with each others work. Thus, marketing being restricted to MSC, no one else seems to be fully aware of the marketing picture of gloves. Only Dhiren who looks after gloves operations, is aware of the details. Milind alone seems to know about Calcium Carbonate, and Sanjay seems to know a little of everything.
- Under-utilisation of time and competencies of partners; in other words, lack of work for all the partners.
- Lack of motivation to expand seems to have set in that in spite of producing more, RV would continue to incur losses as compared to its Selling Agents (MSC).

Threats

For Gloves

- Raw material subject to constant price rises.
- Demand for gloves may rise or fall without any explicable trends.
- Poor and erratic availability of raw material (leather).
- Changing government policies and export restrictions (quotas) by 'importing' countries.
- Buyers may change their loyalty towards India.
- Product substitution possible through other kinds of leather.
- Constant labour trouble on Indian scene.
- Only high volume can sustain the business as profitability is very low.

Calcium Carbonate

- Risk is high or low as it is a function of the whims of the Principal.
- Being a by-product, the principal does not seem to pay proper attention to its marketing. This is affecting RV's performance.
- Irregular supplies of the material.
- Only one grade available as compared to many grades of competitors.

Opportunities for RV as a Group

- Since it has both entrepreneurial and physical resources, RV can both expand and diversify in any line related to gloves or Calcium Carbonate.
- For leather goods, tremendous opportunities exist in both domestic and international markets.
- In case regular supplies are available for Calcium Carbonate, RV can generate much needed surpluses. Assuming a net profit of 6%, RV can each year generate nearly Rs.3 lakh as surplus on a sale of Rs.50 lakh. The main problem was the fluctuating market conditions, affecting the price and hence the profitability.
- It can enter into trading of another line of the Principal i.e., papers. RV would need to develop some strengths at least in terms of market knowledge and marketing practices of trade etc.
- Since RV has a knowledge of Calcium Carbonate and since today its operations are constrained

because of only one grade, RV should explore the possibility of adding few more lines for the same customers or add few more varieties of Calcium Carbonate of other Principals.

- Utilising the present channels and contracts RV can also try to add some more profitable leather goods line, which can be marketed. Shoe uppers, leather garments and finished leather have been claimed to take away the major position of leather exports. It may be worth exploring to add these lines in future.
- Scope also exist for backward integration in leather business.
- Opportunities also exist in utilising government money and expertise to expand the leather business. RV should explore these possibilities to avail these facilities. This, however, may not be possible until RV earns a status of exporter. How this can be achieved needs to be discussed. RV and Mehta should jointly re-examine their relationship for mutual advantage of both the organisations.
- RV can also explore entry into areas whereby competence and time of its partners can be better utilised. Thus, trading in lime and limestone, providing consultancy in managing and marketing of the produce of small scale sector etc., can easily be undertaken by RV without investing much.

Summing Up

Having spent sufficient time, both the directors and the consultant were keen to make RV an example of an excellent professional company promoted by four friends. They could not accept a situation which may degenerate into casting personal aspersions at each other. According to them, survival of the company was a precondition for their unity.

Questions

- 1 Identify the reasons, which precipitated the crises in RV.
- 2 What would be your recommendations for the growth of RV?
- 3 Comment upon the exercise which the consultant has conducted for RV. Do you really think that such exercises are helpful?
- 4 What useful generalisations can be made from the experience of RV Enterprises?

HINDUSTAN SPECIAL TUBES LIMITED

I BACKGROUND

The Hindustan Group of Companies, which originated in 1976 in a leading North Indian metropolis, started with a medium-sized steel rolling mill. Within a short time span of three years, the rolling mill trebled its turnover and raised hopes of becoming a successful group — though with a difference. The Group is not a family concern. It was started by a team of highly qualified professionals-turned-entrepreneurs who had rich industrial experience in India and abroad. The success of the group was mainly attributed to the professionalism, zeal and vision of the entrepreneurs. They attracted talent and experienced individuals from well-known Companies in India.

II HISTORY OF HST

In 1979, the Group decided to go for downstream diversification and took up various new projects — one of them being Hindustan Special Tubes Limited (HST). Incorporated in 1980 and promoted by the Hindustan Group the State Industrial Development Corporation and a technocrat, Mr. Jayant Chopra, the project was implemented in time. But the cost budget was exceeded leading to erosion of working capital margin. The project generated so much enthusiasm in India and abroad that the International Finance Corporation (IFC), an affiliate of World Bank, participated with an equity of 0.25 crores making it the first medium-sized project in India to have IFC's financial participation. HST's issue in 1981 was oversubscribed many times. The total project cost of Rs. 7 crores was financed as below :

	(Rs. crores)
Promoters' Equity :	1.00
Public Issue :	1.00
Equity by IFC :	0.25
Term Loan :	4.60
Subsidy :	0.15
	<hr/>
	7.00
	<hr/>

III PROMISE OF THE PRODUCT

Mr. Jayant Chopra, the technocrat-promoter of HST, is a brilliant engineer who worked for more than 20 years with various leading tube manufactures and is well-versed in all aspects of tube technology. Before promoting HST, Mr. Chopra was with Hindustan Rolling Mills, the flagship company of the Hindustan Group as General Manager (Technical). HST's foreign collaborators, M/s. United Special Tubes Inc., U.S.A., are world leaders in tube technology, operating successfully in over eight countries through financial and technical agreements. The technology is the latest and has been proven in the world. Although the collaborators were desirous to give the full process technology on a turnkey basis, the company preferred to take United's help only in specific areas of the total production process. The rest was developed by Indian consultants.

The main product of HST is a specially coated steel tube using United's SUPERCOAT tube technology. Mr. Chopra was confident that the 20,000 tonne plant will be able to achieve 60% capacity by the end of the first year, 85% by the second year and full capacity by the third year. In his opinion HST's tubes, with its better properties in corrosion resistance and high strength will make deep inroads into the conventional tube market.

Steel pipes and tubes are classified under four major types, based on their production method and end usage. They are :

- a) Welded Steel Pipes and Tubes (Black & Galvanised)
- b) Electric Resistance Welded (ERW) Steel Tubes
- c) Seamless Steel Tubes and
- d) Stainless Steel Tubes.

The tubes made by HST are classified under ERW tubes. These tubes are made of high performance steel and given extra strength by a special cold rolling process. They are hot-dip galvanized, chromated and polymer coated for protection against corrosion. The interior is coated with a proprietary coating for easy pulling and resistance to corrosion (see Annexure I for production process). Because the coating process is on line, the adhesive bonding between the coating and the steel material is greater than in conventional galvanized tubes. As a result, the tubes can be manipulated (i.e., bent over more than 90 degrees) without the coating flaking off. The extensive cold working operation during the tube forming gives more strength to the tube produced by HST's process, which is about 1.5 times the strength of conventional tubes (see Annexure II for properties of HST's tubes vis-a-vis competing products).

IV THE ONSET OF THE PROBLEM

However, the high expectations generated by the project failed to fructify once the company started its operations. Problems cropped up in all the functional areas. Production was at a low level, sales did not take place as anticipated, continuous cash loss led to a severe cash crunch and to add to its woes personnel turnover reached an alarmingly high proportion. An analysis of the problems faced by different functions is given below :—

i) Production : The plant was originally designed for a running speed of 84 meters/minute (i.e., 84 meters of specially coated tube should be produced every minute). It was estimated that the plant would work 2 shifts/day, 7 days a week and that the average plant up-time would be 80%. Contrary to this, the actual speed achieved varied from 26%-65% of standard speed the average being 37% of standard speed. The production personnel claimed that at higher speeds, tube buckling occurs leading to costly plant stoppage. At these low speeds, the coating effectiveness and the finishing on the tube was poor. The yield of the plant was 78% compared to United's 93%. A comparative study done between HST's material input-output vis-a-vis its collaborators is given below :

Input/Output	HST	UNITED
1. Steel Input	100	100
2. Less: Wastage:		
Edge trim at slitter	4.16	0.90
End clips at welder	0.95	0.61
Scarf	—	0.39
Cut of slugs	0.55	0.10
Total	5.66	2.00
3. Tube produced	94.34	98.00
4. Less:		
Scrap tubing	10.83	1.20
Commercial quality	5.42	4.00
5. Prime Tubing	78.09	92.80

When asked about the unusually high percentage of scrap tubing, the production personnel blamed the poor quality of coils obtained from SAIL. They said that the thickness of the sheets in the same coil varied drastically as a result of which the tubes did not get formed properly. Regarding the huge inventory of unsold tubes lying in the factory, production personnel squarely blamed the marketing department. A caustic comment was "Marketing never wants to sell those available in stock". Production also blamed marketing for getting in low quantities leading to small batch sizes. They claimed that small batch sizes lead to more start up scrap and less plant utilisation. Another woe of production was the large number of emergency orders. They claimed that such inordinately large number of rush orders threw all planning haywire.

ii) Marketing : Tubes in India are sold as a commodity and since there is little to distinguish one from the other, Mr.Chopra felt that HST's SUPERCOAT Process allows differentiation of the product in all user markets. The competitors were however skeptical. They felt that the capacity of HST is too small compared to the market size to make any appreciable impact. Moreover, they felt that HST with its claims on quality will have to concentrate at the top end of the market. Above all, applications for HST tube are yet to be developed, implying that a market for these tubes is to be created first. Internationally these tubes were appreciated because of their high strength, safety features and aesthetic value.

The Marketing department conducted a study on the prices of competing products in the electrical conduit sector.

Product	Price (Rs./Metre)	Approx. Market Share
P V C	5.75	60%
Black Enamel Conduit	9.00	15%
Galvanised Iron	10.00	15%
Galvanised Iron Pipe	14.00	10%
HST's Product	15.70	—

Note: The data pertains to the time when HST just entered the market. Marketing contended that similar sorts of price differentials were prevalent in other market segments also.

iii) Finance : Although the company started with a debt equity ratio of 2.25 over the years, it gradually worsened. This was because the company was making cash losses which were eroding its equity base on the one hand and on the other the losses were financed through debt capital. This had a cascading effect and the company soon found itself being burdened with more and more debt servicing. Considering its scale of operations it could scarcely afford such a high debt servicing burden.

The summarised financial results are given in Annexure III. The problem of the finance manager was further compounded by the huge amount of working capital locked up in inventory and debtors. Much of the inventory of finished goods was of secondary quality. The finance manager blamed the Marketing department for his woes. He felt that marketing people were not deriving suitably high margins for the product and moreover no efforts were being directed towards collections. A large amount of money was locked up in debtors over six months. The figures of debts outstanding for more than six months as a percentage of total debts are as below for the four years of operations.

	YEAR I	YEAR II	YEAR III	YEAR IV
Debtors exceeding six months as a % of total debtors	7.5%	36.4%	32.7%	24.3%

The cash crunch was the most visible malady that affected each and everyone in the organisation. The materials manager complained that because he cannot pay his suppliers in time, he has to go to those suppliers who supply poor quality material but extend substantial credit to him. The marketing personnel complained that while the market norms demand that a credit of 1 month to 3 months be given to customers, paucity of funds does not give them leeway to extend the credit. They said that HST is losing business because of this. The production manager complained of shortage of essential spares. He said if these spares are not brought urgently, the plant might stop for months.

V A SHORT OVERVIEW OF THE TUBE INDUSTRY

The rapid growth of the steel tubes and pipes industry in India took place only during the sixties. Before 1955, India was an importer of steel tubes and pipes. During the sixties a number of units entered the market. At present, India is no longer an importer of steel tubes and has, in fact, become an exporter.

In 1982, it was estimated that there were over 50 tube making units and the total licensed capacity was reported to be 22.2 lakh tonnes a year whereas the demand estimated at that time was no more than 4 lakh tonnes a year.

The tube industry thus witnessed a highly unbalanced growth. From the shortage market of 1950s, in the 1980s tube market has become a surplus market. The tube industry, therefore, had to nurse a huge idle capacity for a number of years. The capacity utilisation also showed wide fluctuations. The best rate of capacity utilisation was at 80% in 1965-66, but before and after that period it has varied between 22% and 28%. In 1982, the capacity utilisation rate was estimated to be around 33%.

The industry, therefore, reacted with dismay to the Government's decision in 1982 to sanction an additional capacity of 90,000 tonnes. The Chairman of the Steel Tubes Division of Association of Indian Engineering Industries felt that the creation of additional capacity would be detrimental to the entire industry. He attributed the poor capacity utilisation in the industry to non-availability of raw material, high prices of coils and strips and rise in freight rate.

Steel tubes generally find application in water supply (galvanised steel tubes), construction/structural, scaffoldings, electrical conduits and general engineering. Cold drawn seamless tubes are used for high pressure application (e.g., boiler tubes) and in applications where extremely smooth finish is required (e.g., shock absorbers). HST's tubes being basically ERW, such applications are excluded.

In order to make its mark on the main markets for their tubes, HST had decided to go in for both dealer-based sales and on direct selling to and users depending on the type of the market. For general engineering applications, dealers were relied on for sales, while for construction/structural markets the company relied on direct selling. The company has established regional offices in all the metropolitan and major industrial towns.

Three major market segments were identified construction, electrical and general engineering.

In the construction and electrical conduit market direct selling was attempted. In construction it was felt that the structural designer and the architect being the major decision influencers, they need to be convinced about the better benefits in using the product. The majority of the structural designers and architects expressed confidence in the product but they felt that they cannot rely on their fabricators to do a good job in tubular construction. In their opinion most of the fabricators are familiar with construction with angle iron members. They were willing to specify HST's product if HST take the total turnkey responsibility for implementing the project — from earthwork to sheeting. However, HST in most cases was unwilling to accept such a responsibility. In one or two cases it did accept the assignment. In those cases the project was completed with time and cost overruns. This gave HST a bad name. In some of these projects HST even lost money. Nevertheless, these projects served one useful purpose — HST's product was seen to have been used in construction.

An analysis was conducted to identify the reasons for these overruns. In many cases while accepting the projects unrealistic time estimates were given. This was due to the eagerness of marketing personnel to bag the project. The errors of estimation became apparent at the time of project execution by which time HST already stood committed. Similarly in cost estimates only the cost of tubes were estimated properly. Cost of other material inputs like couplers, joints, plates etc. were grossly underestimated. These two factors were primarily responsible for time and cost overruns. The structural designs made use of many new types of fittings like couplers and joints. Many of these were not available off the shelf in the market. As a result HST had to find jobbers who could manufacture these special fittings. This also contributed to the delay. Another contributory reason for delay was bad financial management. Being in the midst of a cash crunch, often funds earmarked for the project are deployed elsewhere. The projects were not supplied funding at the time it was required.

In the electrical conduit market, direct selling was attempted to SEB's. The decision making process in SEB's being slow, the company could not achieve quick sales here. Marketing blamed it on production saying that unless production manages to achieve product quality, marketing cannot do anything to push the product.

In general engineering applications, the corrosion resistant property of HST's tubes did not cut much ice as a selling point, because most of the applications required the tubes to be painted. In certain applications, like heat exchangers in evaporators used in sugar factory, the tube found good use and fetched a good price. However, for most other general engineering applications, price of the product is major selling factor.

Pricing was the most thorny issue that led to acrimonious debate between Marketing, Finance and Production departments. Marketing claimed the prices to be too high and cited it as a reason for low batch volume. Finance contended that unless a high contribution is obtained, the unit will never be profitable. In support of their contention Finance gave the following table of break-even volumes at different contributions.

Contribution (Rs./Tonnes)	Break-Even Volume (Tonnes/Year)
2,000	21,600
2,500	18,000

Marketing questioned these figures and said that cost accounting data were not reliable. This distrust of figures supplies by Finance department was due to the alacrity with which Finance had changed the cost estimates in the past. Quoting past instances Marketing pointed out that Finance was known to have changed cost estimates for the same product three or four times during the course of a month. Production costs according to marketing sources were inordinately high for HST.

A section of the tube industry differed from this view. In the opinion of this group, demand for steel tubes in the long run was bound to rise substantially, though there could be a short-term fall in demand. The policy was justified on the ground that it was economically viable not to wait for market demand to outstrip capacity before one looks for or allows expansion. This section felt that one reason for under-utilisation of capacity in tube sector was that there had not been enough true competition to enforce increased efficiency, quality consciousness and reduction in price. However, this section also argued that any such liberalisation of industrial policy should also apply to raw materials since the price of tubes is largely dependent upon that of coil.

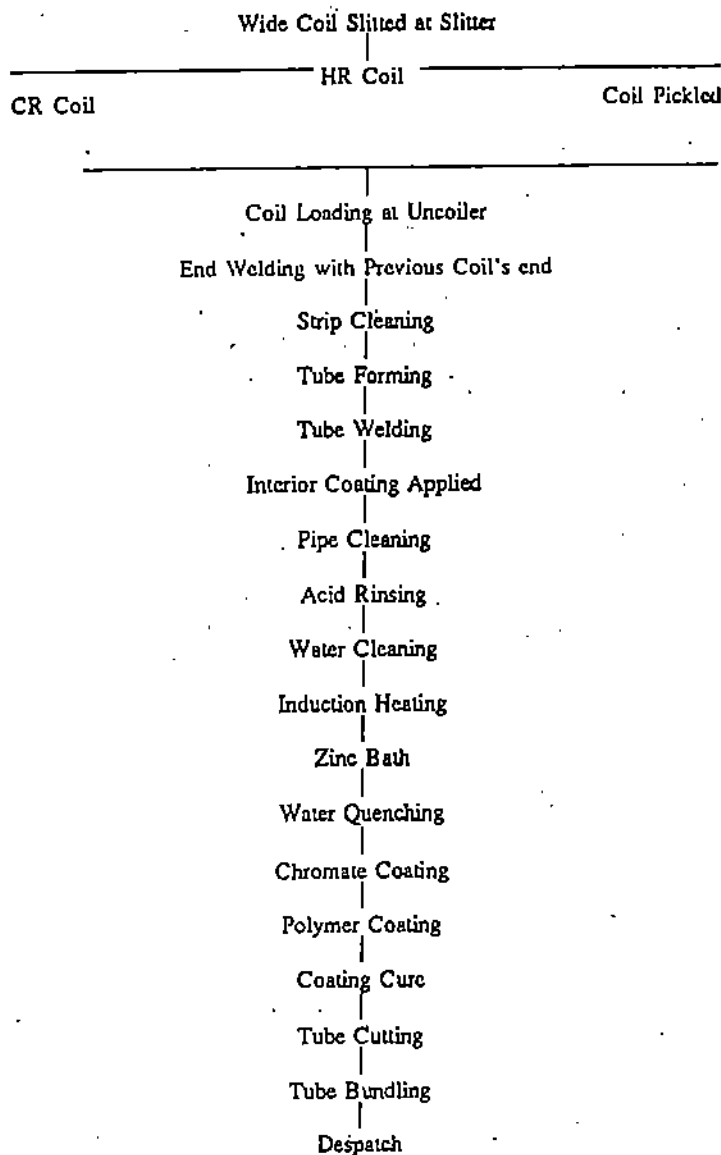
The end use pattern of tubes and pipes in 1982 was as follows. About 36.5% went for irrigation and agriculture, 21% in Public Health Engineering Department (PHED) and PWD, 8% in house building, 6% in mines and collieries, 5% in oil, chemical etc., 4% each in electricity boards/power projects, railways and steam servicing, 3.6% in steel plants and allied industries, 2% in fan industry and 1.5% in structural and auto industries.

PVC/HDPE pipes have emerged in recent years as a serious competitor to steel pipes, especially in rural areas since they are cheaper, do not corrode and relatively last longer.

Faced with low capacity utilisation and threat from PVC, many existing tube manufacturers diversified into new areas. Some went for PVC tubing, some to rollers, rolled steel products and aluminium extrusion and some to absolutely unrelated areas like dye intermediates and engine valves.

ANNEXURE I
NOTE ON HST'S PRODUCTION PROCESS

The figure below gives a schematic description of HST's production process :



The differences between HST's production process and conventional production process for galvanized tubes lie in the extent of cold working and in the coating technology.

HST's tube mill does extensive cold working on the steel strip while it is formed into a tube. This cold working coupled with the use of superior quality steel imparts a higher yield strength to the tube.

Coatings are given on line. In conventional galvanizing, the tubes are first formed, cut to size and then taken to the galvanizing bath. As a result, conventional galvanized tubes have zinc coating both inside and outside the tube. In HST's process the tubes pass through the zinc bath before being cut. Therefore only the outside surface is coated with zinc. The absence of coating on the inside surface does not lead to any deterioration in corrosion resistance property as the corroding agents come into contact with the outside surface. Thus, except for water carrying application, the inside zinc coating in case of conventional tubing is superfluous. For applications like Electrical conducting HST gives a coating of epoxy resin paint on the inside of the tube in order to facilitate smooth cable pulling.

A superior quality steel is required to produce tubes by the SUPERCOAT process. However, inferior quality steel can be used for production of ordinary uncoated steel tubes in the same tube mill. All it requires is switching off the coating stages. HST uses this facility to produce ordinary uncoated steel tubes also in addition to SUPERCOAT tubes.

ANNEXURE II

TABLE 1
Time in Hours for Salt Spray Test.

