Chapter I

Introduction
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Human resource is the basic input in any development process. Human resource management has so far been given a low priority in our country. The principal component of any organisation is its human resource. It is this human resource which is of paramount importance in the success of any organisation, since most of the problems in organisational settings are human and social rather than physical, technical or economic. Failure to recognise this fact has caused immense losses to the nations, enterprises and the individuals.

'Every aspect of a firm's activity is determined by the competence, motivation and general effectiveness of its human organisation. Of all the tasks of management, managing the human component is the central and most important task because all depends
upon how well it is done' - Rensis Likert.¹

No industry can be rendered efficient and lucrative as long as the basic fact remains unrecognised that it is principally human. An industry is much more than a mass of machines and technical processes. At its core it is a group of men, working for the benefit of their country besides their aim. It fulfils its functions not by virtue of some impersonal factors but by the right employment of human energy. Its body is not an intricate maze of mechanical devices but a magnified systematic nervous system. The fact that 'people' in an organisation are being given increasingly more importance is extremely encouraging and paves the way for prospect because of the realization that human assets are the most important assets we have. This emphasis can be attributed to the new value of Humanism and Humanisation emerging in the world. Of all the primary sources, viz., men, machines, materials and money, it is man who constitutes its greatest asset.

The importance of the human factor may be perceived in the fact that whereas all other resources depreciate in value as time passes, the human factor

appreciates in value acquiring greater knowledge, experience, efficiency as it embodies an inherent element of dynamism and development.

The centre of productivity is the human being; man is the basis of all productivity efforts and is the sole agent for its implementation. Increased productivity is the primary goal of all business. Most organisations have more than one goal. Changing aspirations and expectations of employees have caused most organisations to pay more attention to their human assets.

Productivity is the cornerstone for industrial growth and economic development. Productivity in the simplest sense means production per unit factor. A country can achieve progress not merely by production of goods and services but also by improved productivity and by the better utilisation of its human resources.

Of all the factors of production, labour is the most fundamental and critical one in the context of productivity. While other factors have limitations in terms of quantity, quality, physical features, technological features and capacity, the human factor is the most versatile with an unlimited potential.
Productivity in any organisation must be built on human beings and not on machines. Machines can be duplicated but human beings cannot. Hence, effective utilisation of the human resources in terms of physical output, mental capacity and motivational propulsion is an absolute must. This necessitates a constant vigil on the all-round progress that must be made by society, in terms of social progress, economic growth and technological advance. And these in turn add to the dimensions of man in terms of his potential capacity.

Human Resource Management

Human resource management encompasses those activities designed to provide for and co-ordinate the human resources of the organisation. The Human Resources (HR) of an organisation represent one of its largest investments and hence requires effective utilisation and management. Human resource management is a modern term for what has traditionally been referred to as personnel administration or personnel management. Human resource management involves processes such as recruitment, selection, development, utilisation and accommodation of human resources by an organisation.
Organisational health today is inextricably interwoven with effective human resource management (HRM). With intensified competition in the market place becoming a reality, more and more business enterprises are realising that the human resources provide the sharpest competitive edge needed for the success.

In an organisation human resource management must take care of the following aspects:

a) Human resource planning,
b) Selection and staffing,
c) Training and development,
d) Union-labour relations,
e) Organisational design and development.

The main idea of Human resource management should be to match persons' capabilities with the job requirements.

To develop human abilities systematically for productive purposes, concerted efforts are required. The work of developing human resources is comparable to that of constructing a building wherein the foundation is the very essential and the most important component. Human factor is the foundation on which the whole superstructure of the organisation is built up.

Human resource development may be defined as the development of people by providing the required environment where the human being may grow to his
fullest stature and release his fullest potentials. Many view HRD as synonymous with Human resource planning. But there is a difference. Human resource planning is often defined as an attempt to match the supply of people with the jobs available for them, while HRD is the process of identifying and developing right people in succession at various organisational levels. Again there is a difference between Human resource management and HRD. The former is concerned with the management of personnel, while the latter concentrates on the systematic development of people and their potentialities. Again in Human resource management, the basic assumption is that people are motivated by salary and rewards whereas HRD assumes that people are primarily motivated by challenges and opportunities for development.

Besides greater development and appraisal of personnel, HRD imposes high responsibility on management for the development of the human resources of the organisation. Nevertheless, HRD should be complementary to Human resource management, as the basic objective of human resource management is to provide better development and better utilisation of human resources of an organisation.
Statement of the problem

It is but common knowledge that industrial undertakings in general and public sector undertakings in particular suffer due to improper management of human resources. They do not understand the crucial fact that proper human resource management alone can ensure the commercial viability and success of any industry.

Productivity is considered a primary goal of business; without a satisfactory level of productivity, a profit oriented organisation cannot survive.

The public sector undertakings have reached commanding heights of the national economy in several countries of the world. In India, with a colossal investment of public money the public sector represents the greatest hope of the millions as a prime mover and an accelerator of development. Over a period of the last two decades, this sector has multiplied itself manifold. Today there is hardly any area of industrial activity where the public sector has not made its impact felt. In the sixth five year plan (1980-85) the planned investment expenditure for the public sector represented 56.6 per cent of the total planned expenditure
for the plan period. The draft approach paper on the seventh plan (1985-90) visualised a public sector outlay of Rs.1,80,000 crores at 1984-85 prices.*

It is an accepted fact that the public sector does have access to better machines and technology. Despite this access to the best available inputs, the sector has not been able to deliver the results expected of it.

Against this scenario, there are organisations in the public sector like Bharat Heavy Electricals Limited (BHEL), which have performed comparatively better in the past. It is presumed that this success is due to the effective human resource management and its favourable impact on productivity. An attempt has been made in this study to find out to what extent Human Resource Management has its impact on productivity particularly in a public sector undertaking - taking BHEL, Trichy as the case unit for the study.

BHEL, Trichy which is an unit of the Central BHEL with its Corporate Office at New Delhi has been

performing well consistently ever since its inception (1963) both in terms of profit generation and increased productivity. The company has been receiving awards at national level for high productivity continuously for the past several years. The critical factor which has ensured as commercial viability and the success of this unit as claimed by its management is the quality and effective utilisation of its human resource.

In this context, there are many questions that need to be answered:

i) What are the factors that determine the worth of the human resources of an organisation?

ii) Whether there is any relevance between human factor and productivity?

iii) If there is, how can this human resource be systematically developed and scientifically managed?
iv) How do HRM and HRD help improve productivity?

and

v) What is the experience of BHEL in their HRD and HRM efforts and how far it has contributed to its productivity?

The desire to find an answer for these intriguing questions has motivated the researcher to undertake this comprehensive study.

Objectives of the study

The aim of the study is to establish the relation between human factor and productivity and hence the study was undertaken with the following specific objectives:

i) To know how the human resource development and management practices are being adapted in a public sector undertaking.

ii) To assess the role of human resource factor in improving the productivity of an organisation.

iii) To measure the impact of human resource management in productivity in BHEL.
iv) To identify the factors that have enhanced productivity in BHEL, Trichy and

v) To suggest ways and means to improve productivity through HRM in a public sector undertaking.

Scope of the study

The present study is confined only to the Trichy unit of BHEL, and analyses its productivity growth for the five year period, from 1985 to 1989. The study is mainly based on the data relating to High Pressure Boiler Plant (HPBP) which covers Seamless Steel Tube Plant (SSTP) also since the output of SSTP is the input for HPBP.

The productivity measurement is made by the researcher using 'value added' method for the past five years from 1985 to 1989. Under the present study, the researcher has identified the following specific key areas of HRM to know its impact on productivity:

1. Manpower Planning
2. Training and Development
3. Labour-Management Relations
4. Participative Management
5. Labour Welfare.
The researcher has focussed on the above key areas only and has not covered the psychological aspects of HRM on which many of the earlier studies have concentrated. Realising the imperatives of improving the productivity of the public sector in the context of better future for a developing economy like India, an attempt has been made to look at productivity through HRM factors.