	1st White Rust	5% Red Rust	40% Red Rust
Conventional Section & Black Tubes	—	36	40
Galvanised Pipes	36	600	800
HST's SUPERCOAT Tubes	300	1200	1800

TABLE 2
Strength of Various Competitive Products vis-a-vis HST's SUPERCOAT

	Yield Strength kg/mm ²
IS 1239 Galvanised Pipes	17
IS 1161 Structural Black Tube Grade YST 210	22
IS 1161 Structural Black Tube Grade YST 240	25
IS 226 Conventional Black Sections like angles, channels, joists etc.	26
HST's SUPERCOAT TUBES	
—Type I	35
—Type II	45

ANNEXURE III (a)

BALANCE SHEET (As on End of Year)

(Rs. in lakhs)

	Year I Rs.	Year II Rs.	Year III Rs.	Year IV Rs.
ASSETS				
Gross fixed assets	1246.68	1281.92	1345.40	1660.94
Less: Depreciation	85.76	144.03	207.94	285.82
Net Fixed Assets	<u>1160.92</u>	<u>1137.89</u>	<u>1137.46</u>	<u>1375.12</u>
Current Assets				
Inventories	357.68	384.80	515.55	488.89
Sundry debtors	259.41	232.54	150.43	219.07
Cash & Bank Balances	17.83	25.35	39.37	35.62
Loans & Advances	71.93	56.50	87.58	82.17
	<u>706.85</u>	<u>699.19</u>	<u>792.93</u>	<u>825.75</u>
Less:				
Current Liabilities & Provisions Liabilities	263.26	405.57	388.74	679.27
	<u>443.59</u>	<u>293.62</u>	<u>404.19</u>	<u>146.48</u>
Miscellaneous Expenditure	52.62	46.57	40.66	35.36
Profit & Loss A/c	138.89	303.12	708.66	1040.71
	<u>1796.02</u>	<u>1781.20</u>	<u>2290.97</u>	<u>2597.67</u>

	Year I Rs.	Year II Rs.	Year III Rs.	Year IV Rs.
LIABILITIES				
Share Capital	266.85	287.79	287.79	287.79
Reserve & Surplus	12.25	15.00	15.00	15.00
Secured Loans	1044.39	1059.43	1604.14	1688.29
Unsecured Loans	42.70	69.17	113.82	104.41
Interest payable in future over contracted period on term loans	429.83	349.81	270.21	502.18
	<u>1796.02</u>	<u>1781.20</u>	<u>2290.97</u>	<u>2597.67</u>

**ANNEXURE III (b)
PROFIT & LOSS STATEMENT**

(Rs. in lakhs)

	*Year I Rs.	Year II Rs.	Year III Rs.	Year IV Rs.
INCOME				
Sales	561.9	498.17	417.84	559.10
Other Income	62.14	56.23	80.29	396.78
	<u>626.06</u>	<u>554.40</u>	<u>498.13</u>	<u>955.88</u>
EXPENDITURE				
Personnel	34.51	32.01	39.86	43.96
Manufacturing expenditure	484.02	442.39	520.43	849.79
Admn. selling & other expenditure	84.68	80.93	128.94	142.80
Interest & Financial charges	73.12	98.96	144.61	152.20
Depreciation	85.76	58.26	63.91	77.87
Misc. expenses written off	2.86	6.08	5.90	5.34
Prior period adjustments	—	—	—	15.97
Loss for the year	138.89	164.23	405.54	332.05
Balance b/f.	—	138.89	303.12	708.66
	<u>138.89</u>	<u>303.12</u>	<u>708.66</u>	<u>1040.71</u>

*Year for 18 months.

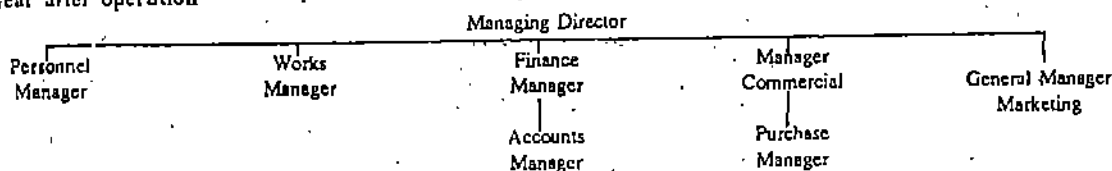
ANNEXURE IV

	Year I	Year II	Year III	Year IV
Sales				
—Prime Tube	5537	3971	3399	3972
Production	6250	4800	3151	4127
Tube Stock at end of year (Prime & Commercial)	1263	2054	1439	948

Note: All figures in MT.

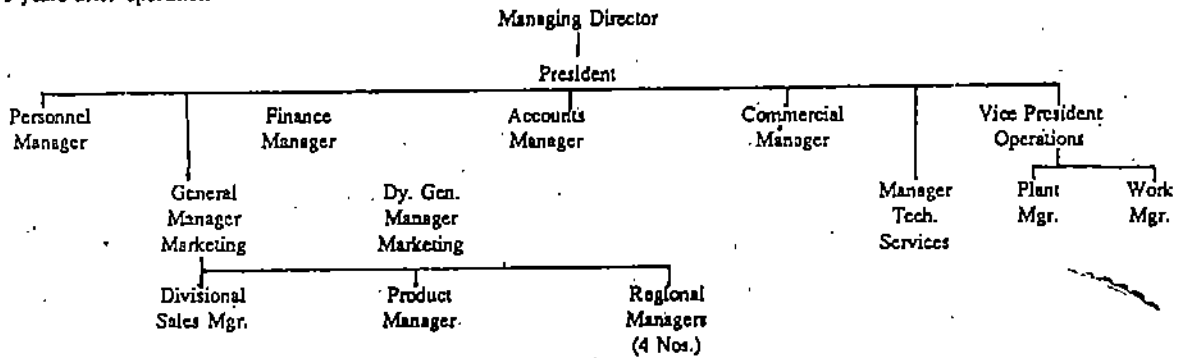
**ANNEXURE V
CHANGING ORGANISATIONAL STRUCTURE**

One year after operation

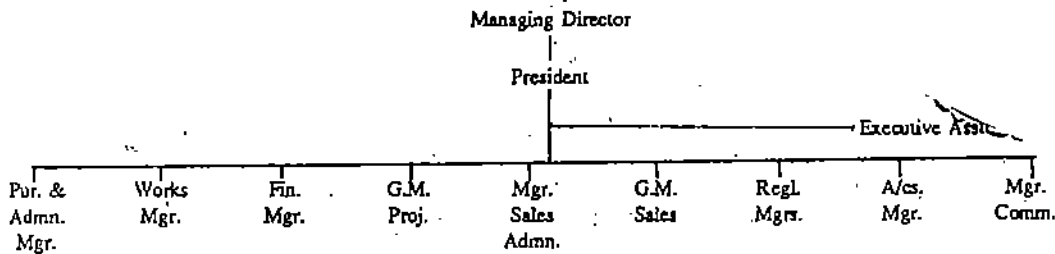


ANNEXURE V (Contd.)

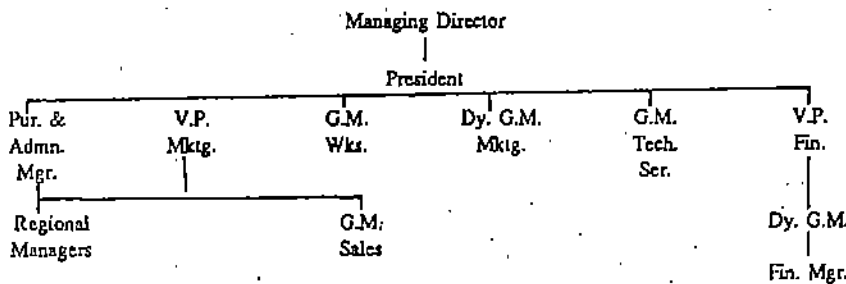
Two years after operation



Two and a half years after operation



Three and a half years after operation



ANNEXURE VI

NOTE ON ISI SPECIFICATION FOR TUBES

The Indian Standards Institution has given different specifications for tubes depending on the end usage. Totally there are about 48 standards on Steel Tubes, Pipes and fittings. Apart from these there are standards pertaining to design practices to be followed for design with tubular members.

The important Indian Standards which have a bearing on HST's business are as below :-

IS	806	—	1968	—	Code of practice for use of Steel Tubes in General Building Construction.
IS	1161	—	1979	—	Specification for Steel Tubes for structural purposes.
IS	1239 (pts. I & II)	—	1979	—	Specification for Mild Steel Tubes, Tubulars and other wrought steel fittings.
IS	3074	—	1979	—	Specification for Steel Tubes for automotive purposes.
IS	3601	—	1966	—	Specification for Steel Tubes for Mechanical and General Engineering purposes.
IS	5429	—	1979	—	Dimensions for Steel Tubes for Automotive Purposes.

ANNEXURE VI (Contd.)

IS	7138	—	1973	—	Specification for Steel Tubes for Furniture purposes.
IS	9537 (pts. I & II)	—	1980	—	Specification for Conduits for Electrical Installations.

HST's marketing thrust was directed towards three sectors viz., Construction, Electrical Conduit and General Engineering.

IS specifies three grades of tubes for construction industry viz., — Yst 210, Yst 240 and Yst 310. Yst stands for yield strength expressed in N/mm^2 . Thus Yst 210 means the minimum yield strength is $210 N/mm^2$ and so on. HST's Supercoat Tubes have a yield strength in the region of $340-440 N/mm^2$. The existing design practices recommended by IS, however, only specifies parameters depending upon the three existing grades. The higher yield strength of supercoat tubes is thus not put to use if structural designers wish to follow IS 806 - 1968. The most important parameter used in construction with Steel Tubular sections is the slenderness ratio. IS 806 specifies the slenderness ratios to be used for different grades of tubes and for different axial load. While designing structures with SUPERCOAT tubes designers have to use the slenderness ratio specified for Yst 310 grade although strength of HST's tubes are much higher. The scope for optimisation in design is thus reduced.

The procedure for changing IS specifications is long drawn. Representations have to be made to ISI supported by evidences from independent testing entities. After the representation ISI will conduct its own investigations. All the evidence thus gathered will have to be examined by the relevant sectional committee. The committee if it is convinced of the necessity to modify the specifications will prepare a draft. This draft will have to be approved by the relevant Division Council before it is adopted by the Indian Standards Institution. The whole process is estimated to take about two years.

In the Electrical Conduits segment and General Engineering Segment, HST's tubes satisfy the requirements of the relevant standards. If a manufacturer wishes to use the ISI certification mark on its product, it has to apply to IS for a licence along with the prescribed fee. There is a well defined system of inspection, testing and quality control which is devised and supervised by the ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to the standard as a further safeguard. An annual fee is charged by ISI towards surveillance.

INDIAN PETRO-CHEMICALS CORPORATION LTD.

IPCL is considered to be a bright star among the public sector undertakings. Its performance is likened with the performance of Reliance Industries Ltd. in terms of capacity utilisation, payback period of the projects and its dash to go ahead with the projects notwithstanding the fact that its request, to the Planning Commission, to allocate resources for a massive project was turned down. Besides, its performance needs to be reviewed in the background that it agreed to produce chemicals which were refused by well-established private sector units. How to improve its performance, however, continues to be a major concern of the Chairman.

Historical Perspective

IPCL is a Government Company under section 617 of the Companies Act, 1956 and is wholly owned by the Government of India. It was incorporated on March 22, 1969 with registered office at P.O. Petrochemicals, Distt. Vadodara, Gujarat.

The Corporation has established a large integrated petro-chemicals complex near Vadodara. The plants in the complex produce a variety of polymers, fibre, fibre intermediates and chemicals. Several of the products have been produced for the first time in the country.

1973 is an important landmark in the history of IPCL when the Corporation started producing for the time in India a range of xylenes, dimethyl terephthalate (DMT). Production of DMT helped substantially in the subsequent growth of the polyester staple fibre and filament yarn industry in the country. In 1978-79, the Corporation commissioned its multiunits olefins complex at a total cost of Rs. 350 crores. The complex includes production of major intermediates such as ethylene, propylene, benzene and butadiene, polymers such as low density polythelene, polypropylene, polybutadiene rubber, a variety of industrial chemicals such as acrylonitrile, ethylene glycol and linear alkyl benzene and the novel acrylic fibre which substitutes wool.

Major achievements during the year 1983-84

- i) With total indigenous efforts, the production of four acrylates, viz., methyl, ethyl, butyl and 2-ethyl hexyl was achieved during the year. The distinguishing feature of this plant is that it is based on indigenous technology in collaboration with National Chemicals Laboratory and is the only type in the country capable of producing wide range of acrylates.
- ii) The Vinyl Chloride and Polyvinyl Chloride (VC/PVC) Project for the manufacture of 57,300 metric tonnes per annum of VC, 55,000 metric tonnes per annum of PVC and 1,00,000 metric tonnes per annum of ethylene dichloride (EDC) was substantially completed during the year. EDC plant was commissioned successfully on March 21, 1984. Production of Vinyl Chloride monomer commenced on March 31, 1984.
- iii) During the year, another new project namely the Petroleum Resins Project, had made considerable progress and by the financial year end, the project was mechanically complete.
- iv) A 130 metric tonnes per hour boiler was commissioned in June 1984. The installation and completion of boiler was done in a record period of 21 months.
- v) The Corporation received the Award of Honour, being the highest recognition, from the National Safety Council, U.S.A. in addition to receiving during the year the Award of Merit from that Council. The Gujarat State Safety Council Awards for the year were also won by the Corporation.

Case (1988) prepared by Prof. O.P. Chopra of the Faculty of Management studies, University of Delhi

Case material has been prepared to serve as a basis for class discussion. Cases are not designed to present illustrations of either correct or incorrect handling of administrative problems.

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Market and Competition

Of course, other public Sector giants like Indian Oil Corporation and Oil and Natural Gas Commission make far more money than IPCL, and have bigger investment projects but there is one crucial difference: the other profitable organisations function under monopoly conditions and enjoy administered prices. In contrast, as the Chairman points out, "We have to compete in the marketplace with private companies, and against imports on the open general licence (OGL)."

The competition between IPCL and Reliance is about to intensify, with Reliance planning to move into some of IPCL's market strongholds : linear alkyl benzene and monoethylene glycol (raw materials for detergents), acrylic fibre and polyvinyl chloride.

Finance

IPCL's initial Rs. 28 crore investment in an aromatics plant in the early 1970s got a pay back in just three years, and subsequent investment of Rs. 351 crore in a series of downstream projects got a pay back in five years. The IPCL undertook this investment because but for its entry, its mother unit (which cracks naphtha into a molecular components at 850 degrees Celsius) would have had no market.

Last time IPCL got budgetary support was way back in 1978. Yet the Company has surplus funds; it has repaid its loans ahead of schedule and is sitting on Rs. 44 crore in cash and bank (August 1985). It contemplates to undertake fresh investments worth Rs. 1385 crore in the coming five years (most of it on a new gas cracker complex at Nagothane in Maharashtra's Raigad district). Out of this proposed investment about Rs. 625 crore will be generated internally and the rest will come as loans from variety of sources, and through the issue of debentures.

In early 1985, the Planning Commission told the Company that the government did not have money to invest in Rs. 1,200 crore gas cracker complex. Unruffled by this, the Board of Directors met and decided to go ahead with the project with their own funds and borrow from different sources including the World Bank and domestic financial institutions.

The Company's officials indicate that despite the massive investment projects, financial projections show that the company will have plenty of financial cushion left in its debt equity ratio to undertake additional borrowings.

Safety Record and Other Contributions

The Corporation takes pride in its safety records. It is asserted that the Chemical Industry in the U.S. has the accident rate involving worker absenteeism of Rs. 4.89. The average for India is 7.5 and at the IPCL the figure is less than 1.02.

The official talk of ushering in the plastics age in India: introducing polythene lining for irrigation canals and ponds to prevent water seepage, replacing milk bottles with cheaper plastic packaging, using PVC pipes for the water, economising method of drip irrigation in the semi areas of Karnataka and Gujarat, encouraging the tyre industry to use synthetic rubber, introducing the era of use of synthetic detergents as a substitute for washing soap, getting the Food Corporation to store its grains under polythelene sheets. This is termed by the Marketing Director as the concept selling of plasticulture.

Conscious of the fact that it spends Rs. 30 lakh every day on fuel and power, the Company has launched a major energy saving programme which has already resulted in a saving of Rs. 22 crore over the last five years.

The difficult business of staying abreast of technologies in a rapid technological changing environment is being attempted by using the latest technology in Maharashtra unit. This is three steps ahead of that used in existing polypropylene plant at Vadodara. Officials claim that only two plants of its type exist elsewhere in the world and the use of technology involves substantial cost economies.

Industrial Relations

Industrial relations are said to be good as judged by the number of mandays lost. However, a few executives feel that this has been achieved by conceding to all requests of labour. There is said to be a certain amount of impatience among engineers. During the initial growth phase the young engineers found the job challenging and were given commensurate rewards. That phase being over, these engineers find their jobs monotonous and uninteresting. However, the perception of the concerned Ministry about the organisation is "well managed"

TECHNICAL NOTE

The origins of the petro-chemical industry can be traced back to the evolution of the organic chemical industry at the beginning of this century with the production of synthetic dyestuffs in Germany. Petro-chemical products are essential for the production of a diverse set of products such as plastics and resins, synthetic fibres and rubbers, solvents and paints, fertilisers, drugs, explosives and many more.

The production of plastic materials has grown enormously over the last twenty years. Its output in volume terms could approach that of steel by the end of century. Plastics are used in all walks of life. They also find application in cars as well as the latest designs of fighter and outer space aircraft.

Characteristics : The petro-chemical industry of today is characterised by the worldwide variety of its products and their end uses, the complexity of their production, the alternative routes of production processes to final products and the flexibility in the choice of feedstocks. Petroleum derived chemicals are numerous; they include over 90 per cent of organic chemicals and a significant amount of inorganics such as ammonia, ethylene, sulphur and carbon black. Majority of petrochemical is consumed in the form of intermediates for the production of plastics, synthetic rubber and synthetic fibres, fertilisers, detergents and pesticides.

The production of these (world production) has increased rapidly from about 3 million tonnes in 1950 to over 70 million tonnes by the mid— 1970s, with plastics accounting for over half of production.

The industry's growth rates, in the range of 15 to 20 per cent per annum, were a result of the combination of vast capital investments and R & D expenditures which resulted in rapid technological improvements on one hand and the availability of cheap raw materials and low energy costs on the other, which allowed the new products to supply the increasingly growing markets at competitive prices, substituting many natural materials as well as finding new applications.

Since early 1970 there is a slow down in the growth of the petrochemical (at the global level). The lower growth rates, the spreading of over capacity, particularly in Western Europe, and sensitivity of production costs to factor inputs of raw materials and capital costs in the late 1970s are all signs of maturity.

Questions

- 1 What is the business of IPCL? To what extent does it enable the organisation to take advantage of synergy?
- 2 Comment upon the factors that are critical for the survival of the organisation.
- 3 Critically examine the policies pursued by the organisation regarding finance, marketing and personnel.
- 4 Generate strategic alternatives and recommend at least two of them, stating explicitly the assumptions regarding opportunities offered by the environment.

EXHIBIT 1

TABLE GIVING INFORMATION ON PRODUCTION OF DIFFERENT PRODUCTS AGAINST THEIR INSTALLED CAPACITY

(All figures in metric tonnes)

Major Products	Installed Capacity	Production In				
		1985-86	1984-85	1983-84	1982-83	1981-82
1 Low Density Polyethylene	80,000	75,566 (94)	82,081 (103)	72,043 (90)	78,443 (98)	68,868 (86)
2 Polypropylene	30,000	24,066 (80)	27,146 (90)	24,366 (81)	24,045 (80)	20,631 (69)
3 Polybutadiene Rubber	20,000	14,402 (72)	16,457 (82)	11,468 (57)	16,176 (81)	11,481 (57)
4 Benzene	23,600	29,052 (123)	29,154 (124)	22,678 (96)	23,752 (101)	16,501 (70)
5 Ethylene Glycol/Oxide	20,000	16,900 (90)	14,467 (76)	14,467 (72)	14,000 (70)	12,075 (60)
6 Linear Alkyl Benzene	30,000	33,440 (111)	29,219 (97)	17,509 (58)	29,165 (97)	30,331 (101)
7 Acrylonitrile	24,000	20,832 (87)	21,052 (88)	16,477 (69)	17,965 (75)	13,981 (58)
8 Acrylic Fibre	12,000			11,974 (100)	12,663 (105)	10,094 (84)
9 Xylenes	40,500	28,859 (72)	34,074 (84)	35,413 (87)	28,233 (70)	33,390 (82)
10 Dimethyl Terephthalate	30,000	26,002 (87)	26,560 (89)	25,059 (83)	22,883 (76)	27,317 (91)

Note : Figure 2 in brackets give percentage capacity utilisation.

EXHIBIT 2

SALES PERFORMANCE DURING THE LAST-THREE YEAR

(All figures in metric tonnes)

Product	1983-84	1982-83	1981-82
1 Low Density Polythelene	87,451	80,064	61,592
2 Polypropylene	26,544	23,066	22,960
3 Polybutadine Rubber	21,638	32,641	10,416
4 Benzene	15,395	13,350	7,977
5 Ethylene Glycol	9,523	11,087	11,729
6 Ethylene Oxide	3,325	2,873	1,643
7 Linear Alkyl Benzene	21,638	32,641	25,457
8 Acrylonitrile	5,238	5,261	4,528
9 Acrylic Fibre	13,286	11,590	11,529
10 Orthoxylene	18,431	13,365	16,972
11 Mixed Xylenes	3,518	4,096	5,776
12 Paraxylene	2		13
13 Dimethyl Terephthalate	24,859	22,850	38,441

EXHIBIT 3

INDIAN PETRO-CHEMICALS CORPORATION LTD.