Survey of earlier literature

Many authors have highlighted the importance of human resource management from different angles. Yet, only a very few research studies have been made to arrive at concrete conclusions.

Narendra K. Sethi and Manju Ahuja\(^2\) in their study have brought to light the importance of Human resource planning. Human resource system is seen as the function which has the specific task of integrating all other functions of management.

The study found that human resource is the most vital part of any modern business system. Productive

individuals are essential for the achievement of corporate goals. The element of effective human resource planning, the process of organisational staffing and the performance appraisal procedure are the three important parts of total human resource system. When these three processes are integrated efficiently in an organisation, the result would be better productivity and results.

Udai Pareek\(^3\) has explained that 'the concept of human resource as distinct from personnel emphasises not only on individual persons but also on groups of people functioning in an organisation. Human resource management is primarily concerned with increasing the capability of an organisation.' Human resource system gives importance to the basic unit of all teams in the organisation, viz., the dyadic unit of the employee and his supervisor. He stressed that all activities of human resource management should help to strengthen this two-person relationship and increase the trust

\(^3\)Udai Pareek, Changing concepts of Human resource Management, Productivity, January 1981, Vol.22, p 3
and mutual understanding between the so-called superior and the subordinate.

Prof. D.M. Pestonjee⁴ has described that productivity is a problem on which research and theoretical opinions abound. The author has attempted to explore the relationship between industrial output and the personality dimensions of operators. The author has observed that productivity is a complex problem and one cannot develop a clear insight into it unless one explores the human variables in depth. Available literature clearly indicate that psychological variables can act as potent determinants of productivity. HRM is more psychological in nature since human mind and attitude are involved.

Dr. M.N. Kulkarni in his article 'Managing Human Resource Development Programmes (HRDP): challenges and opportunities'⁵ has observed that schemes and projects

⁴D.M. Pestonjee, Productivity - A Human resource prospective, Productivity, September-October 1984, Vol. 27, No. 3, p 7

designed to serve basic human needs such as health, education, food etc. do not directly contribute an organisation's business objectives. The corporate enterprises have tended to shy away from investments in such projects and no serious effort has been initiated towards inducting modern management techniques as an aid to the efficient running of the 'HRD'. The study envisaged the importance of introducing these techniques and methods of HRDP's and had discussed their various dimensions.

His opinion is that the management movement had not caught up among the managers of HRDP's and it will not do so, unless agencies like All India Management Association and a number of corporate bodies make a conscious and deliberate effort to generate management ethos among the policy makers and managers of HRDP's in the country.

N.Rabindra Kanungo in his study 'Managing People for Productivity'\(^6\) has focussed on managing people

\(^6\)Rabindra N.Kanungo, Managing People for Productivity, Productivity, July-September 1986, Vol.27, No.2, p 12
for better results. He is of the view that the manager in an organisation must diagnose ineffective employee behaviour through appraisal and measurement of such behaviour. Secondly, he must create conditions for replacing undesirable behaviour with desirable behaviour linked with high performance in employees through appropriate changes in the work environment. He is of the opinion that design and implementation of such an action programme requires a constant monitoring and evaluation of performance appraisal and reward system of the organisation. He has concluded that it is not an easy task to frame an action programme but it is a vital task, if management wants to maximise the potential of each employee with the organisation.

S.K. Bhatia in his article 'Challenges in HRM' had analysed the challenges of HRM under three broad groups.

a) Organisation level:

Human resource planning has to be integrated with the strategic plans of the organisation.

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7 S.K. Bhatia, Challenges in HRM, Indian Management, August 1986, Vol.25, No.8, p 8
b) Work place:

Adapting the work force to rapid changes in technology.

c) Human resource development:

Increasing the effectiveness of Human resource functions.