(Rs. in lakhs)

Details	1983-84	1982-83	1981-82
Working Results			
Sales/ Operating Income (Gross)	47231	4,42,68	40622
Less—Commission/ Rebate and Discounts on Sales	653	11,94	507
Add—Other Income/ Receipts	841	5,36	433
Net Income	47419	4,36,10	40548
Expenses on Production			
Accretion/ Decretion in Stock	36480	3,51,32	28621
Finished Goods	2889	(—) 4,84	1425
Work-in-Progress	(—) 360	(—) 2,57	641
Depreciation Provision	3700	29,20	2,690
Deferred Revenue Expenditure Written off			
Total	42709	3,73,11	33371
Gross Profit/Loss	4710	62,99	7171
Interest:			
On Central Government Loans	529	6,97	894
On Foreign Loans	3	4	8
On Other Loans	452	3,99	366
On Cash Credit	53	1,41	350
Less Interest Capitalised	7	30	
Total Interest	1030	12,11	1618
Tax Provision	515		
Net Profit/ Loss	3165	50,88	5553
Dividends Declared			
Retained Profit	3165	50,88	5553
Year End Inventories:			
Raw Materials and Components:			
Imported	614	3,79	210
Indigenous	783	7,08	807
Spare Parts	2047	19,73	1381
Stores other than Spares	1508	16,64	1680
Finished Goods	2767	56,56	5172
Work in Progress (including Advance/ Stage Payments)	1194	8,34	577
Surplus Stores:			
Stores in Transit	421	6,24	340
Other Stores	728	5,80	589
Total	10062	1,24,18	10756

EXHIBIT 4

**INDIAN PETRO-CHEMICALS CORPORATION LTD.
MANAGEMENT RATIOS**

	1983-84	1982-83	1981-82
General :			
Capital Employed (Rs. in lakhs)	37869	39002	37980
Value of Production : (Rs. in lakhs)	36405	36719	32687
Value of Production : Capital Employed (%)	96.1	94.1	86.1
Cost of Production (Rs. in lakhs)	33566	32167	27567
Material Cost : Cost of Production (%)	48.6	51.7	44.1
Manpower Cost : Cost of Production (%)	6.0	4.9	4.7
Value Added (Rs. in lakhs)	13768	14372	13311
Value Added : Capital Employed (%)	36.4	38.8	35.1
Sales :			
Cost of Sales (Rs. in lakhs)	36748	32620	30140
Cost of Sales : Net Sales (%)	94.4	90.7	86.7
Net Sales : Capital Employed (%)	102.8	92.2	91.6
Net Sales : Current Assets (%)	189.6	158.6	173.1
Personnel :			
No. of Employees (other than casual)	6422	5745	5350
Average Capital Employed per Employee (Rs.)	589676	678886	709346
Average monthly emoluments per employee (Rs.)	2616	2266	2011
Value of Production per man month (Rs.)	47240	53262	50914
Value Added per man month (Rs.)	17866	20847	20734
Average monthly sales per employee (Rs.)	50522	52187	54132
	1983-84	1982-83	1981-82
Inventories :			
Finished Goods : Net Sales (%)	7.1	15.7	14.9
Work-in-Progress : Cost of Production (%)	3.6	2.6	2.1
Finished Goods Inventory (in terms of no. of days' sales)	25.9	57.4	54.3
Raw Material Inventory (in terms of no. of days' Consumption)	136.5	130.2	149.7
Work-in-Progress Inventory (in terms of no. of days' Cost of Production)	12.0	8.3	6.4
Sundry Debtors (in terms of no. of days sales)	33.2	34.4	29.8
Financial :			
Gross Margin : Capital Employed (%)	22.2	23.6	26.0
Gross Profit : Capital Employed (%)	12.4	16.2	18.9
Gross Profit : Net Sales (%)	12.1	17.5	20.6
Profit Before Tax : Net Worth (%)	9.7	14.6	18.7
Net Profit : Paid-up Capital (%)	17.0	27.4	29.9
R and D Expenditure : Net Sales (%)	0.3	0.4	0.3

EXHIBIT 5

TEN YEARS AT A GLANCE

(Rs. in Millions)

Particulars	Equity	Borrowing & Deferred Credits	Reserves & Surplus	Current Assets	Current Liabilities	Gross Block (including capital work-in-progress)	Sales and Other Income	Profit before Depreciation, Interest & Taxes	Depreciation	Interest	Dividend	Provision for Taxes	Profit after Taxes but before DRR/AR	Number of Employees	Year
—	1860.0	773.9	272.1	842.1	313.7	2499.9	404.1	178.7	38.7	11.6	—	53.5	74.9	2860	76-77
—	1860.0	1294.9	295.3	765.0	222.2	3114.6	474.0	124.3	85.3	15.8	—	—	23.2	3842	77-78
—	1860.0	1386.1	164.3	895.3	248.5	3211.8	947.3	230.2	239.4	90.7	—	31.1	(-)131.0	4577	78-79
—	1860.0	1599.2	221.3	1303.9	194.6	3288.3	1749.8	473.4	275.4	140.9	—	0.2	56.9	4986	79-80
—	1860.0	1663.5	562.0	1868.8	298.8	3496.8	2838.2	773.0	265.0	167.2	—	—	340.8	5218	80-81
—	1860.0	1081.0	1117.5	1879.5	296.7	3724.9	4105.4	986.1	268.9	161.9	—	—	555.3	5350	81-82
—	1860.0	1031.6	1626.3	2268.1	373.7	4163.8	4487.0	921.9	292.0	121.1	—	—	508.8	5745	82-83
—	1860.0	636.6	1942.8	2053.1	367.4	4663.0	4807.2	835.8	370.0	103.0	—	51.5	311.3	6422	83-84
—	1860.0	388.7	2261.2	2516.6	686.4	5080.2	5969.3	1192.2	517.0	65.1	186.0	105.7	504.4	6831	84-85
—	1860.0	840.3	2646.9	3208.2	1125.8	6153.6	6988.8	1312.0	481.6	52.2	186.0	211.0	567.2	7236	85-86

EXHIBIT 6

TARGETS AND ACTUAL PRODUCTION OF CHEMICALS AND PETRO-CHEMICALS DURING THE YEAR 1984-85 AND THE TARGETS FOR 1989-90

	1984-85 Targets Capacity Production	1984-85 Actual Capacity Production	1989-90 Targets Capacity Production
1 L.D. Polyethylene	112 100	122 107.2	282 186
2 H.D. Polyethylene	30 27	30 38.9	155 125
3 Polyvinyl Chloride	173 128	139.4 84	288.4 233
4 Polystyrene	23.5 20	26.2 17.6	38.5 29
5 Polypropylene	30 27	30 27.3	121 79
6 Styrene Butadine (rubber)	30 27	30 21.5	70 46
7 Polybutadine (rubber)	20 18	20 16.6	60 26
8 Acrylonitrile	24 20	24 19.5	30 26
9 DMT	66 56	139 26.6	224 173-194
10 Caprolactam	20 18	20 16.3	150 118-133
11 Detergent Alkylate	37.5 35	30 29.5	143.5 92
12 Methanol	124 100	44.5 44	170 150

Source : Seventh Five Year Plan

EXHIBIT 7

GROWTH OF DEMAND FOR SELECTED PETRO-CHEMICAL PRODUCTS
(PER CENT PER ANNUM)

Petro-chemical Product	World total			Industrialised countries*			Developing countries		
	1975-1979	1980-1985	1985-1990	1975-1979	1980-1985	1985-1990	1975-1979	1980-1985	1985-1990
Basic Petro-chemicals									
Ethylene	11.2	1.5	3.7	10.4	1.0	2.8	24.0	7.5	7.4
Propylene	11.8	3.0	3.7	8.7	2.7	3.4	26.0	7.0	6.3
Butadiene	8.8	2.9	5.1	7.8	2.4	4.7	18.9	7.5	7.8
Benzene	11.0	1.8	2.3	10.8	1.4	2.0	12.8	7.2	5.9
Xylene	11.8	2.7	2.6	9.3	2.0	1.7	41.4	9.5	8.5
Methanol	10.7	3.1	4.4	10.1	2.8	3.8	22.9	7.4	10.0
Thermoplastics									
LDPE**	10.3	4.3	5.0	11.3	3.5	4.8	19.1	8.4	5.7
HDPE	17.9	5.9	5.1	15.9	5.5	5.0	24.4	8.3	5.4
PP	20.4	6.4	6.6	19.0	6.0	6.5	28.7	8.2	7.4
PVC	11.4	4.0	3.9	10.6	3.3	3.4	16.1	7.8	6.3
PS	11.9	3.6	3.6	11.2	3.1	3.2	18.1	6.7	5.2

* Including Eastern Europe and the USSR.

** Includes LLDPE

Sources : UNIDO, ID/ WG. 336/3, May 1981, p. 54, UNIDO, IS. 427, Dec. 1983, SRI

EXHIBIT 8

ESTIMATES OF CAPACITY TO PRODUCE SELECTED PETRO-CHEMICALS IN INDUSTRIALISED COUNTRIES (MILLION TONS)

Petro-chemical Products	Japan		W. Europe		N. America		Soviet Union and E. Europe		Other Countries		Total	
	1979	1984	1979	1984	1979	1984	1979	1984	1979	1984	1979	1984
Basic petrochemicals												
Ethylene	5.98	5.43	16.11	14.58	18.48	20.57	3.66	6.32	0.45	0.64	44.60	47.54
Propylene	3.73	3.76	8.99	8.22	9.96	11.38	1.77	2.77	0.26	0.22	24.71	26.35
Butadiene	0.74	0.79	2.19	2.08	2.31	1.88	0.44	1.00	0.06	0.12	5.74	5.87
Benzene	2.80	2.89	6.71	7.15	8.62	9.53	2.26	3.70	0.14	0.30	20.53	23.57
Xylenes	1.11	1.86	1.98	2.35	3.05	6.30	0.90	1.70	0.09	0.09	6.87	7.34
Methanol	1.30	0.53	3.08	2.80	5.51	7.09	2.25	3.30	0.12	0.50	12.27	14.72
Thermoplastics												
LDPE*	1.50	1.40	6.29	5.53	4.17	3.81	1.46	1.61	0.20	0.22	13.62	12.57
HDPE	0.90	1.07	2.43	2.86	2.82	5.28	0.30	0.88	0.15	0.27	6.60	10.36
PP	1.15	1.39	2.20	2.40	2.54	2.55	0.35	0.81	0.18	0.18	6.42	7.33
PVC	1.86	1.84	5.39	5.47	3.96	4.48	1.33	2.60	0.31	0.31	12.85	14.70
PS	0.92	1.04	2.89	2.82	2.73	3.01	0.36	0.61	0.07	0.09	6.97	7.57

* Includes also LLDPE capacities.

Sources: UNIDO, ID/WG. 336/3, May 1981, p. 64; SRI

EXHIBIT 9

ORGANISATION CHART UP TO TWO LEVELS BELOW BOARD LEVEL DIRECTORS

SCALE OF PAY (00)

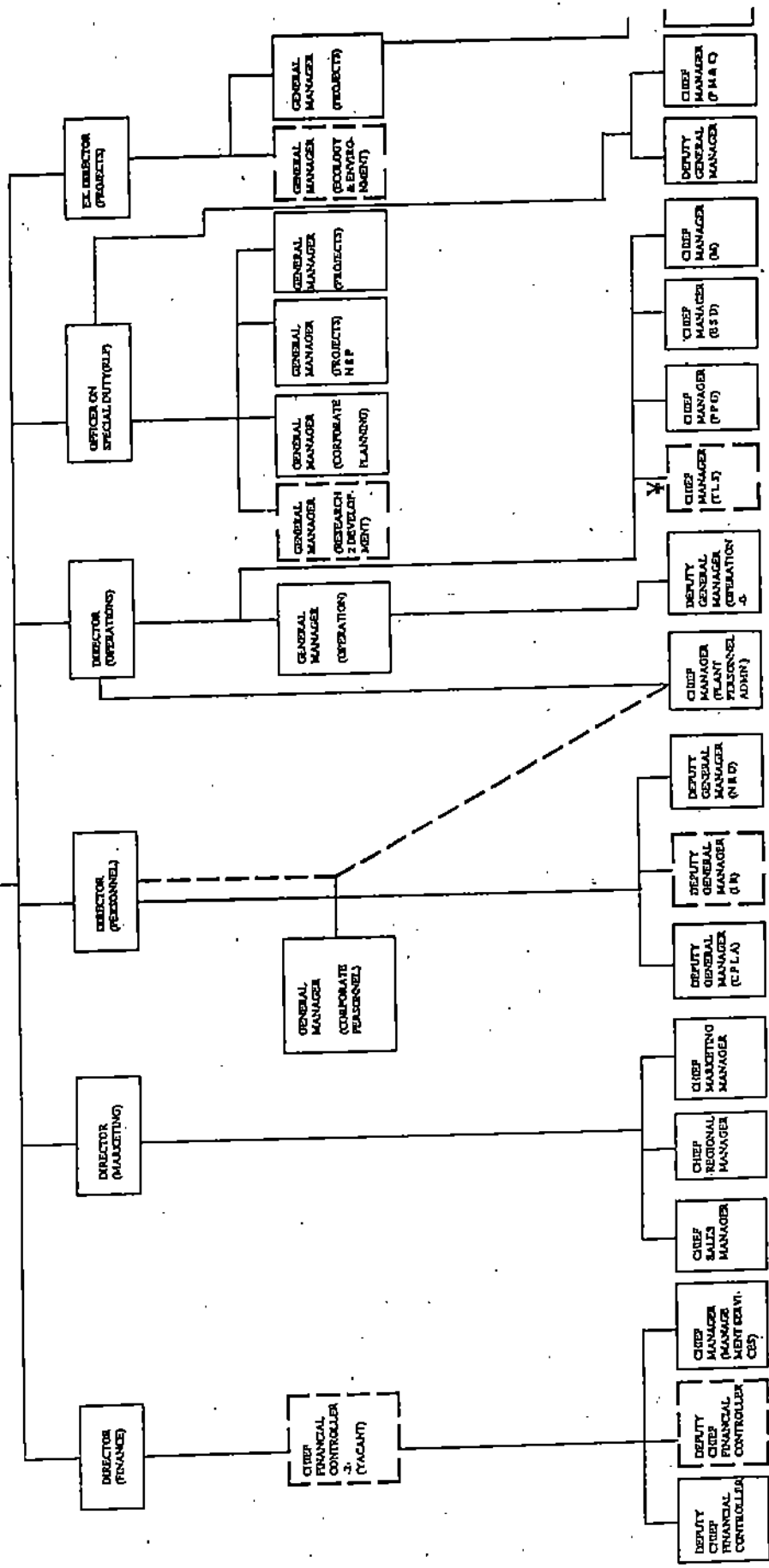
1500
50/0

1000
13/00

1500
4000

2000
1500

CHAIRMAN & MANAGING DIRECTOR



□ VACANT POST

• AT PRESENT OPERATED BY TECHNICAL ADVISER

UNIT 4 CASE : PUNJAB TRACTORS LIMITED (R)

Company Background

Punjab Tractors Limited (PTL) was promoted by Punjab State Industrial Development Corporation Limited (PSIDCL) with the objective of promoting new industrial projects in the state of Punjab on 27 June 1970 at Chandigarh. The unit went into production in 1974. The tractor was based on completely indigenous design and was the result of six years of design, development and field proving effort at the Central Mechanical Engineering Research Institute (CMERI), a national laboratory under the Council of Scientific and Industrial Research (CSIR) of the Government of India. The group of design engineers, who had developed the first model at CMERI, were later transferred to PTL to commercialise the product.

During the period 1974 to 1980 PTL increased its production and sales from 58 to 7116 tractors, gross block from Rs. 31.53 million to Rs. 97.25 million, net worth from Rs. 9.32 million to Rs. 51.10 million, gross income from Rs. 1.64 million to Rs. 345.54 million, earnings per share from nil to Rs. 16.08, number of employees from 518 to 2470, and market share from 1.0 per cent in 1974 to 11% in 1980. (See Exhibits 1 and 2 for some financial information.)

The character of the company has changed considerably during the last few years. In addition to manufacturing tractors, PTL now manufactures harvester combines and grey iron castings. Recently PTL entered into a technical and financial collaboration with Toyokogyo Co. Ltd. of Japan for manufacture of light commercial vehicles and a new company named Swaraj Vehicles Limited has been formed for this purpose.

This case describes the process of development of indigenous technology at CMERI and its subsequent commercialisation by PSIDCL and PTL.

About CMERI

The CMERI was established in 1958 at Durgapur in West Bengal as one of the links in the chain of national laboratories under the Council of Scientific and Industrial Research (CSIR) of the Government of India. The objectives of laboratories set up under CSIR were :

- i) Development of substitutes for imported raw materials.
- ii) Indigenous manufacture of essential components hitherto imported.
- iii) Development of indigenous know-how at a significantly advanced level to be commercially utilisable in respect of those articles on which repeated foreign collaboration has been sought.
- iv) Orientation of industrial research to the needs and requirements of industry.

CMERI's activities were to be exclusively devoted to design, development and improvement of machinery and equipment, development and improvement of process technology, and evaluation methods for engineering products and materials. In 1965, it was organised under seven divisions: i) Applied Mechanics, ii) Applied Science, iii) Automobile Engineering, iv) Heat Power and-Refrigeration, v) Materials vi) Product Development and Industrial Design, and vii) Production Engineering.

Aurora and Morehouse (1974) mention that :

... The preliminary work of developing the Institute, namely the buildings, ordering and erection of equipment, and recruitment of scientific and technical staff, took a long time. When Mr. G.S. Chowdhury became director-in-charge in 1962, the Institute's Professional staff was composed primarily of scientific and included only two mechanical engineers. During his tenure, Mr. Chowdhury was able to enlarge the staff of scientist-engineers and created several new research units related directly to industrial problems, such as industrial design, welding, automobile production and refrigeration. It was only in 1963 that significant activity in applied research began at the Institute. In

Case (1983; revised 1985) prepared by Prof. Shekhar Chaudhuri, Indian Institute of Management, Ahmedabad.

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Case material has been prepared to serve as a basis for class discussion. Cases are not designed to present illustrations of either correct or incorrect handling of administrative problems.

June 1964 Mr. Chowdhury was replaced as director-in-charge by M.M. Suri. He too was a person of outstanding energy and imagination... Within the first three years of his accession to the directorship, collaboration with industry increased remarkably (Table 1).

Table 1: Collaborative Agreements 1964-67

Year	Number of industrial collaborators	Initial fees received for industrially sponsored research in Rs.	Fees received for the evaluation of products & materials in Rs.
1964-65	6	25,000.00	19,000.00
1965-66	24	175,000.00	17,000.00
1966-67	28	48,500.00	99,000.00

Demand for Tractors

Up to the end of the First Plan period, tractor requirements were met to a some extent by indian firms assembling semi-knocked down packs in agreement with foreign principals. In 1955 a committee was appointed by the Ministry of Commerce to estimate the total demand for tractors. Exhibit 3 shows the estimates of tractor requirement by the year 1960-61. The Fourth Plan estimates made by the Ministry of Agriculture are shown in Exhibit 4. Exhibit 5 gives in concise form estimates made by a number of organisations.

The sudden increase in perceived demand for tractors could be explained by the occurrence of Green Revolution in the mid sixties. The Indian Agricultural Research Institute made an interesting analysis of the power build-up required during the Fourth Plan period. This study highlights the fact that if the Fourth Plan food production targets were to be met, it was necessary to step up the power input into agriculture from 42.9 million H.P in 1965-66 to 111 million in 1970-71. The study, after looking into alternative sources of power, like human and bullock power, concluded that tractors and power tillers would be required to provide an additional 47.5 million H.P. in 1970-71. Their estimated tractor requirement is presented in Exhibit 6.

Government Policy and Development of the Tractor Industry

The Indian tractor industry is now more than 25 years old. A beginning with indigenous manufacture was made in 1959 when the first tractor manufacturing unit was set up by Eicher Tractors Limited in Faridabad near New Delhi. Though indigenous manufacture was initiated as early as 1959 there was significant dependence on imports till the end of the sixties as could be seen from Exhibits 7 and 8. However, the industry has grown quite rapidly since the mid 70s and is now said to be the fifth largest in the world. In 1984 the tractor industry produced more than 80,000 tractors.

The various policies enunciated by the Government of India from time to time have played an important role in the development of the industry. In this section we shall try to explore the more important policies from the point of view of the tractor industry.

As seen in the section on demand for tractors, the real spurt in the perceived demand came with the onset of the Green Revolution. The introduction of high yielding seeds in the mid sixties in what growing areas of northern India and its adoption by farmers led to the need for mechanisation of farming activities and hence the demand for tractors spiralled.

Import of Tractors

Tractors were allowed to be imported by established importers, who were required to provide evidence that 1) they were accredited agents of manufacturers of imported tractors, 2) they had adequate workshop facilities and trained engineers to service the imported tractors, and 3) the makes of tractors to be imported by them had obtained specific official test certificate. Imports were allowed relatively easily till 1956, though certain procedural modifications were made because of the deteriorating foreign exchange position of the country. From 1957, besides the normal trade channels, tractors were imported through the State Trading Corporation largely from Soviet Russia and Czechoslovakia. During the period 1961-70, Russia, Czechoslovakia and Rumania were the major sources for imported tractors.

During 1971 and 1972 massive quantities of tractors were imported under a world Bank Scheme for financing integrated agricultural projects in India. However, from 1974 onwards import of complete tractors

was stopped.

An interesting aspect is that prices of tractors imported from East European countries were substantially lower than those of locally manufactured ones. The Government was of the opinion that such a policy of import of low priced tractors would not hurt the domestic industry as imports were allowed to bridge the gap between production and demand.

Industrial Licensing

During the period 1960-61 four firms were granted industrial licences to set up tractor manufacturing units with a total capacity of 11,000 tractors per year. As a result of the increase in perceived demand for tractors, the Government allowed the existing manufacturers to increase their capacities and also licensed an additional private firm and proposed to set up a public sector firm to manufacture tractors. The total licensed capacity in 1966 was 18,500 tractors per annum. The sudden spurt in demand from 1966 onwards prompted the Government to delicense the tractor industry on February 7, 1968. Nine new projects were approved. However, again when the demand seemed to stabilise and the industry seemed to be becoming extremely crowded by a large number of potential manufacturers, the Government brought the industry under the purview of industrial licensing in 1970. Ultimately, only a few projects finally materialised. During the period 1959-65, five firms set up plants for manufacturing tractors. In the second phase of the development of the industry six new units set up tractor manufacturing facilities. Two units were set up during the period 1981-83. Exhibit 9 gives the names of units, along with their collaborators and date of commencement of indigenous production.

Other Policies

- 1 To protect the interest of the farmers in a situation of shortage of tractors, the Government in 1967 imposed statutory control on selling prices of indigenously produced tractors. In 1971 the Government also imposed control on distribution of tractors. However, these controls were removed in 1974 and 1976 respectively.
- 2 To accelerate the pace of indigenisation the Government required new projects to give a plan of progressive indigenisation. Duties on imported components were raised considerably in 1969-70; however, in spite of heavy duties, imports from the East European countries were substantially cheaper than indigenously produced components. This hampered the pace of indigenisation.
- 3 To strengthen the demand for tractors the Government attempted to increase the credit facilities to farmers for purchase of tractors through directives to commercial banks to increase their proportion of rural lending and through expansion of rural branches. Agricultural development branches were created within commercial banks specifically for advancing rural credit. Re-finance facilities to commercial banks were analysed and special schemes for encouraging tractorisation were developed.

Genesis of SWARAJ

The story of SWARAJ ("Swaraj" means self-rule) tractor began in 1965 when the Fourth Five Year Plan was being formulated. One of the projects for which the Government of India was thinking of obtaining aid from Soviet Russia was the establishment of a plant for manufacturing a 20 H.P. tractor in India. Tractors in the lower horse power ranges were required in view of the pattern of landholding as shown in Exhibit 10. The aid envisaged to be obtained from Soviet Russia was both financial and technical. However, the Russians indicated their reluctance to assist the project.

Mr. M.M. Suri, who was then the Director of the Central Mechanical Engineering Research Institute (CMERI), was also a member of the delegation which visited Soviet Russia. He felt that the project as formulated had excessive foreign exchange content and required a large number of Russian experts, and that it was not warranted with large idle capacities with Mining and Allied Machinery Corporation (MAMC), Durgapur, and Heavy Engineering Corporation (HEC), Ranchi, two public sector firms. Mr. Suri suggested to the then Deputy Chairman of the Planning Commission that CMERI could develop an indigenous tractor design that could be produced without external assistance or even imported parts.

The thinking of Mr. Suri and his associates who were to take up the project later was that the Indian industry was essentially foreign collaboration based. The diversity of the sources of technology posed a great problem to Indian planners, steel manufacturers and the users of various engineering products. Each new imported technology imposed fresh ancillary burdens for diverse components. They (PTL document) gave the example of the diesel engines:

... India manufactures a larger variety of diesel engines than any other country in the world, even though the total production is comparatively small. Each ancillary manufacturer has thus to cater to a very wide range of designs, sizes, and specifications of components which increases the cost of indigenous manufacture. Such a growth of national production has imposed on the country the choice between dependence on component imports, or in the alternate uneconomic production...

Mr. Suri began a crusade advocating the development of indigenous technology and was successful in getting the Government's approval for designing an indigenous tractor at CMERI.

A Committee of Technical Experts (CTE), comprising representatives of the industry, agricultural universities, farmers and the Tractor Training and Testing Station (TTTS) at Budni was constituted in 1965 at CMERI for directing the design team.

Regarding the role of the Planning Commission in this, Mr. Chandra Mohan as quoted by Bhatt 1978 said:

... If I look back, it was not the Planning Commission which assigned the task to CMERI. It was virtually Mr. Suri, who forced the Indian approach on the Planning Commission ...

The design team created at CMERI to work on the tractor project consisted of two production engineers, two design engineers, an industrial engineer, a foundry expert, a metrologist and two automotive engineers.

Development of Prototypes

The design team undertook intensive studies in the comparative merits of designs of various tractors available in the country. The tractor was to be engineered specifically for the Indian environment and to withstand Indian use and abuse.

The philosophy underlying the design may be gauged by the following statement (*ibid*):

At the time when Swaraj designs were initiated at CMERI I had analysed that considering the immense popularity of the Massey-Ferguson, Swaraj must be fully competitive with it, if not better.

Swaraj tractor was built to suit local conditions — farmers required a tractor in H.P. range of 20 to 30; such a tractor would mean lower capital and operating costs to the farmer. While explaining the basis of the design of Swaraj, Mr. Chandra Mohan (*ibid*) said:

... Economics of scale can only be related to the scale of production for any particular design and not when different designs are under consideration. Specific examples, which I may mention are:

- 1 Sheet metal (fenders, bonnets etc.) of tractors all over the world and more particularly from the developed countries, is so designed that it requires minimum tooling investments of Rs. 5 million and plant investments of Rs. 10 million. Designs have been developed basically to save labour. On the other hand Swaraj sheet metal requires a tooling investment of not more than Rs. 10,000 and it is being made in three small-scale units with investments of around Rs. 1,00,000 each.
- 2 The casting wall thickness for tractors in the developed countries has been so reduced over the years to save material costs that they can be produced in foundries with investments larger than Rs. 100 million. On the other hand Swaraj castings developed specifically for technology levels readily available in India are being made in foundries with capital investments as low as Rs. 5,00,000... Our production costs with these designs are decidedly lower even at low production levels...

According to the top management of the organisation:

... Indian standard materials are used to ensure 100% indigenous content. Secondly, a suitable diesel engine already manufactured in bulk is engineered into the tractor to reduce project capital cost and administrative effort to nearly half. Thirdly, ancillary components, switches, clips, clamps, fasteners, bushes, bearings, electrical steering wheel, gauges, etc., which are already being manufactured in India for some user or the other, are used in the Swaraj to avoid developing new ancillary components to the extent possible, so that the benefits of rationalisation can accrue to the manufacturers of SWARAJ.

Design Features

Swaraj tractor was initially built around a four-stroke, two cylinder, air-cooled engine that was being manufactured by the Kirloskar Group within the country. Later on, the management decided in favour of a water-cooled engine. The managing director of the company explained:

We did eventually decide to switch to a water-cooled engine, despite proven technological advantages of air-cooled engines. A casual remark of a very senior Punjab Government official made

us take this decision: "As it is you are trying to market an unknown tractor based on Indian know-how: why open a second front by introducing an air-cooled engine with which our farmers have had bitter experience on some tractors earlier. One front at a time is better strategy..."

Some of the salient features of the original design (CMERI) were the following:

The tractor had a 20 HP diesel engine of French design with a rated speed of 2000 R.P.M. and a compression ratio of 16:1 with dual range four speed transmission so as to cover a wide variety of jobs ranging from heavy duty to fast transport, and a provision for an independent power take off unit which could be engaged or disengaged when the tractor was in motion and could be used as a prime mover for pumps and other similar equipment. Engine cooling was achieved by an axial blower. Implement movement was controlled by a hydraulic system with fingertip control. For improved traction in slippery and muddy spots a foot operated differential lock was provided. There was also provision for adjustment of front and rear axles, and manual steering.

Design Innovation

Availability of hydraulics was considered as a major requirement for a good tractor. Providing a sophisticated system with automatic draft and position control of implements without infringement of the existing patents posed a problem. The CMERI team successfully developed an original single lever automatic depth-cum-control hydraulic system, which is covered extensively by CMERI patents in India, U.K., Japan, West Germany, U.S.A., France, Poland and Yugoslavia. All known tractor hydraulic systems in the world employ two or more remote control levers for controlling the working of the hydraulic system. The Swaraj system is an improvement upon the existing design concept. The entire control is effected by single lever which leads to:

- i) Easier training of the farmer for handling implement operation efficiently.
- ii) Lesser chances of confusion during operation.

Field Testing of the Prototypes

Test rigs were developed to carry out endurance tests on the front axles, engine, main castings, etc. to fully prove each one of these sub-assemblies prior to their assembly on the prototypes. The first prototype tractor was assembled in 1967 and was put to extensive endurance tests in CMERI lasting 1197 hours non-stop running with 10-30% overload during the hot summer months when the ambient temperature was as high as 49°C.

Three more prototypes were produced in March 1969 incorporating all the improvements that were found necessary during trials on the first prototype. These were sent for extensive field trials and performance evaluation at the Tractor Testing and Training Station at Budni, Punjab Agricultural University, Ludhiana (PAUL), and U.P. Agricultural University, Pant Nagar. Testing at Ludhiana and Pant Nagar not only covered the universities but also farmers. Tests extended over a period exceeding 1600 hours. The performance was very satisfactory and the farmers who had used this tractor were extremely happy.

At a meeting convened by the Additional Secretary, Ministry of Industrial Development and Internal Trade, on 22 February, 1971 where representatives of the Directorate General of Technical Development (DGTD), Ministry of Agriculture and the Director, Tractor Testing and Training Station, Budni, were present, the following points emerged:

- 1 The Director, TTTS, Budni, noted that Swaraj tractor was better than most of the imported tractors with regard to drawbar pull and the ratio of drawbar H.P. to the power available at the power takeoff (PTO). These parameters were of primary concern to farmers.
- 2 Three main items which needed improvement were the steering, front axle and the hydraulic pump.
- 3 Steps had to be taken to submit RV2 engines made by Kirloskar Oil Engines Ltd. for testing them with regard to fuel consumption after certain modifications:

The improved versions of the three items mentioned in (2) above were evaluated by Director, TTTS during the period 17 to 22 May, 1971. Indications were that all the three items were satisfactory and were cleared for production.

SWARAJ Runs into Heavy Weather

While Mr. M.M. Suri was advocating reliance on indigenous technology, the then Minister of Industries of

the Government of India, Mr. T. Singh, went to Czechoslovakia, where he concluded an agreement with M/s. Motokov to prepare a detailed project report on the manufacture and assembly of 12,000 Zetor 2011 tractors and some agricultural implements for a plant to be established at Ramnagar (Aurora & Morehouse op. cit). The report was submitted in March 1967 involving a capital investment of about Rs. 32.5 crore.

In the initial stages of development, Mining and Allied Machinery Corporation (MAMC), a public sector corporation at Durgapur, was expected to undertake the tractor project with the addition of some balancing equipment. But in the period of industrial recession in the country —1967 to 1971—MAMC incurred financial losses and was therefore not willing to take the additional risk involved in the manufacture of tractors (Chaudhuri, 1980).

At this time HMT, another public sector undertaking, was exploring for diversification opportunities. HMT perceived the tractor industry to be a promising field and hence suggested to the Government that it would like to take up the manufacture of tractors in the 20-25 HP range. CMERI saw some hope of reviving Swaraj when HMT put forward its proposal to the Government.

The Government of India appointed the National Industrial Development Corporation Ltd. (NIDC), to prepare a project report with the following terms of reference :

- i) To select the most suitable design for the tractor to be produced.
- ii) The extent to which the existing facilities in HMT, Pinjore and MAMC, Durgapur could be utilised for manufacturing tractors.
- iii) Additional investment involved and economic analysis of such a venture.

The NIDC submitted its report to the Government in April 1969, recommending the manufacture and assembly of 12,000 Zetor tractors of 25 HP at HMT, Pinjore.

The Swaraj tractor project seemed to fizzle out without any governmental support. The Planning Commission members who had shown interest when Mr. Suri had made the proposal to manufacture the 20 HP tractor indigenously had been changed by 1969. Mr. Suri, who had spearheaded the initial phase of the project, left CMERI in 1969.

Revival of Swaraj

When all seemed lost, help came from unexpected quarters. The Punjab State Industrial Development Corporation Limited (PSIDCL) had been familiar with the development of Swaraj; it had observed the field trials in Punjab and was aware of the farmers' favourable response to it.

The PSIDCL is a wholly owned undertaking of the Punjab Government. It was specially set up in 1966 to promote large and medium sized industries in the State. It had already implemented successfully six industrial projects by 1970.

According to the Managing Director of Punjab Tractors Ltd., though PSIDCL was aware of these developments, they were not very enthusiastic about the project's success. Possibly, they were sceptical about indigenous technology. The Central Government which should have encouraged the development of indigenous technology, had cold shouldered Swaraj. The PSIDCL's risk-taking ability was also not very high. The design team of CMERI impressed upon the PSIDCL the inherent strength of the project, and the benefits that would accrue to Punjab, some of which seemed to be:

- 1 Indigenous design, specifically engineered for the Indian environment.
- 2 Favourable customer reaction during the tests in Ludhiana and Pant Nagar.
- 3 Employment potential in the factory itself and development of a multitude of ancillary units.
- 4 Injection of high technology and the development of quality consciousness in the small industries around.

The PSIDCL authorities, having been influenced by the thinking of the leader of the CMERI design team, promoted the Punjab Tractors Limited. The company was incorporated on 27 June, 1970 at Chandigarh and obtained the Certificate of Commencement of Business on 29 July 1970.

The know-how and technology development by CMERI, Durgapur, was licensed to PSIDCL through the National Research Development Corporation (NRDC) of India, New Delhi, a Government of India organisation. The conditions were:

- 1 Right to CSIR's Indian Patent Nos. 113114, 113115, 116257 and their corresponding patents in USA, UK, West Germany, France, etc.
- 2 Right to any further developmental work done by CMERI on Swaraj tractor and first options on work in a field allied to tractors.
- 3 A royalty of 2% on the net ex-factory sales price of the tractor excluding major bought-outs like the engine, tyres, tubes, rims, and electricals (including dashboard instrumentation) would be payable to NRDC for a period of 10 years.
- 4 A royalty advance of Rs. 1 lakh to NRDC to be adjusted subsequently.

Implementation Team

For the implementation of the tractor project, PSIDCL obtained the services of the team of engineers of CMERI, which had been working on the development of the tractor since 1965. The promoters felt that it was essential to have the services of the original design team for successful implementation of the project. The CMERI team had become wellknown for its dedication and commitment to the cause of indigenous technology.

Consultancy Services for the Implementation of the Swaraj Tractor

In the initial negotiation with the CMERI it was indicated that the major responsibility for translating the developmental know-how into mass production technology would have to be taken by PSIDCL. This aspect was further emphasised during discussions between PSIDCL, NRDC and CSIR.

It was recognised that the development of production technology for Swaraj would require expertise of the highest calibre in every field : styling, jig and tool design and manufacture, stores and procedures, production planning and controls, material management, plant layout, etc. Two alternatives were available to PSIDCL :

- i) Appointment of reputed consultants who would provide the composite engineering services for the project; and
- ii) Building up PSIDCL's own cadre of experts.

The second alternative was dropped after detailed consideration, when it was recognised that full-time services of experts of the calibre required would be extremely expensive. Furthermore, it would not be possible to give these experts full time occupation, particularly after the project went into production.

It was then decided that the services of some reputed consultants would be retained for helping PSIDCL in executing the Swaraj tractor project and at the same time training its young team of engineers in all the facets of implementation.

The services of M.M. Suri & Associates (P) Ltd., New Delhi, a reputed consultancy firm headed by Mr. M.M. Suri, formerly with CMERI, were retained with effect from 3 September 1971 to provide comprehensive engineering services during the period of construction and six months of production thereafter at an approximate cost of Rs. 19.3 lakh. They were to be given the responsibility of training an adequate number of engineers and staff in all aspects of project execution, production, and management.

Competition

Some information on the industry has already been provided in the section on government policy. This section provides brief description of the major competitors of Punjab Tractors Ltd.

Eicher Tractors Limited (ETL)

This was the first company to commence manufacture of tractors in India. ETL was floated in 1959 in collaboration with Geler, Eicher of West Germany. The manufacturing operations started in a very small way. Starting with a single cylinder air-cooled tractor of 24 HP Eicher India now has developed improved models of the original tractor. It has also developed 35 and 12 HP tractors through its own efforts and the tractors are likely to be in the market soon. Beginning in 1960-61 with a production of 132, the company manufactured 13,650 tractors during 1983-84. The company's plant is located at Faridabad about 60 Km from New Delhi. The company set up a relatively large research and development centre at Faridabad during 1975-76, with departments specialising in engine design; tractor design, system design, transmission

design, metrology, prototype development, materials science, and testing. The annual recurring expenditure is approximately Rs. 10 million.

Gujarat Tractors Limited (GTL)¹

GTL was set up in 1961 in Vadodara by an erstwhile trading company, which was perhaps the first to introduce tractors into India in the twenties. Owing to poor financial performance GTL was closed down in 1971 and was then taken over by the Government. This company is presently manufacturing 50 HP tractors mainly and a 61 HP tractor to a limited extent. The company had introduced a 35 HP Model in 1964 with imported powerpacks but the model was discontinued after 1975. The original 50 HP model is based on the know-how provided by M/s. Motokov of Czechoslovakia. GTL recently entered into a collaboration agreement with M/s. Polytechna of Prague for manufacturing Zetor 45 HP tractors. The 61 HP model which GTL is presently manufacturing was developed through in house developmental efforts. After the takeover by the Government production has improved but been erratic. Production in 1971 was 211 tractors which increased to 2654 in 1978-79 but declined to 1150 during 1980-81.

GTL's R & D department was set up in 1972 after the takeover by the Government. It is still in its infancy. GTL has developed a 61 HP model which it has started marketing. The R & D section forms a part of the larger engineering department.

Tractors & Farm Equipment.Ltd. (TAFE) (Based on Suri Report)

TAFE was engaged in distributing and servicing Massey Ferguson tractors before manufacturing it in 1961 in collaboration with Massey Ferguson. The factory is located in Madras. The company forms part of the Amalgamations Group, which manufactures automotive and industrial diesel engines, tractors and farm equipment, forgings, stampings, cutting tools, batteries, and automotive ancillary equipment such as pistons, liners, rings, and bimetal bearings. Commencing with a 35 HP model the firm introduced a number of other models which were assembled from imported kits. However, those were soon withdrawn from the market. In 1974 a 55 HP model was introduced but was given up in favour of a 45 HP model which along with the original 35 HP model are in production presently. By 1971 this company was producing close to 5000 tractors; however the production declined to about 2000 in 1973 but has again almost steadily increased to about 8000.

Escorts Limited and Escorts Tractors Limited

Prior to commencing manufacture of tractors Escorts was engaged in distributing Ferguson tractors. However, when the agency was terminated, Escorts Limited started selling a Polish made tractor known as Ursus. In 1966 their manufacturing operations began with a 27 HP model. Over the next few years a number of models were added by attaching prime movers of different horse power to the original transmission, which was considerably overdesigned. The engine was procured locally from an indigenous manufacturer, Kirloskar Oil Engines Limited. Later, Escorts started manufacturing the engine in collaboration with the Polish manufacturer. They now have 35 HP and 47 HP model, in production at their plant located at Faridabad near New Delhi. In 1970 Escorts, production reached a peak of more than 10,000 tractors, but declined due to certain field problems. It remained below 6000 tractors still 1976 and since then it has picked up to about 12,500.

Escorts Tractors Limited was promoted by Escorts Ltd. in 1969 in collaboration with Ford Motor Co. of U.K. to manufacture a 47 HP tractor. The factory is located beside the older plant in Faridabad. Starting with a production volume of less than 1100 tractors in 1971 ETL produces over 8000 tractors per year. Its market share is around 11%.

Mahindra and Mahindra Ltd.

The International Tractor Division of Mahindra and Mahindra (M&M) was initially floated as a separate company in collaboration with International Harvester of Great Britain and Voltas Limited Bombay. From the beginning till 1976 the company did very well when it suffered a major set back. It was then merged with M&M as one of its divisions. Besides tractors, M&M manufactures jeeps, light commercial vehicles, agricultural implements, and process control instruments.

The company started manufacture with a 35 HP model which even today is the dominant one in the product line. A 43 HP model was added during 1971-72 in collaboration with IH and a 50 HP model designed by ITC's own R&D department was introduced in the market during 1981-82. The production has picked up from about 2000 during 1976-77 to almost 16,000 tractors during 1983-84.

¹ This section is based on a report prepared by M/s. MM Suri & Associates Pvt. Ltd.

Hindustan Machine Tools Ltd.

Hindustan Machine Tools Ltd., a central government enterprise is one of the most well known state owned enterprises. It is engaged in the manufacture of a variety of machine tools, tractors, wrist watches, watch manufacturing machinery, printing machinery, lamps and lamp making machinery, etc., in 13 plants all over the country.

Tractor manufacture commenced in 1971 at Pinjore near Chandigarh in collaboration with M/s. Motokov of Czechoslovakia. Starting with a 25 HP model, HMT has added two more models to its product line. A 35 HP model, developed through in-house R&D efforts, and a 58 HP model in collaboration with M/s. Motokov were introduced during 1977-80. Till around 1980 the 25 HP model was the dominant one; however by 1983-84 the 35 HP model accounted for about 60 per cent of the total production of a little less than 12,000 tractors. The 25 HP model accounted for almost 40 per cent with the 58 HP one accounting for less than 1 per cent.

Kirloskar Tractors Limited

Kirloskar Tractors Limited (KTL) was promoted by Kirloskar Brothers Limited and Kirloskar Oil Engines Limited in 1970. It entered into a technical collaboration agreement with M/s. Klockner Huboldt Deutz of West Germany in 1970 for technical know-how for the manufacture of tractors. KTL belongs to the well known Kirloskar Group of companies, which is engaged in the manufacture and selling of diesel engines, machine tools, electric motors, and pumps. In spite of the fact that the product technology acquired by KTL is acknowledged as superior to many of the competing brands, KTL has been having financial problems because of poor sales performance from the very beginning. As a result it was merged with Kirloskar Pneumatic in 1982.

Production commenced with a 43 HP model during 1972-73. Since then, three other models of 75 HP, 35 HP, and 100 HP have been added to the product line. But the first one continues to be the dominant one. Beginning with a volume of 500 tractors per annum during 1972-73, KTL reached a volume of a little more than 2000 during 1980-81. However, the production declined to about 800 during 1982-83. The plant is located at Nasik near Bombay.

Financing of the Project

The detailed project report was completed by March 1971. The next problem was that of financing the project. PSIDCL and PTL approached the Industrial Development Bank of India (IDBI) and other financial institutions.

PTL submitted a project (capacity output of 5,000 tractors in 20-30 HP range) with a capital cost of about Rs. 3.7 crore (Table 2). They had planned a very high percentage of (80 per cent) boughtouts with only 15-20 per cent own manufactured components in order to reduce the capital cost of the project.

Table 2 : Swaraj Tractors : Project Cost

	Expected (March 1972)	Actual (April '74)
Land	1.162	0.985
Buildings	2.252	3.435
Plant and Machinery		
a) Imported	3.191	3.135
b) Indigenous	15.426	13.457
Technical Know-how	2.073	1.640
Miscellaneous Assets	0.781	2.337
Preliminary Expenses	4.480	0.583
Pre-operative Expenses	5.050	5.187

Provision for Contingencies	2.300	—
Margin for Working Capital	4.287	5.187
Total	37.002	35.916

Source: V.V Bhatt, "Decision Making in the Public Sector Case Study of Swaraj Tractor", *Economic and Political Weekly*, XIII (21), (May, 1978).

The expected project costs were exceptionally low compared to most tractor manufacturing programmes. Plant and machinery costs could be kept low by ensuring high utilisation rate of expensive machinery. In the words of the Managing Director of PTL (Bhatt, 1978) :

A very critical contribution of indigenous technology is the in-depth flexibility which it provides to the design group to adopt/ innovate to bring down the costs keeping local conditions in view. This flexibility is further increased by their in-depth knowledge of the production processes. We have in our own case changed designs of components to cut down capital investments any number of times. Complementarity of the production group has also shown immense flexibility in selection of machines and stretching them to the limits of their capabilities to conserve capital, a scarce commodity in a developing country. We are perhaps the only unit in the world where in special purpose machines which are normally tooled up for the production of one or two components, have been stretched out to handle 4 to 5 components. Our utilization of these expensive SPMs had 100% utilisation at production levels of 400 and as we proceed further to higher production levels, we will keep on adding SPMs. Capital investments for us will always be made as the market demands higher production levels.¹

The PSIDCL was agreeable to contribute at the most 10 per cent of the project cost, while the IDBI's rule of thumb was that the promoters should finance the project at least to the tune of 15 per cent of the total cost through their own resources. The PTL team suggested that the Punjab Government and G.S. Atwal's combined shareholding would satisfy IDBI's conditions. However, complications arose when IDBI took the decision that G.S. Atwal & Co. had to be dropped and PSIDCL's equity had to be increased to satisfy its conditions. Almost one year went by before PSIDCL could be convinced into taking this decision.

Some of the striking arguments made by the PTL team which won the case in their favour were (Company Document, PTL)

...This project has been worked out taking full advantage of the traditional dynamism of the ancillary industry of the Punjab, their initiative and their extreme competitiveness. However, their presently poor reputation as regards quality with resultant high rejection (which only increase the component costs) has to be overcome by providing technical assistance... to develop their manufacturing skills for precision working, heat treatment, etc. Having taught one supplier the right manufacturing process all concerned can rest assured that in the Punjab the technique will spread around the area through worker enticement defection etc., generating keen competition from the area as a whole. This strategy perhaps could not be deployed in any other region of the country with the same confidence as in the Punjab. The planned spillover of high technology for achieving quality production of the Swaraj would raise the quality standards throughout Punjab where production costs are lowest in the country. If quality is also assured, the Punjab ancillary would be like Japan, hard to compete in any international market. Swaraj is treated as a catalyst for the spread of precision technology which offers to the Punjab ancillary outlets around the world for component suppliers. Already western countries, especially West Germany, are poised as large buyers if quality could be ensured. Thus the project approach has wider horizons than the mere successful setting up of Swaraj tractor manufacturers by the Punjab Tractors Ltd. Permeation of high technology throughout the Punjab industry... is aimed at.

At one stage PTL was confronted with questions regarding the possibility of the project's attaining 100 per cent rated capacity in the second year of the project. The design team gave the following reasons for their optimism in achieving a rapid rate of production build-up.

¹Source: V.V. Bhatt, "Decision Making in the Public Sector: A Case of Swaraj Tractor." (Domestic Finance Studies No. 48, Feb. 1978), World Bank.

- 1 The design itself is evolved around major assemblies which were already in production in India and where no new capacity/technology/tooling is to be established either by the ancillary manufacturers or by PTL.
- 2 Ancillary manufacturers, particularly for the hydraulic system and 3-point linkage, were associated with the development of these assemblies ever since 1967. This four-year association has given them a major understanding of the technological problems involved in the development of these components.
- 3 The technological skills which have been generated within PTL by the availability of the CMERI team which has worked on the development of each and every component of the tractor over the last six years. This experience is further heightened by the fact that the development was done with established industry and not within a research laboratory.
- 4 The design know-how and experience available with PTL which will enable PTL not only to educate the ancillary industry in the supply of components and the requisite quality standards but also enable them to modify the designs for adaptation of scientific components which may already be under manufacture in India.
- 5 The two years of construction schedule of the project is a period dictated primarily by machine deliveries. This construction schedule is typical only to our project because of its 100 per cent indigenous content and is not applicable to any of the other tractor manufacturers, who because of the availability of CKD components start assembly operations within the first year itself. This early commencement of production with CKD supplies and the phased deletion programme thereafter delay the attainment of rated production levels.
- 6 The extensive pre-planning that has gone into the project since 1968 from the manufacturing point of view, the location of the sub-contract facilities for components, tooling, spare machine capacity, etc.
- 7 The component that is there behind the project of the CMERI team which is determined to make the Swaraj project a true and effective symbol of the emergence of national technology. It will be appreciated that a committed management/technological team will go a long way towards overcoming any hurdles that are likely to be experienced in the implementation of such a major project :

The company was successful in making arrangements for underwriting and long-term loans with the IDBI, Industrial Finance Corporation of India (IFCI), Industrial Credit and Investment Corporation of India (ICICI), Life Insurance Corporation of India (LIC), and the Unit Trust of India (UTI) under which the financial institutions agreed to provide underwriting assistance to the extent of Rs. 85 lakh (equity and preference) and long-term loans totalling Rs. 230 lakh. The Government of India also took the decision to participate in the equity capital of the company to the extent of Rs. 8.5 lakhs, which was ultimately routed through HMT, Bangalore.

Project Implementation

IDBI, a major partner, was very impressed with the performance of the project on various dimensions: meeting target date of completion; keeping within expected project cost at a time of rising material prices, raw material shortage, financial stringency; and reaching full capacity in the expected time (See Table 3).

Table 3: Some Performance Indicators

	Expected	Actual
Capital Cost (Rs. million)	37.002	35.916
Costation Lag	105 weeks (March 1972 to March 1974)	105 weeks (March 1972 to March 1974)
Output/Sales of Tractors (Nos.)		
1974-75	1600	933
1975-76	3500	2242
1976-77	4500	3196
1977-78	5000	4003
Operating Profit (Rs. Million)		
1974-75	-3.656	-8.82

1975-76	-0.320	+0.57
1976-77	1.761	+11.89
1977-78	2.702	+13.34

This was achieved through management action in various areas as explained by the Managing Director :

In Punjab Tractors Ltd. (PTL), completion within project estimates was a total commitment. This commitment in a situation where prices started rising abruptly at an alarming rate inspired us to explore every conceivable avenue towards cost saving in all aspects of the project...

To save on construction costs, PTL adopted a large number of innovations in building technology, some for the first time in industrial construction, even though all these technologies had been proven extensively in other fields of civil engineering.

Once the project was commissioned, the one goal uppermost in the mind of management was to reach full capacity utilization. Some problems arose in reaching this target :

- 1 Development of reliable vendors to cater to the very steep production growth curve.
- 2 Technical problems of the product.
- 3 Manufacturing problems.

Development of Reliable Vendors

PTL has developed about 125 ancillary units out of which 60 per cent have been promoted by PTL, the remaining 40 per cent being those existing in small units which were located and given support to manufacture Swaraj components.

Out of the 750 components, approximately 60 are made by PTL. The largest single item is the engine (about Rs. 12,000 or 25-30 per cent of the retail price) which comes from Kirloskar of Pune.

Approximately 50 per cent of the components come from large scale enterprises. Components like tyres, tubes, batteries, wheels, radiators and clutches come from suppliers all over India. Out of 125 small and medium scale enterprises supplying components to PTL, 40 are within a distance of 1 km from the plant and another 40 are in Chandigarh. Proximity has several advantages : ease of communication, better quality control, and greater continuity in supplies. Some 50% of PTL's components come from such enterprises, although in rupee value the share is much less.

Initially PTL found it difficult to convince potential vendors to take up manufacture of Swaraj components. During this period PTL started manufacturing a large number of components within its premises to somehow increase production. Production facilities had been planned to manufacture only 70 to 80 components. When it was utilised for manufacturing several times this number the production of complete tractors was naturally small. A separate vendor development cell was created, which reported directly to the Managing Director. Its role was to develop entrepreneurs from fresh engineering graduates in order to meet component requirements of an increasing production volume. In 1978 PTL received the ASSOCHAM award for ancillary promotion.

Technical Problems

To cope with teething problems on the product a Product Servicing Group was created. It reported to the Marketing Manager, and worked in close coordination with R & D. Later it was brought under R & D.

Manufacturing Problems

The assumptions of 90 per cent machine utilisation and 90 per cent operator efficiency which had been made while planning for facilities did not come out to be correct and balancing machinery had to be purchased. Also third shift working had to be introduced. Third shift working has its attendant problems of poor discipline and low efficiency. Experienced workmen could not be recruited as salary bills had to be kept low. Machinery selected was more of the general purpose type which required high operator skill, which could only be developed over a period of time. Special jigs and fixtures had to be designed to de-skill the operations.

Marketing Swaraj

By 1974 the tractor industry was facing a major depression. In addition there were 11 manufacturers in the fray, which had resulted in the market's transition from a sellers' to a buyer's one. In the initial stages Swaraj faced some resistance as explained by the Managing Director (1979) :

This project is the first large scale tractor project in India based on 100% Indian knowhow and technology. There was some initial resistance in accepting the Indian knowhow by both the central and state governments since it had never been tried before. When we proposed to manufacture the tractors, a foreign collaboration agreement was acceptable to everyone but our project which was 100% indigenous was not.¹

PTL faced a challenging task in marketing Swaraj. When PTL began its effort in the selection of dealers, the factory was still under construction and prospective dealers were doubtful about the company's ultimate success. PTL's management realised that product performance, product quality and reliability, and easily-accessible servicing facilities were critical dimensions in a competitive market which would dictate customers' decision-making.

PTL did not begin lining up dealers until the end of 1973 and the beginning of 1974. By mid 1975 it had 19 dealers in a 200 mile radius of Chandigarh. By the end of 1976, it had 80 dealers spread all over the country. Out of the roughly 10,000 tractors sold by mid 1978 over 80 per cent had been sold in Punjab, Haryana, Delhi and U.P.

When the tractor market was very tight in 1975-76 and 1976-77, PTL began experimenting with incentives to dealers. If a dealer sold over 100 tractors in a year, he would get a seven-day paid vacation in Kashmir. If he sold over 150 tractors he would get a ten-day vacation in Goa. During tight condition PTL began exploring diversified uses and outlets for its tractors—as road-masters for transport and haulage, without the hydraulic lift—for Rs. 2,500 less. PTL was also exploring the use of the tractor as a hydraulic lift platform for fixing street lamps and electric transmission lines.

PTL provides a one-year guarantee on its tractors. Most other tractors carry only a six-month guarantee.

Servicing is of course critical to building up a satisfactory group of customers who in turn are the product's best salesmen. PTL has three service centers with personnel and dealer coverages as indicated in Table 4 below.

Table 4: Swaraj Service Centres

Centre	Dealer Coverage	Staff
Chandigarh	52	24
Lucknow	29	6
Bhopal	19	1

PTL is also trying to establish auxiliary service centres in small towns. PTL's input is to provide training for the mechanics.

The Director's report for 1976 stated :

To cater to a larger market spectrum the product range was enlarged in November 1975 with the introduction of a new 35- HP tractor, the Swaraj-735. Swaraj-735 has been developed by the company's own R&D and is again 100 per cent indigenous. Exhibits 11 and 12 give comparative prices of tractors of different makes.

Research and Development

Research and development is of prime importance to this company. The whole projects was started because of Mr. Suri's faith in indigenous technology. The manager of the R&D department said :

¹"Professional Profile— The Man Behind Swaraj," *Business India*, April 16-29, 1979, p. 38.

We strongly believe that for our country to develop at a fast rate India R&D is a must and products suitable for Indian conditions and at suitable prices can best be done by R&D in India. The founding of our company has been based on this basic principle itself. Our company started with the purpose of using indigenous design for manufacture and consequently R&D was set up at the start of the company.

In fact it was the tool room which was the first block to be commissioned on 16 August 1972. From October, two-shift working began for manufacturing jigs and fixtures. Perhaps PTL is the only company in the tractor industry to have started with a R&D department from the very first day. Tool room facilities were to be used for the manufacture of jigs and fixtures and other toolings and prototypes of new products.

The usual practice with regard to manufacture of jigs, fixtures, and tools in the tractor industry is that special purpose machine tools are purchased from the manufactures in completely tooled up condition but the jigs and fixtures for the general purpose or universal machinery are partly manufactured within the plant and partly sub contracted. The function of the tool room in the tractor industry is that of maintenance of these special tools as and when required. But in the case of PTL, a deliberate policy decision was made to manufacture all jigs and fixtures for general and special purpose machinery within the plant itself in order to reduce costs. The designs of the jigs and fixtures were made by PTL engineers with the aid of their consultants. Tractor manufacturers having foreign collaboration could get ready-made designs which had to be modified to suit Indian standards. In many cases they could import complicated jigs and fixtures from their principals. Tool room facilities in India are scarce and therefore difficulties crop up in developing reliable sources of high quality jigs and fixtures. Also their cost is exorbitant. According to a very senior officer of the company, the cost of manufacturing these jigs and fixtures for PTL was less than half of what they would have cost in other places.

Table 5 shows yearwise capital and recurring expenditure on R&D activities.

Table 5 : R & D Expenditure (Rs. in Lakhs)

Year	Capital	Recurring
1972-73	—	0.41
1973-74	3.00	1.26
1974-75	0.30	3.65
1975-76	0.52	3.94
1976-77	0.80	4.70
1977-78 (est.)	11.00	5.10

Capital expenditure has gone towards purchase of certain instruments and building of a small shed. Plant and machinery for R&D has not been set up in a separate shed because of the company's policy of conserving scarce capital. Tool room facilities are used for R&D work and the coordination for the use of the common facilities is done at the managerial level, but when there are complex situations the priorities are given by the Managing Director. Research and developmental work does not follow a smooth pattern. At certain times there is a very heavy work load and at other times the utilisation rate of machinery may not be more than 15-20 per cent. For this reason R&D work is generally scheduled whenever the load in the tool-room is less and by this arrangement extra capital investments have been avoided.

Even without its own production facilities R&D's achievements have been quite remarkable in terms of the new products it has developed, and design improvements made on existing products for cost reduction and quality enhancement. The department has to its credit several types of agricultural implements in addition to the new model of tractors, i.e., Swaraj-735 (39 HP) and Sartaj, the economy model, which uses a single cylinder engine of about 17-18 HP. About 80-90 per cent of all the new products developed by the R&D Department have been commercialised and all the company's products are products of its own R&D. Already work has begun on developing a 50-HP tractor, to be called "Samrat". PTL will have then the most complete range of tractors ranging from 18 HP to 50 HP

Organisational Set-up and Training

PTL has a functional structure with the Managing Director as the head. The CMERI team which developed Swaraj Tractor formed the core of the project management team with four of them heading four of the functional areas which were found most suitable to them. A few experienced persons were taken over the production planning, maintenance, technology, tool room, marketing, finance, etc. A phased recruitment of

personnel was planned to reduce personnel expenses. Particular attention was given to the provision of engineers in every major activity. This was done with the idea that attachment of trainee engineers right from the inception of each activity would groom them into the very rationale of each plan and its subsequent execution. The idea was that in the two years during project implementation, this would build up a core of young, enthusiastic and competent engineers who would be able to shoulder responsibilities for further expansion with full confidence and technical capability.

The training of the engineers consisted of a certain period of on-the-job apprenticeship in tool room and design. Design was given special emphasis including jigs and fixture design because the management believed that injection of these disciplines activated processes of thinking and emergence of ingenuity. Quality control is the primary importance. The Manager (Quality Control) reports directly to the Managing Director to ensure strict and impartial observance of high standards of products. Even when the Manager, materials, develops the ancillary supplies, the Manager, quality control, is the independent authority to check on the quality of the supplies.

The Manager, R & D, also reports directly to the Managing Director in addition to the Director, Finance. Manager, Materials, also reports to Director, Finance. The Works Manager and Manager, Special Assignments who looks after new investment planning and export marketing, report to the Managing Director. The partial organisational structure is shown in Figure 1.

Questions

- 1 What were the forces that led CMERI to take up the 20 HP project ?
- 2 What factors were responsible for delay in the successful completion of the project?
- 3 What problems were faced in developing the technology and how were they overcome?
- 4 Evaluate the strategy of PTL.
- 5 What lessons can we draw from this case?

Appendix

TRACTORS

A tractor is a self-propelled vehicle capable of pulling a load. It is usually powered by an internal combustion engine, and is used on highways and in factories; but its greatest use is on agricultural land.

Basically, a modern farm tractor consists of an internal combustion engine, a transmission or gear reduction and selection unit to change engine power to torque at various speeds, main drive gears for further speed reduction, a differential unit to apply equal torque to each rear drive wheels at all times, and the drive or traction wheels. These units may be self-supporting by bolted to each other, suspended in a framework or by a combination of these methods of assembly. An engine clutch is necessary in order that the transmission gears may be stopped to "shift" gears and to absorb the load without breakage or engine stalling.

—There are 4 to 8 gear ratios-incorporated in tractor transmissions with travelling speeds ranging from approximately $2\frac{1}{4}$ to 15 or 20 miles an hour.

Tractors are equipped with high capacity air cleaners because of the extremely dusty conditions in which they operate. All are equipped with belt pulleys and power take-off shafts and many have some type of hydraulic lift system. The power take-off shaft is a powered shaft extending at the rear of the tractor from which an extension transmission shaft can be used to operate trailed machines such as a combine.

Tractors can be classified according to their main functions such as farm tractors, industrial tractors and highway tractors.

The farm tractor has revolutionised the mode of farming wherever it has been used. It has relieved farmers of arduous work and made great increases in production possible. Through the use of the tractor, farmers can control power that is equivalent to many horses and men. The average man is rated at 1/10 H-P, but when he drives a 20 HP tractor across his fields he is doing the work of 200 men. Tractors are used for a variety of purposes such as ploughing, harrowing, sowing, harvesting, pumping, and transporting.

Figure 1
Partial Organization Chart (1975)

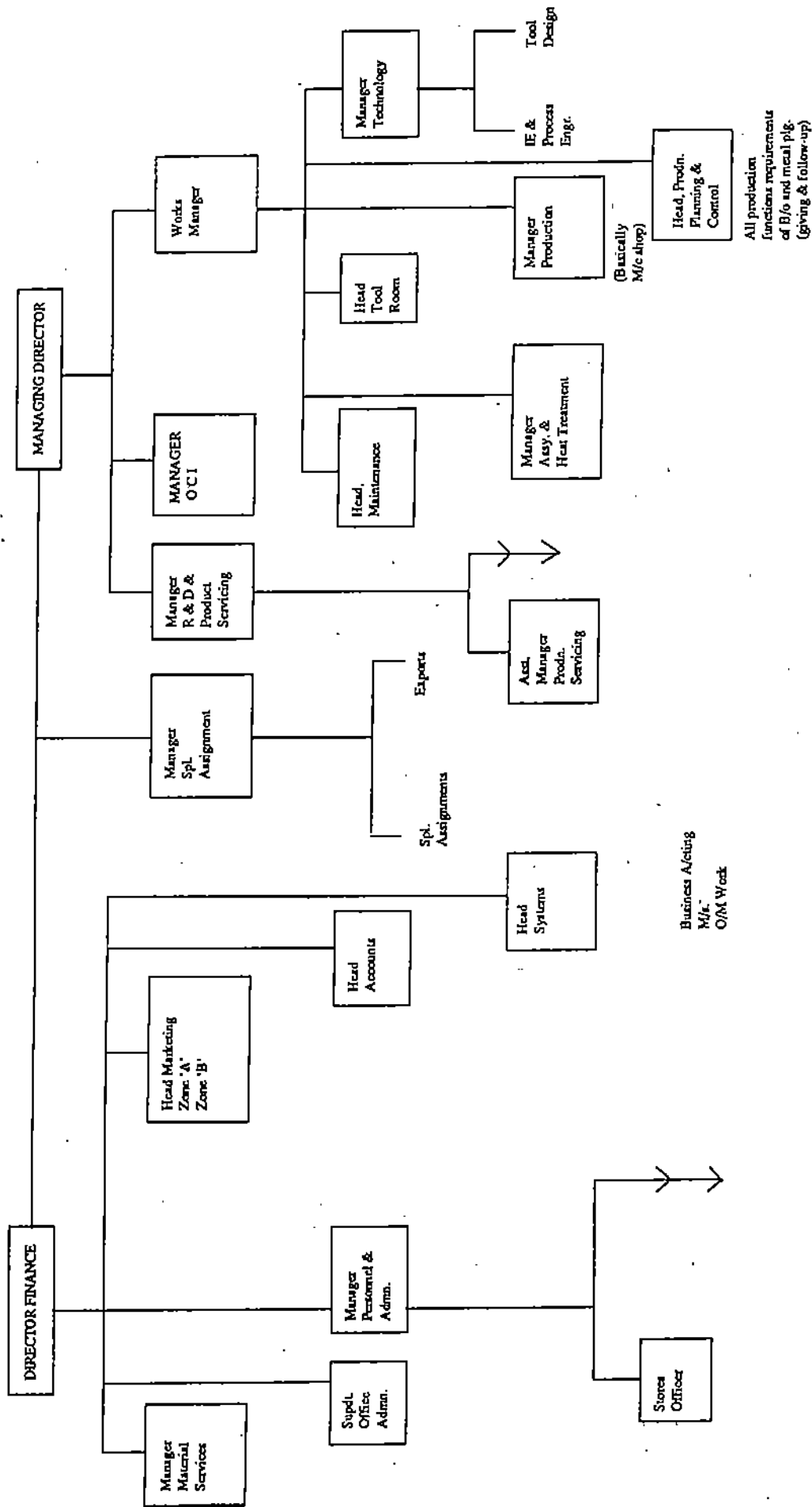


EXHIBIT 1

PUNJAB TRACTORS LIMITED
Summarized Income Statement

(Rs. in thousands)

Sl. No.	1973-74	1974-75	1975-76	1976-77	1977-78	
1	Product Sales	1,625.65	30,548.73	83,814.87	1,29,675.99	1,71,286.42
2	Other Sales	6.38	772.42	60.37	90.18	71.73
3	Other Income	2.80	37.56	394.99	188.79	725.65
4	Total Revenue (1+2+3)	1,634.83	30,663.52	84,270.23	1,29,954.96	1,72,883.80
5	Consumption of Materials	1,247.31	24,724.82	64,781.36	97,019.86	1,21,882.47
6	Excise Duty	136.09	2,689.99	1,865.62	20.13	10,843.96
7	Operating & Administrative Expenses	983.88	5,880.31	9,727.18	13,723.91	19,853.58
8	Finance Charges	572.68	3,862.84	4,871.63	4,589.43	2,364.62
9	Depreciation	—	2,328.96	2,454.29	2,708.99	3,801.08
10	Total Expenses	2,939.96	39,486.92	83,700.08	1,18,061.52	1,58,745.71
11	Profit for the year (before tax) (4-10)	-1,305.13	-8,823.41	570.14	11,893.44	13,338.09

EXHIBIT 2

PUNJAB TRACTORS LIMITED
Summarized Balance Sheet For a Decade

Particulars	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
Assets			*43.037					
Fixed Assets	0.454	11.635	136.355		321.760	307.835	302.833	300.155
Current Assets, Loans & Advances	2.188	16.849	87.788		197.951	352.446	360.707	414.808
Miscellaneous Expenditure	4.807	15.434	5.836		150.690	146.179	47.695	1.960
Profit & Loss Account	0.031	—	—		—	—	—	—
Total	7.470	43.970	273.016		670.407	806.460	711.236	716.882
Liabilities								
Share Capital	7.000	37.500	138.910		139.815	139.815	139.815	139.815
Reserves & Surplus	—	0.002	0.002		46.271	48.503	53.176	114.984
Secured Loans	—	—	117.535		363.817	383.624	302.096	191.090
Unsecured Loans	—	0.392	—		26.050	44.410	17.175	17.000
Current Liabilities & Provisions	0.470	6.075	16.570		94.454	190.109	198.973	253.992

Note : Errors in totals are due to rounding off *(1972-73) — Unallocated Capital Expenditure.

EXHIBIT 3

Estimated Demand for Tractors by 1960-61

H.P. Range	Nos.
12-18	1,500
20-30	3,000
35-45	500

Source : Report on the Fixation of Prices of Agricultural Tractors. (Bombay: Tariff Commission, 1967), p.6.

EXHIBIT 4

Estimates of Tractor Demand

Sl. No.	Year	Nos.
1	1966-67	20,000
2	1967-68	25,000
3	1968-69	30,000
4	1969-70	35,000
5	1970-71	40,000

Source : Adapted from Fourth Plan estimates quoted in *Tariff Commission Report, 1967* (Estimates made in 1966-67), p.27.

EXHIBIT 5

Tractor Demand—Estimates for 1973-74

	Upto 25 HP	26/35 HP	36 HP & above	Total
Planning Commission				
Ministry of Agriculture:	21,000	38,000	9,000	68,000
a) 1968 Estimates.	25,000	45,000	20,000	90,000
b) 1972 Estimates	—	—	—	40,000
Loading Tractor Manufacturers:				
a) Estimate 1968	10,000	40,000	15,000	65,000
b) Revised Estimate-1972.	—	—	—	36,000
Indian Society of Agricultural Engineers :				
Estimate 1968	—	—	—	52,000
Actual Demand 1971-72 :				
a) Production	1,301	22,168	—	23,469
b) Imports	10,000	4,000	—	14,000
c) Total	11,301	26,168	—	37,469

EXHIBIT 6

**Tractor Requirements Achieving Fourth Plan Targets
as Estimated on I.A.R.I**

Sl. No.	Horse Power Range	Nos.
1	6-10	500,000
2	12-16	500,000
3	22-24	500,000
4	28-36	200,000
5	44-50	50,000

Source: *Tariff Commission Report, 1967, P. 31*

EXHIBIT 7**Import of Tractors (1961-1974)**

Year	Imports (Nos.)	Total Availability
1961-62	2,997	13,877
1962-63	2,616	4,030
1963-64	2,349	4,332
1964-65	2,323	6,646
1965-66	1,989	7,703
1966-67	2,591	11,407
1967-68	4,038	15,432
1968-69	4,276	19,742
1969-70	10,478	28,598
1970-71	13,300	33,399
1971-72	19,739	37,839
1972-73	1,000	27,802
1973-74	1,000	21,425

Source : Adapted from B.K.S. Jain "Production of Agricultural Machinery in India," (Paper presented at the International Rice Research Conference, Manila, April 19 to 23, 1971) p. 8 (Estimate made in 1968) and S. Kumar Deb, "Indian Now an Exporter," *Commerce*, (February 28, 1976), pp. 271-72.

EXHIBIT 8
Production of Tractors

Number of Tractors Produced

	INDIA											TOTAL
	ETIL	EL	ETL	GTCL	HIL	HMT	KTL	M&M	PTL	PTPL	TAFE	
	BEL	Escorts	Ford	Hindustan	Harsha	Zoror	Kirloskar	International	Swarnj	Pitue	Masey Ferguson	
1960	59	—	—	—	—	—	—	—	—	—	—	59
1961	202	—	—	—	—	—	—	—	—	—	395	597
1962	269	—	—	—	—	—	—	—	—	—	1,308	1,577
1963	36	—	—	485	—	—	—	—	—	—	1,124	1,645
1964	235	445	—	1,555	—	—	—	—	—	—	1,716	3,751
1965	113	1,055	—	1,270	—	—	—	225	—	—	2,935	5,598
1966	135	2,115	—	1,870	—	—	—	550	—	—	3,400	8,070
1967	122	2,109	—	1,805	—	—	—	2,669	—	—	3,819	10,524
1968	346	4,269	—	2,032	—	—	—	3,818	—	—	3,336	13,801
1969	329	8,120	—	1,971	—	—	—	4,329	—	—	3,344	18,093
1970	768	9,665	—	1,402	—	—	—	5,835	—	—	2,267	19,937
1971	878	3,204	—	344	—	617	—	7,603	—	—	3,412	17,111
1972	780	2,481	1,053	703	—	2,578	—	10,161	—	—	1,420	19,946
1973	969	4,887	1,823	310	—	3,557	—	9,502	—	—	1,494	23,557
1974	1,196	5,133	3,403	750	—	5,704	506	9,230	380	93	2,351	28,746
1975	1,563	4,651	4,701	766	982	6,549	754	7,399	1,508	35	3,430	32,378
1976	2,854	5,259	5,010	1,565	588	6,553	325	6,348	3,001	105	4,842	36,450
1977	3,485	7,142	5,500	2,056	1,028	4,132	252	1,932	3,272	101	5,727	34,627
1978	5,159	10,377	6,671	2,552	731	9,190	600	7,077	4,541	300	6,201	53,399
1979	7,011	12,246	7,428	2,100	523	8,441	1,027	9,405	6,355	279	4,975	60,190
1980-81*	11,164	11,266	7,304	1,150	795	8,105	2,087	13,401	8,929	N.A.	7,794	71,995
1981-82	12,710	13,478	7,286	2,146	897	11,034	1,235	11,751	9,420	N.A.	8,862	78,819
1982-83	10,573	9,211	7,375	729	245	9,890	784	11,901	5,310	N.A.	8,258	64,276
1983-84	13,650	12,208	8,611	1,335	185	11,780	1,563	15,901	10,285	N.A.	7,632	83,150

* From 1980 onwards the figures are for financial year April to March
Source: Association of Indian Automobile Manufacturers.
Note: From 1955-1959 the production of tractors was 'nil'.

EXHIBIT 9

Indian Tractor Manufacturers

Period: 1959-65	Date of Commencement of Commercial Production	Name of Collaborator
1. Eicher Tractors Limited Faridabad	1959	Gebr. Eicher, West Germany
2. Gujarat Tractors Limited (Erstwhile Hindustan Tractors Limited) Vadodara	1963	Motokov Czechoslovakia
3. Tractors and Farm Equipment Limited, Madras	1964	Massey Ferguson, U.K.
4. Mahindra and Mahindra Ltd. Bombay (Erstwhile International Tractor Co. of India Ltd.)	1965	International Harvester, U.K.
5. Escorts Ltd., Faridabad	1966	Motoimport Warszawa, Poland
Period 1971-75		
6. Escorts Tractors Ltd. Faridabad	1971	Ford, U.K.
7. Hindustan Machine Tools Ltd., (State owned Central Govt.) Pinjore	1971	Motokov, Czechoslovakia
8. Kirloskar Tractors Ltd., Nasik	1974	Klockner— Humboldt Doutz, W. Germany
9. Punjab Tractors Ltd., Chandigarh (state owned)	1974	Indigenous know-how
10. Pittie Tractors, Poona	1974	Indigenous Know-how
11. Harsha Tractors Ltd., Ghaziabad		Motoimport, USSR
Period: 1981-83		
12. Auto Tractors Ltd., Pratapgarh (state owned)	1981	British Leyland, U.K.
13. Pratap Steel Rolling Mills Ltd., Ballabgarh.	1983	Indigenous know-how

EXHIBIT 10

Distribution of Operational Landholdings by Size

Size	1961-62				1970-71			
	Holdings No. (Millions)	%	Areas Hectares* (Millions)	%	Holdings No. (Millions)	%	Area Hectares* (Millions)	%
Marginal (0 to 1 ha)	19.8	39	5.1	7	35.7	51	14.5	9
Small (1 to 2 ha)	11.5	23	16.4	12	13.4	19	19.3	12
Semi-medium (2 to 4 ha)	10.0	20	27.6	21	10.7	15	30.0	18
Medium (4 to 10 ha)	7.1	14	41.6	31	7.9	11	48.2	30
Large (10 + ha)	2.3	4	38.6	29	2.8	4	50.1	31
Total	50.7	100	133.3	100	70.5	100	162.1	100

Source: For 1961-62: *National Sample Survey, No. 144, 17th Round, Cabinet Secretariat, Government of India, New Delhi, 1968.*

For 1970 -71: *I.J. Naidu, All India Report on Agricultural Census, Government of India, Ministry of Agriculture & Irrigation, New Delhi, 1975.*

* One hectare = 2.47 acres

EXHIBIT 11

Tractor Retail Prices (Rs.) (20-30 HP)

Year	Eicher	Swaraj 724	Zetor
1970	17,480		
1971	19,460		
1972	25,200		
1973	27,720		
June 1974	30,410	27,720	30,400
Sept. 1974	30,700	30,700	30,700
Nov. 1974	30,700	33,330	31,200
April 1975	30,700	33,330	35,500
Oct. 1975	30,700	31,516	35,500
Jan. 1976	30,700	35,516	35,500
May 1976	30,370	37,000	35,500
Aug. 1976	30,370	37,000	36,700
May 1977	30,370	37,000	38,570
1st Jan. 1978	30,370	37,000	38,570
Sept. 1978	32,170	41,313	40,947

Source: Company Documents.

EXHIBIT 12

Tractor Retail Prices (Rs.) (30 - 40 HP)

Year	Escorts E - 3036	Escorts E - 335	International IH - 275	Massey Ferguson MF - 1035	Swaraj 735
1970		17,291	19,570	21,140	
1971		18,896	22,890	24,250	
1972	25,200	25,200	25,200	26,300	
1973	27,720	27,720	28,930	28,930	
June 1974	30,410	30,410	31,710	31,710	
Sept. 1974	32,000	32,000	32,000	32,000	
Nov. 1974	36,528	36,528	37,750	38,207	
April 1975	36,528	36,528	43,250	43,497	
Nov. 1975	36,528	36,528	43,250	43,497	41,423
July 1976	36,528	36,528	43,250	43,550	40,830
Jan. 1977	41,791	40,613	43,250	43,104	40,830
April 1977	43,150	40,613	43,250	43,104	40,830
Jan. 1978	44,015	41,425	43,250	43,104	40,830
Sept. 1978	48,617	44,851	47,352	46,566	45,734

Source: Company documents

HMT WATCH DIVISION

Mr. A.P. Naik, General Manager, Marketing Division was on his way back to Bangalore after his visit to Delhi. He knew that a meeting of the Business Planning Group of HMT was scheduled in the second week of April 1993 which he was to attend. As he settled down in his seat after boarding the plane in Delhi he pulled out a newspaper tucked in the back pocket of the seat in front of him. The newspaper (*Business Standard* dated 6th April 1993), contained an article on HMT and as the plane took off, Mr. Naik started reading the article with great interest and excitement. He recollected that he had read a similar article in the same newspaper only a couple of months back (both these articles are reproduced as Annexures 1 and 2). The reading of the article triggered a chain of thoughts in Naik's mind and he started reflecting on the turn of events in his Watch Division. Titan a, relatively new entrant in the quartz market, had caused significant chinks in HMT's armoury. With his long innings at HMT, the growth of Watch Division's production, marketing and other related events started unfolding.

HMT: ORGANISATION AND PRODUCTS

Watches form one of the four business groups of HMT, the other three being Machine tools, Agricultural Machinery and General Engineering. The organisational structure of the company, which has been in vogue since 1978, is presented in Figure 1.

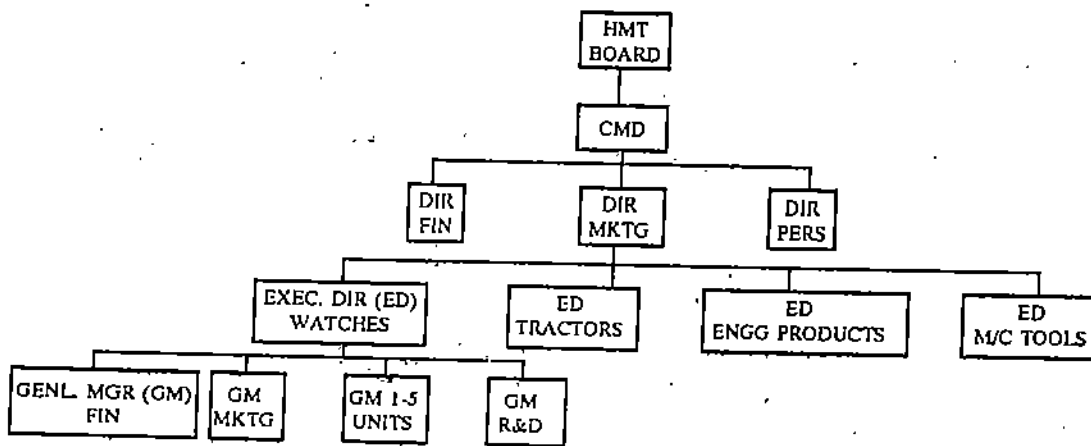


Figure 1 : HMT Organisation Chart

Growth of HMT Watch Division

During the late nineteen fifties, watch manufacturing was a closely guarded secret of the Swiss companies. These companies marketed high quality products and were unwilling to reveal their technology to any other country. In the early 1960s, Jawaharlal Nehru was very keen on starting a watch company in India. This led the HMT into the watch industry. HMT collaborated with Citizen, Japan around 1968. During the initial period about 200-500 HMT employees were trained in Japan. They were taught how to handle and maintain the machinery involved in the production process. The required equipments were purchased from Citizen. When actual production started, a few employees from Citizen worked along with the HMT employees for a period of one year.

With this initial plunge into the watch market, HMT faced smooth sailing. However, smuggled watches were rampant and this was when, the then prime minister, Mrs. Indira Gandhi asked HMT to double its capacity. HMT doubled its capacity in 1976.

HMT adopted a Phased Manufacturing Program (PMP) to double its capacity. During the early stages of capacity doubling, most of the components were imported but slowly HMT started making these components.

Case (1993) prepared by Prof. M.L. Bhatia, School of Management Studies, Indira Gandhi National Open University, New Delhi and Dr. R. Srinivasan, Department of Management Studies, Indian Institute of Science, Bangalore.

Case material has been prepared to serve as a basis for class discussion. It is not meant to illustrate either correct or incorrect handling of managerial or administrative problems.

STAGES IN THE DEVELOPMENT OF TECHNOLOGY IN THE WATCH INDUSTRY

The earliest kind of watches (during 60s and 70s) were the mechanical watches. The next stage (mid-seventies) saw the introduction of the automatic day date watches. The movement of the wrist was used as a source of energy. The main problem faced in the watch industry at this stage was how to ensure accuracy. Although automatic day-date watches had higher accuracy than mechanical watches, it was not satisfactory.

During this stage the piezo electric effect (i.e. the quartz crystal generating electricity when subjected to load) had become popular. This led to the dawn of quartz technology (early 80s) in the watch industry. In the quartz watch a power cell and a quartz crystal were used. A stepper motor was used to drive the hands of the watch. The accuracy improved to +/- 15 seconds/month. With further research in crystals, accuracy of the order of +/- 3 seconds/month became possible.

PRESENT NATIONAL SCENARIO

Analysis of the the wrist watches produced in the country reveals :

1. Mechanical Watches

Mechanical watches are still preferred by the masses in India, mainly due to the attributes like durability and low maintenance cost. HMT watches continue to dominate the mechanical scene with a share of 71% followed by M/s. Jayco, Allwyn, IST etc. In addition, local brands produced in the organized and small scale sectors are concentrated in regional markets in lower price segments.

2. Automatic Watches

With regard to automatic watches, HMT continues to dominate the market followed by Allwyn. The demand for ADD (Analogue Day Date) watches appears to be declining and giving place to quartz watches. Apart from HMT and Allwyn, brands like Citizen, Nelson and West End are also available in the market.

3. Quartz Analog Watches

The demand for quartz watches is growing steadily with the entry of Titan in the quartz segment, where it continues to dominate followed by HMT.

Both Titan and HMT have tapped the high price segment and made their mark. Though Raymond Weil watches are available in this segment, the demand is quite limited and hence availability is restricted.

Some brands like Roches and Ricoh watches, in the small scale sector, continue to dominate in the low and middle price segments. The brands continue to imitate the models of major brands at much lower prices.

Indian watch market production in 1991-92 is shown in the table.

Table 1 : Indian Watch Market Production, 1991-92

Brand	Mechanical		Quartz		Total
	Handwound	ADD	Analog	Digital	
A. Public Sector					
HMT	52.81	2.49	13.76	0.74	69.80
Allwyn	3.50	1.50	3.50	—	8.50
Sub-total	56.31	3.99	17.26	0.74	78.30
B. Organized Sector					
Titan	—	—	22.60	—	22.60
Bifora	1.50	—	0.30	—	1.80
Time Star	0.60	—	—	—	0.60
Jayco	5.00	—	0.50	—	5.50
Indo-Swiss Time Industries	3.00	—	0.10	—	3.10
Others	1.00	—	0.10	—	1.10
Sub-total	11.10	—	23.60	—	34.70
C.SSI	6.00	0.40	6.00	1.00	13.40
Total A+B+C	73.41	4.39	46.86	1.74	126.40

*All figures are in lakhs.

Two important competitors of HMT can be identified. They are :

- Allwyn
- Titan

Allwyn entered the quartz market in 1981 but was not very successful despite the collaboration with Seiko and Government support. The lack of success is attributed to poor management and lack-lustre strategy. It came out with Allwyn Trendy during 1988-89 which is a competitor of HMT's Pace.

It was during 1987 that the Titas tied-up with TIDCO to set up TITAN. The collaborator was a French company, France Ebauchis. Titan also weaned away many of HMT's personnel. It did not attack HMT directly but concentrated on the smuggled watch market.

Titan came out with Titan quartz during 1989-90. HMT came out with a series :

- Ana-digi in 1989
- Elegance in 1990
- Pace and Astra in 1991

Figure 2 shows the sales trend during 1985-92 for HMT mechanical watches. Figure 3 shows the sales trend during 1985-92 for HMT quartz watches. Analysis of Indian watch market shows that it is becoming highly competitive.

INTERNATIONAL SCENARIO

The international watch market has been growing at a steady rate of 10% p.a. but in 1991 the growth was only 3% over the previous year. In 1991 the production was 797 million watches, and in 1990 Production was 771 million watches. These are shown in Fig. 4 and Table 2 (Source : Marketing Agencies).

Figure 2

SALES TREND DURING 1985-1992

MECHANICAL WATCHES

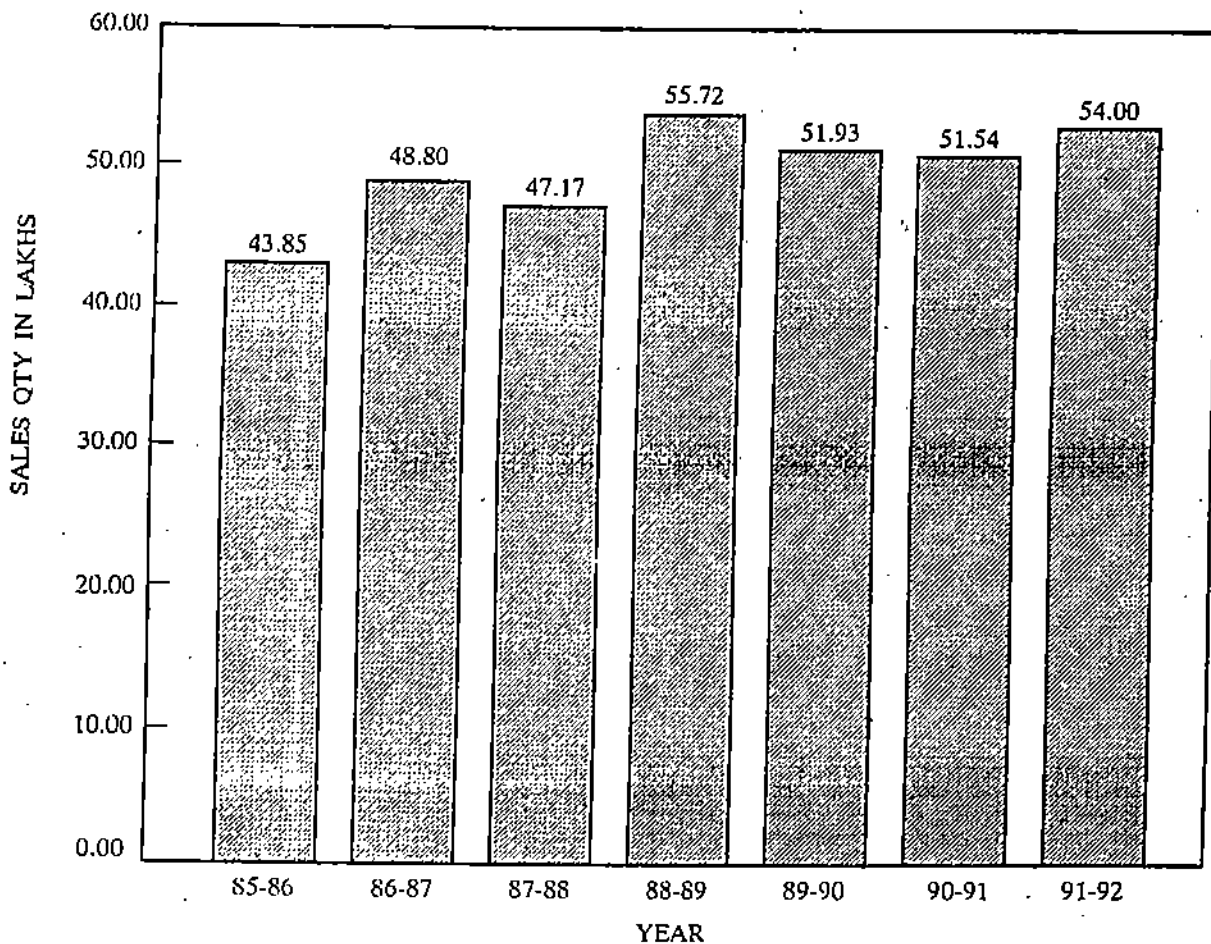
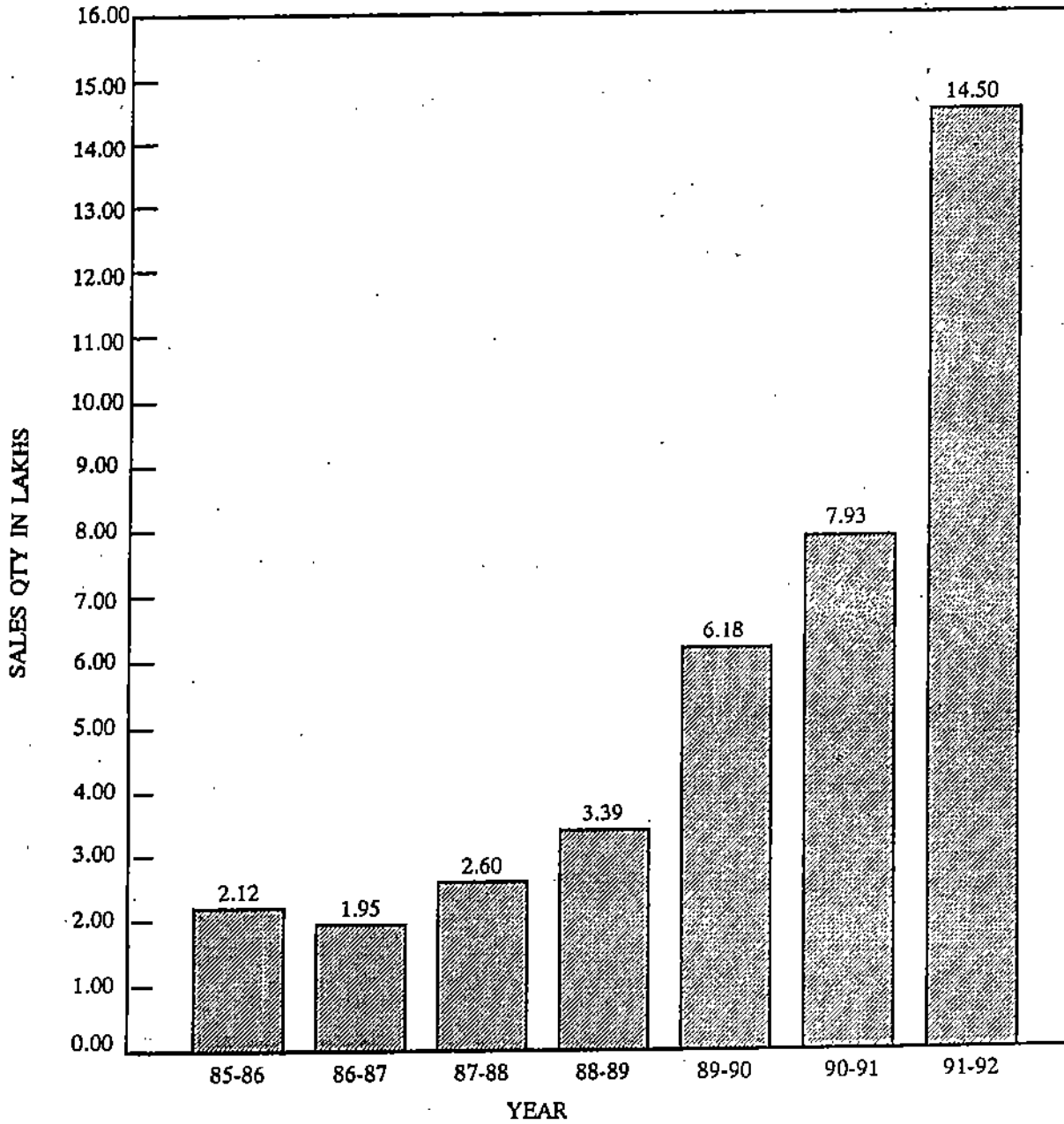


Figure 3
SALES TREND DURING 1985-1992
QUARTZ WATCHES



The insignificant rise in production in 1991 is attributed to the stagnation caused by a recession in the U.S.A. and political and economic turmoil in Eastern Europe. The overview of the global watch production indicates:

- Watch production in Japan accounts for 47% of the world's total production.
- The Swiss watch industry increased movement kits (cbebion) exports to Asian countries.
- The Japanese domestic gift market (watch being given as a gift) increased considerably.

Figure 4 Typewise World Watch Production In 1991

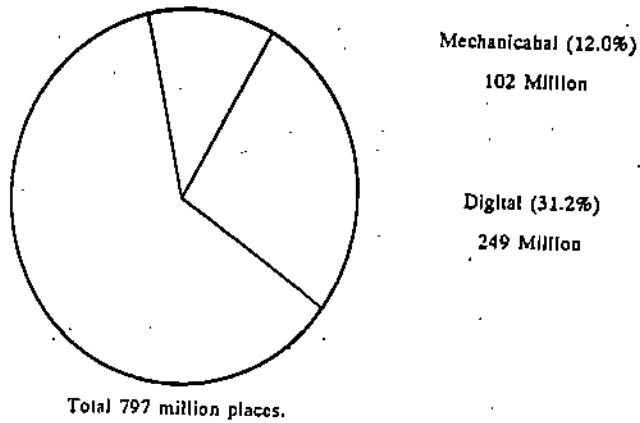


Table 2 : Typewise World Watch Production between 1982 to 1991

Type	1982	'83	'84	'85	'86	'87	'88	'89	'90	'91
Mech.	146	140	134	143	133	128	122	114	106	102
Digital	149	146	149	149	225	230	230	227	260	249
Analog	65	95	127	173	200	227	308	341	405	446
Total	360	381	410	465	558	585	660	682	771	797

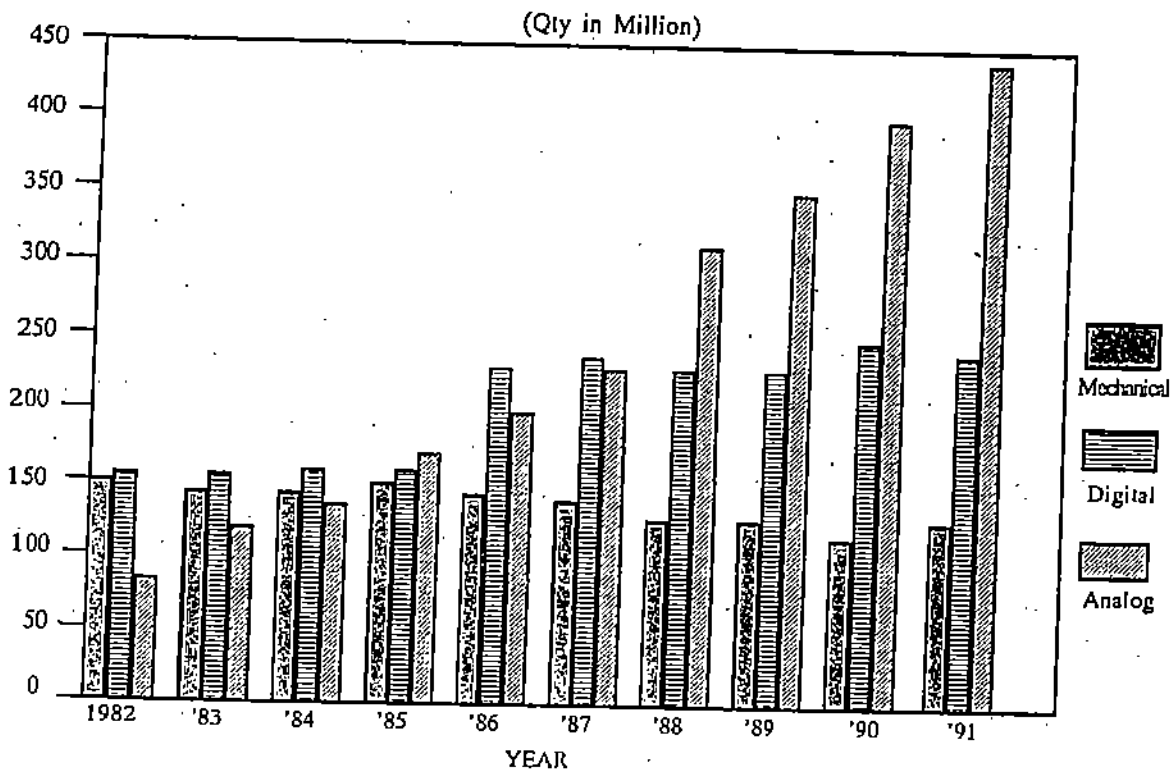
Mechanical Watches

Over the years, the production of mechanical watches continues to decline. The analysis of the last ten years production shows a decline of 30%. This is due to the growing acceptance of quartz watches. Presently these watches account for 12.8% of the total watch production.

Quartz Watches

The ratio of quartz watches to non-quartz watches continues to increase; a record volume of 695 million was reached in 1991 accounting for 87.2% of the total production (Fig. 5).

Figure 5 : Typewise Production between 1982-1991



Watch Division : where it stands

The Division depends on information mostly generated in house or through surveys. The sources of published information are limited. With the available information some important features stand out.

HMT Watches have a good brand image and market leadership, perhaps due to high quality and reliability. In a survey conducted to probe the awareness of watches among customers, 55% mentioned the name of HMT when asked to recall. In a market where the demand for watches is increasing, HMT's share stands at 34%. Although it has an established marketing network on All India basis, the competition is becoming severe with mechanical watches in the decline stage of its product life cycle and most competitors having taken the lead in Quartz Analog Watches (QAW). However, with marginal investments, HMT has the ability to switch over to QAW technology. The company has a record of good industrial relations. It has never had any labour or industrial relations problem. The company's liquidity position has been quite comfortable and it has adequate land and buildings available.

The Company seem to suffer from bad work habits, lack of discipline and low commitment of manpower, inspite of sufficient managerial talent. More than adequate skilled talent is available and there are also good training facilities. There seems to be lack of team spirit and awareness among employees that HMT is passing through a difficult phase. Motivational strategies—punishment/reward—have been inadequate resulting in low utilisation of human and machine capacities. Manufacturing costs and wage bills are continuously increasing. A plus point appears to be the company's established production technology which is flexible enough to adapt to new technology. However, there has not been much emphasis on R&D and design engineering. There is a good demand for watches and also sufficient (unutilised) capacity with the company. However, an adequate cost control system has not been insisted upon in the company. The wage bill and other manufacturing costs have been swelling.

There are good diversification possibilities in products Anadigi, Digi-ana, multi-function, digital, stop watch, Alarm, Thin etc. Export market could also be tapped. The customer profile for the company has changed with the market segmenting itself into youth, gift, fashion, blind, sports and novelty, etc., thus increasing the demand. In addition, the market for ladies watches is also providing a good opportunity.

HMT has to prevent the misuse of its brand name by its spurious operators. The Authorised Service Agents (ASAs) for foreign smuggled watches in the country are also offering competition to HMT. The company has to stand upto all these detractions.

Titan : Future Plans

Titan has produced and sold over 6.5 million watches (Quartz) since April 1987. Their sales performance is consistently improving and they have an edge over HMT and other competitors in Quartz. This is attributed to better designs, attractive looks, higher level product availability and effective advertising and sales promotion campaigns.

The sales performance in 1991-92 indicates 97.8% achievement against production (Production: 22.6 Lakh watches), Sales are realized through :

- a) Attractive Titan showrooms and Franchise shops
- b) Distribution stockists for reaching out to retailo outlets
- c) Others : like Institutions, Canteen Stores Department and Retailers

During 1992-93, Titan planned a sales target of 29 lakhs. Out of this, 27 lakhs was planned for domestic market and the remaining 2 lakhs was targeted at export market. The company hoped to achieve sales of one lakh in the Middle East and one lakh in the European market. To suit the European market preferences better, Titan has deputed its term of designers and planners to Basel Fair in Switzerland, 1991.

Titan also produced watches, costing Rs. 25,000 to Rs. 40,000, of solid gold and studded with precious stones. Planned for 1992 Diwali release, Titan positioned these watches at the superrich who would like to use them as life-style items.

Titan has also entered into a tie-up with Timex, U.S.A. to produce quartz analong and Ana-Digi watches. With manufacturing facilities set up at Noida (U.P.) and with back-up support from Hosur (Titan's present manufacturing base) the company plans two million Timex watches per annum in the price range of Rs. 350-650.

HMT WATCH DIVISION—FUTURE PLANS

The future plans of HMT Watch Division envisage as follows :

- 1) The total production is likely to increase from the present 7 million watches to about 14.5 million watches by year 1996-97 with emphasis on quartz watches.
- 2) The sale of watches will also increase accordingly which will be backed up by an enlarged network of sales outlets, effective distribution system and after sales service.
- 3) It aims to achieve cost reduction through productivity improvement and restricting further recruitment.
- 4) It seeks to maintain market leadership in terms of penetration and technological leadership through continuous updation of product technology and production facilities.
- 5) It will work to increase export of watches.

Armed with this information, Mr. Naik started wondering if HMT's future plans (in Watches Division) could be improved. As the thoughts crystallized, there came the announcement "The plane is about to land in a few minutes at Bangalore airport".

Questions

- 1) Analyse the (i) strengths and weaknesses, and (ii) opportunities and threats of HMT's Watch Division.
- 2) What factors were responsible for the dramatic growth of Titan? What are the main features of Titan's marketing and competitive strategy?
- 3) What lessons HMT seems to have learnt from their experience in the quartz market? How did Titan outmaneuver HMT?
- 4) What are the salient features of HMT's current competitive strategy? Critically examine them.
- 5) Describe the future plans of HMT and evaluate them.
- 6) "The failure of HMT was the success of Titan" Do you agree? Discuss.
- 7) From the future point of view, what are the critical factors for success in the watch market?

ANNEXURE 1

WHEN A GIANT TRIPS*

Six years before Titan burst on the scene with its quartz watch, India's largest watch manufacturers, HMT Ltd, had entered the same market—and failed.

Like Titan, HMT's quartz watch was a premium product. Priced around Rs. 1,500, it was the most expensive watch in the market at that time. And it was touted as the watch for the 'space-age generation'.

But the HMT quartz has a crucial flaw: it looked no different from the mechanical hand-wound watches the company had been selling for two decades.

Result: consumers shunned the HMT offering, and quartz never became a factor in the Indian watch market until Titan shook up the market in end-1987.

If Titan had not come on the scene, HMT could well have gone down as one of India's super-marketers. Its combination of engineering strengths, innovative advertising and high-volume production lines made it a highly successful watch seller. It monopolised the country's watch market, successfully shutting out foreign brandnames like Favre-Leuba and domestic private players like Timestar and Hegde & Golay.

In 1975-76, it sold 600,000 watches, accounting for nearly 90 per cent of the Indian-made watch market. But this sheer dominance caused a blindspot: the giant never had to question the way it defined the market and the role it was to play in it.

Today in the overall 12.5 million-pieces watch market, HMT is still the leader with a near-100 per cent share of the seven-million-piece mechanical watch segment. But in the faster growing quartz segment, HMT is a distant second to Titan. The Tata company accounts for nearly 65 per cent of the quartz segment, while HMT has to be content with the rest. Now HMT has started fighting back to reclaim the quartz market it had discovered. Even the 30-35 per cent share of the quartz market it has today has been wrested back in recent time—about three years back, HMT had been practically wiped out of the market.

But how did the giant lose out in a market it had spotted first.

THE MAKING OF A LEADER

HMT's watch division was set up in 1961. It had a clear, if unwritten, charter from the government: combat the influx of foreign brandnames in the country.

To do this, HMT used a two-pronged strategy. One, it established a strong brand name that could stand up to competition. Two, it produced enough volumes to make an impact on the market. The HMT watch division, of course, started off with an advantage few of its private sector competitors had — the backing

Source : Business Standard, April 6, 1993.

of a parent company with deep pockets. Consequently, getting the funds needed to set up high volume production centres, and financing the ad blitzes to establish a national brandname, became that much easier.

A far-sighted investment the company made in its early years was in its advertising. The company was one of the first big advertisers in the seventies, and with print as the primary medium then, HMT's advertising budgets ran into several lakh rupees. Agency Sistas Advertising had created the memorable campaign "If you have the inclination, we have the time", and no competitor was able to stand up to this kind of an attack.

By 1975, HMT had also set up 14 ancillary units across the country. Producing the components required, the biggest cost centre for other manufacturers, was not much of a problem since HMT's skills in precision engineering helped it cut tooling costs to a third. This was to give it the sheer volumes needed to cow down competition. HMT's production went up to two million watches, more than five times that of its nearest competitor. And demand in a hungry market always outstripped supply.

THE LEADERSHIP TRAPS

(The HMT mistakes that Titan could capitalise on)

❶

Despite having all the data at its fingertips, HMT didn't bother to segment the market even minimally; it continued with just four basic designs.

❷

Because it was the largest watchmaker in the country without serious competition, HMT started ignoring the retail trade.

BREAKING LOOSE

(How HMT is fighting back)

❸

HMT has now started segmenting the market faster than Titan! It introduced plastic watches and children's watches before Titan.

❹

HMT has started duplicating Titan's trade tactics—appointing and servicing dealers better, paying more attention to display, setting up exclusive shops.

❺

Since size and technical skills are still in its favour, HMT thinks strategy corrections like these will do the trick.

HMT was selling everything it made. And this was when it made two classic mistakes. First, it paid scant attention to aesthetics and packaging of its watches. And second, it virtually ignored the 'trade'—the retail outlets who actually serviced the customers.

THE BLIND SPOTS

Product development in HMT became restricted to quality development. At that time, most designs were copies of foreign models available in markets like Hong Kong and other far-eastern markets. HMT personnel would visit these markets and come back with a few select models, which would be copied in its factories. In fact, even in 1982, soon after the quartz watch was launched, HMT had just four basic designs and continued with them for up to two years after Titan hit the market. Yet, this didn't really matter initially because everything it was making was selling any way.

The inability to make a wider range of designs for the Indian market, however, meant that when a customer wanted a good-looking, premium product, he still went to the neighbourhood smuggler.

Surprisingly, HMT did regular market audits to assess demand, buyer behaviour, multiple ownership patterns and even psychographics to cross-verify demand patterns. But apart from changing communication focus, the company hardly did anything to take advantage of the market studies it was conducting.

For instance, in an audit done in 1981, HMT found that the average age of the first-time buyer was 23 years. The company, therefore, ran a campaign to reduce this age, concentrating on the pre-teens and the teenagers. The campaign worked and, by 1985, HMT had reduced the first-watch age to 19. But the company never really designed a watch that could match a youthful lifestyle.

Even where it had a clear lifestyle model — the HMT pocket watch which dated back to the mid-sixties—HMT never talked about it. With all the information at its fingertips, the company never really bothered to segment the market — a flaw Titan exploited so successfully later. When Titan introduced its own pocket watch, it took a strong lifestyle tack to make the model a success.

Moreover, when HMT launched its quartz watches, the company made another mistake. HMT positioned the quartz as the 'space age' generation watch—that is, a watch for the modern young man. But the HMT quartz's high price meant that only the affluent middle-aged consumer could afford it. Thus, the product ended up in a never-never land—neither for the young, nor for the conservative rich.

In less than a year, the company reduced the price to Rs. 850-800 and took a different tack. It put out a series of ads explaining the function of the quartz battery in the watch. The ads, which ran for four

months, looked at four different elements of the quartz watch. The power cell was called the 'mini-generator'; the quartz crystal with its precision role in the movement was compared to the Hummingbird. And the ads talked about how different the watch looked at the back though it looked the same on the wrist.

In an attempt to bring out the accuracy of the quartz watch, the ads took the famous signature-tune further. The catchline now was: "If you have the inclination, we have the time. The exact time." And some months later, HMT followed this up with some lifestyle advertising to justify the high price of the quartz.

At the end of four months, HMT had sold 2,482 watches. The advertising itself was distinctive, but the HMT quartz design didn't match up to the communication. And customers weren't really convinced that the quartz was any different from the other HMT watches. The result: HMT primed the market for quartz, but it couldn't claim the market.

By 1984-85, HMT could sell only about two lakh quartz pieces a year. The company then made another mistake. Going by its own sales figures, HMT estimated that the quartz as a product would have only a restricted market in the country. And it, therefore, pegged its quartz manufacturing capacity at a mere 5.6 lakh pieces annually, and virtually stopped advertising the quartz models. In fact, all the advertising went back to the old HMT umbrella theme. Thus HMT's first attempt to segment the market was soon confined to the dustbin.

LOSING CONTROL

By 1985, HMT was selling about 6 million mechanical watches a year.

By that time, the formidable HMT brandname had meant that the company rarely had to cultivate the retailers. But the trade was not so favourably inclined towards HMT always.

HMT's problems with the trade began as far back as 1961. At first, the retailers had enough foreign brands like Favre-Leuba to sell and were simply not interested in HMT's home-grown product. So HMT decided to go it alone. The company began selling through its 13 branch offices for machine tool equipment.

The official watch market for foreign brands dried up when the government clamped down with the Foreign Exchange Regulation Act (FERA). In the late sixties and early seventies, therefore, the trade found that it had to cooperate with HMT if it wanted to be in the watch business, and began wooing the company after having ignored it for nearly eight years. HMT took advantage of this only in a limited way— if offered service agencies to about 50 key watch retailers as a sop rather as a way of expanding its selling reach.

In 1973, when HMT introduced the first high-priced Indian watches at Rs. 330, it found that it needed more retailers. To expand the market, it simply needed

more outlets. Initially, the same service outlets were given HMT retailership, and slowly, by 1981, the number of authorised HMT retailers went up to about 250. These retailers were supplied through the 13 HMT branch offices across the country.

In the mid-eighties, however, HMT's selective retailer policy began going against it. Some of the authorised retailers started acting as wholesalers without being officially appointed so. These retailers would buy in bulk, and sell it to the smaller retailers at a premium price. Despite the fact that HMT was churning out 4 million watches annually by now, the demand for the watches was so much that a premium was being paid for HMT watches. But because of this HMT slowly lost control over things like final consumer price and the trade completely.

No regular trade audit was being carried out by the company to check what was actually happening in the market. The net result was that there were actually a few large retailers who were controlling all the trade. The smaller sellers were a disgruntled lot.

THE TITAN ATTACKS

The giant's inability to control the retail trade and the sheer lack of designs in its range provided the gaps that Titan exploited when it entered the market. Titan acted the perfect tactical warrior when it launched its quartz watches in 1987-88. The Tata project had been conceived around 1983 and subsequently Titan followed the old policy of raiding the best potential competitor for manpower. Several of HMT's top managers, including general manager (watches) I.K. Amitba who was the driving force behind the HMT strategy so far, joined Titan in 1985. It is believed that it was this core group of managers who drew up and fine-tuned the Tata quartz strategy.

Titan consciously emphasised looks and range. There were nearly 70 watches in the Titan range, each clearly positioned in a different segment, against HMT's 40-odd variants of four basic designs. And the Tata company went to town about its premium products and its range, and pulled in the customer to its shops. To lure customers, Titan even under-priced replacement costs for repair. It would repair watches and replace parts and the battery at below cost, making it service a much talked about affair.

However, one important factor for its success was Titan's trade strategy, which exploited the biggest chink in the HMT armour. Titan deliberately wooed the trade. Its 20-strong sales force was recruited from outside the industry and the primary brief given to them was to scan the market rigorously. Each salesman had to evaluate a retailer to get data, not just about his buying patterns and price but also his attitude to the customer and business. Even seemingly small things like the length of the retailer's counter, and the display space available were noted. Each salesman

had to appoint a predetermined number of retailers in his territory in a fixed timespan.

Moreover, where HMT's retailer margins were officially 7 per cent Titan began offering 2 per cent extra. And the Tata company appointed clearing and forwarding (C&F) agents throughout the country. A Titan sales officer was posted at each C&F agent's office to ensure prompt delivery and good after-sales service to the retailer. Mega dealer conferences, something unheard of in the industry, were organised. And special promotions and incentive schemes were offered like trips abroad for best-selling dealers. With this approach, Titan soon began getting more space on the retailer's shelves than HMT.

Titan also took the watch into unconventional outlets like boutiques and jewellery shops where the product had never been sold before. By 1989-90, Titan sold nearly 1.3 million quartz watches, making HMT look 'fuddy-duddy and down-market.

THE FIGHTBACK

For the first time, the giant was forced to look within and what it found wasn't very pleasing. By then, ground-level HMT staff had nearly six rungs of bureaucracy to go through before a general manager in sales or marketing could take a field decision. Decision-making was almost completely centralised. Even decisions on campaigns for specific products had to be okayed by the managing director, further increasing the time lag in responding to market changes.

Moreover, the loss of its key managers to Titan was a blow the public sector player could recover from only four or five years later. With no real systems to follow, all innovations in HMT had been initiated by individuals. This meant that in the absence of key individual, market decisions often got held up.

In 1988-89, HMT's only action was to bring back the quartz watch, which it had sidelined almost completely by now, and add the Anadigi (analogue-digital) range. This as some HMT managers confess, was more reactive measure than a long-term strategy. Again, HMT failed to make its product aesthetically different, giving itself no real competitive edge.

Ironically, to respond to the Titan threat, the erstwhile master had to take cues from the usurper. The first calculated response came in 1990 when HMT recognised the need for aesthetic detail and presented a new quartz range called Elegance—a dress watch priced at Rs. 1,000-plus. (Titan didn't have a competing product at that time).

But that generated another problem. The elite watch couldn't be sold through the usual HMT retailer nor could it be sold through the branch office showroom. It took the company almost another year to establish exclusive showrooms called Time Art

In 1991, HMT set up a product development centre for watch design for the first time. That year, it also launched the Pace and the Astra plastic quartz ranges, following the Titan segmentation strategy for the first time. Pace and Astra were mid-price watches, the former in a lifestyle package, and the latter positioned as a multi-function watch. And in 1992, HMT preempted Titan again with its Zap! children's watches. The giant was learning to play the segmentation game from the challenger.

And distribution—the key weakness so far—was shored up. HMT now operates a system similar to Titan, with three nodal warehouses servicing C&F agents. Re-distribution stockists buy from these agents on cash payment and distribute them on fixed margins

to retailers. Unlike before, HMT's 100-strong sales force is now on the move, monitoring markets with regular retail audits. However, reaction to data can't be done before the end of each quarter at HMT unlike Titan which can do so on a monthly basis.

Today, the watch market has been cleaved into two halves of a pyramid. HMT still dominates the base—with quality and low prices as its weapons. But Titan has hijacked the upper end using design as its edge. Now the battle is shifting to HMT's base camp as Titan-Timex get ready to attack the middle and lower segments of the watch market (See *The Chess Players, The strategist* dated December 29, 1992). HMT has the production volumes and the reach to defend its turf. But the question is: can the giant move fast enough in the marketplace?

ANNEXURE 2

THE CHESS PLAYERS*

What can a price warrior do without the price weapon?

How will plastic fare in a clash with metal?

Can you transform a commodity market into a lifestyle market?

The answers will determine the nature of the mainstream Indian watch market. Also the future of HMT, "the timekeepers to the nation"; and Timex Watches Ltd., a joint venture between Timex of the US and Titan of the Tata Group.

Titan has already sewed up the upper end of the watch market with 70 per cent market share and if Timex succeeds in sweeping up the lower end as it intends to do, HMT will have no place to hide. Luckily for HMT, Timex will have to do quite a bit of marketing maneuvering before it can hope to emulate the success of its Indian parent. Although it has the marketing and retail outlet chain of Titan at its service.

For one, Timex, the international price warrior and aspirant to the mass market title in India, will be forced to price itself at least 75 per cent higher than HMT's mass models! For another, Timex could just tie itself up in a trendy, niche market with its exclusively plastic models while HMT keeps its monopoly over the mass market with its hardy metal products. However, having known each other's tactics over the last five years, both sides are rehearsing their moves carefully.

The board

The low and medium priced segments of the Rs. 700 crore-plus Indian watch market. These segments account for roughly half of the total market in value terms. The consumers here look upon a watch almost as a commodity, an essential utilitarian time-keeping device bought for purely functional reasons. They, however, set great store by a watch's durability and look for value for-money while making their buying decisions.

So far, there is only one kind of watch ruling supreme in these segments—mechanical (hand-wound) metal watches. These are bulky and inelegant, and also somewhat inaccurate, but give the impression of great durability. That is, however largely a matter of perception.

Opening moves

Timex gained its price warrior image in the world market by consistently cutting costs by 10 per cent every year. It did that by having off a couple of cents here using plastic components to substitute for metal, half a dollar there by using a single component to do several related jobs, and a few more cents by using innovative manufacturing practices.

Unfortunately, because of the high initial investment in its spanking new factory (Rs. 83 crore) at NOIDA, Timex cannot produce cheap watches in India just yet. In fact, its cheapest model costs Rs. 360 and while the bulk of the models fall in the Rs. 450 to Rs. 700 range. Some of its watches even go up to Rs. 1200.

To add to the company's troubles, it will need to change the public perception about plastic to sell its models in the durability-conscious mass market. Right now, plastic watches are popular among the urban youth, but are considered rather filmy by the consumers of the mainstream market.

Price and plastic, therefore, are forcing Timex to ignore the absolute economy segment of the market at the beginning. Even if that goes against its strategic grain. Instead, it has targeted the urban, 'trends' market, which can support its prices.

Here, it won't have to work very hard to establish itself. Its Indian parent has already done much of the work. The Titan Aqura range of plastic watches is already well-established with fashion-conscious urban youngsters looking for a watch to match their moods. And the Aqura range is being transferred to Timex. Moreover, Timex is assured of good display in the 4,000 classy retail outlets in a thousand towns that Titan controls. And Timex can boast of a huge array of styles—200 to start with, and more in the near future. However, this is only a waiting game. As soon as possible, Timex intends to attack the mainstream market itself.

HMT, on the other hand, is starting off with a slight positional advantage. It has both kinds of watches in its range—the plastic, fashionable watches, and the metal watches aimed at the utility and economy segments. Like Titan, HMT had promoted the plastic, 'trendy' analogue range called Astra, when the market took off. And now, it has added two more plastic models—Zap! for preteens, and Pace for the teenagers. All these are substantially cheaper than anything Timex can come out with.

The HMT Zap! range costs between Rs. 115 and Rs. 150, while Pace sells at Rs. 175-300. Even the most expensive Astra from HMT costs only Rs. 600-odd. But for HMT, plastic watches is just an urban niche. Its main bread and butter markets still come from the handwound metal watches. And these watches constitute at least 60 per cent of HMT's production of 7 million watches. In the near future, therefore, it lies in HMT's interest to keep the plastic segment distinct from the metal segment.

The opening moves, therefore, will determine one crucial thing: whether Timex can avoid the trap of a head-on collision with HMT's Zaps and Paces.

*Source : Business Standard, December 29, 1992.

The middle game

Timex doesn't intend plastic watches to remain just a niche in urban centres for long. It wants to position them as the better alternative to metal watches in both urban and rural areas. And to do that, it intends to educate consumers that plastic watches are more durable, accurate and better in every respect than metal handwound watches. It will emphasise on the lesser number of watch movements in plastic watches, which means less wear-and-tear, and the quartz connection, which stands for more accuracy.

At the same time, Timex also intends to change the rules of the game in the middle priced watch segment. It perceives a strong weakness in the metal watches being offered in this price range—the fact that they don't offer consumers much choice by way of styles.

A key strategic weapon that Timex intends to use is its ability to design and produce a watch for every conceivable lifestyle. It can offer sober watches, watches for fashionable women, watches for the sports-minded, watches for teenagers as well as children, and chronometers for the gadget-minded. Using that track it hopes to convert many of the erstwhile metal watch users—who are sick of buying undistinguished watches—to its fold.

Timex knows that HMT will not be able to match its range easily or cheaply. Timex uses flexible manufacturing practices to be able to produce small numbers of specific styles. HMT, on the other hand, depends on huge volumes to keep prices low. So HMT keeps churning out huge numbers in a small number of styles to play the price warrior to the hilt.

So the rational thing HMT can try and do is keep the plastics market confined to a small segment. It can do so by pricing its own plastic watches so low that a consumer associates plastics with cheapness-and flimsiness. That way, it has the best of both worlds—a position in the plastic segment plus a monopoly in the mainstream low end market.

To be able to do that, it has to keep prices of both its metal and plastic watches much below what Timex can offer. And the lack of styles in its metal segment

can actually work in its favour. After all, moods are subject to change—and one cannot keep buying a watch every time every time there is a mood shift. It will probably emphasise the solid respectability of its metal watches to keep that market safe.

But to play it safe, HMT is stepping up its plastic watch production from 2 lakh-odd a year to 4 lakh. Even if plastic watches start cutting into metal sales, therefore, HMT will be in a position to grab a chunk of the sales given its low price tags.

End game

Timex calculates that five years from now its watches will be cheaper than HMT's. It figures that by this time, the depreciation of its plant and the production efficiencies it will have achieved will help it play the price warrior. Also, the plastic watches will have by now proved their durability.

When this happens, Timex plans to address the absolute bottom end of the market. Moreover, it will not remain tied to the apron-strings of the Titan retail outlets either. If it has to expand to rural areas alone, it is quite prepared to do so. Even when it concentrates on positioning its plastic watches as the 'main' economy it will be offering enough styles to suit every lifestyle. That, it hopes, will see an ever-increasing tribe of erstwhile metal watch owners shifting to plastic watches.

HMT claims its main strength lies in selling every kind of watch at the most affordable prices. It seems confident that Timex will never be able to bring out lower priced watches than HMT does. And HMT certainly can't see plastic watches replacing metal watches in the near future. And even if that happens, HMT could well parley its huge volume production facilities to churn out more plastic watches than Timex can. It has learnt to move faster after its clash with Titan.

It then depends on who plays the game better. And whose perceptions about the consumer is more accurate. Five years from now, the answers should be apparent.

THE COST CUTTER

HMT needs 3,000 people to produce 7 million watches. Timex plans to use just 200 employees to manufacture 1.5 million watches.

The spanking new Timex production facility in Noida is designed to achieve two things—watches at the cheapest cost, and using the least number of people.

As far as the cost aspect is concerned, Timex has depended heavily on the expertise of its parent Timex Corp of US. The accent is on seeing how the least number of components can be used to make up a watch. And how a component's cost itself can be brought down.

Therefore, most components are made of inexpensive, ultra-light high-impact plastics. And most components are designed to perform more than one function. Not only that, the majority of the components also act as a base to help some other component do its job well. Thus Timex Watches are assembling watches with as little as 55 to 60 components while most manufacturers use between 95 to 110 components.

To be able to keep the number of workers low, Timex depends heavily on automation. Automation doesn't cut down the number of people required to assemble one watch. What it ensures is that the same number of people can process more watches than otherwise.

A line manufacturing facility helps in deskilling workers. Workers in a line just add on their bit to a watch passing through their workstation using the latest machines. In batch manufacturing, batches of different types of watches is sent to a workstation where a worker who specialises in a particular kind of job handles them one by one. On the other hand, in line manufacturing there is a constant flow of a single type of watch from worker to worker, each of whom just attends to the operating machine to fit in the required component swiftly.

The plant is a "clean" manufacturing space—that is, it is dust-free, humidity controlled, temperature controlled and has a rather antiseptic feel about. Despite all this high-tech, Timex still cannot produce watches as cheap as HMT. The problem, apart from the high project cost, is the fact that most components are imported.

Timex is trying to indigenise as fast as possible to bring down the costs. Some calculations of savings that it has worked out: injection moulds imported from abroad costs Rs. 16 lakhs, having them made in India will cost the company barely Rs. 2.50 lakh. An imported watch strap comes at a price tag of Rs. 40, an Indian one will cost just Rs. 15. Timex calculates that if it can stop these expensive imports in the near future, its watches can be priced at half of what it is now.

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