The study also revealed that there are plans, approaches, change in techniques and strategies, which the companies are developing to make their organisations more effective, more participative and more acceptable; the challenge lies in successfully integrating each change effort with the development of human resource management. Workers' participation has also to begin from the grass roots of the boss-subordinate relationship. The challenge of keeping the organisation young and productive lies in seeking a stable and pro-active industrial relations environment instead of pre-occupation with fire fighting, he concluded. He finds that the most important mistake by the management today is the sad neglect of 'grievance handling'.
Naval H. Tata in his study 'Harmony in Industrial Relations for Productivity'\(^8\) has expressed that the success of productivity depends to a large extent on the labour-management relations at the plant level. He is of the opinion that in a mixed economy like ours, the third party, viz., the government has by right a bigger role to play on the plea of public interest or industrial peace or uninterrupted production. He has observed that no attempt has been made to link wages to productivity. Thus our wage system acts as disincentive in the path of increased productivity.

Dr. Ram S. Taneja in his article 'Towards better technology: utilising human resources'\(^9\) has observed that one cannot manage machines, finance, marketing, production so on and so forth, without the proper utilisation of human resources. We as a nation to upgrade our standard of living want that, as a supplement to

\(^8\)Naval H. Tata, Harmony in Industrial Relations, Indian Management, July-September 1986, Vol.27, No.2, p 129

\(^9\)Dr. Ram S. Taneja, Towards better technology: Utilising Human Resources, Indian Management, June 1987, Vol.26, No.6, p 12
our human resources which are precious and rare we should be able to adopt technology to suit our environment and conditions. He has concluded that both the technology and social values are changing and in this background an organisation should maintain a balance between changing technology and changing social values with an aim to maximise the utilisation of Human resources.

Rabindra N. Kanungo and Manuel Mendonca in their research study 'Work Rewards and Management of Human Resources' have discussed the objectives of reward system and its evaluation. Intrinsic rewards are those that are built into or inherent in the job such as responsibility, feelings of accomplishment. Employees gain these rewards directly as they perform the job tasks. Extrinsic rewards are those that are external to the job for example, pay, benefits, praise, pleasant working conditions, job security etc. The intrinsic rewards generate in the employees a level of satisfaction which induces a high level of performance. For this reason, 

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intrinsic rewards are regarded as the real and only 'motivators'. His view is that if you want just happy employees, then provide extrinsic rewards. But if you want to increase employee productivity, provide intrinsic rewards.

Dr. Muktar N. Khan in his study 'Human Resource Development in Changing Technology'\(^\text{11}\) has stated that manpower resources are in fact a double edged weapon. If it is used faultily, it leads to uneconomic retardation of a country. An effective HRD programme should include (a) proper HRD strategy, (b) adequate manpower development procedures and (c) a specialised motivational plan. He has opined that in this age of changing technology, human resource development is a pre-condition both for maintaining and further developing the national economy.

Prof. V. Sreenivasan and V. Siva Subramanian in their study 'HRM - Effective and Efficient'\(^\text{12}\) have expressed

\(^{11}\) Dr. Muktar N. Khan, Human Resource Development in a Changing Technology, Human Resource Development - Strategic Approaches and Experiences (Edited by Dr. B. L. Mathur), Arihant Publishers, Jaipur, 1990, p 127

\(^{12}\) Prof. V. Sreenivasan and V. Siva Subramanian, HRM - Effective and Efficient, Indian Management, May 1988, Vol. 27, No. 5, p 20
that a good organisation which is very successful cannot exist on probabilities. Efficient people have to be put on appropriate tasks to make them effective, otherwise it gives a misinterpretation that the people are inefficient. They observe that it is very difficult to select a person who will suit the needs of jobs, and individual capabilities become obsolete due to changing work environment. They have concluded that HRM is not praising effective men and rejecting ineffective men, but making ineffective men effective through different techniques that the empirical studies have endowed to the world of management.

P.N.Prabat in his study 'Linking Human Resource Planning with Strategic Planning',¹³ has explained that planning normally addresses itself to perspective changes in business objectives and the forces affecting the business. Business, as it is today will change in many ways in the future. Strategic planning is therefore vital for effective management of especially large companies. As a company grows larger or changes emphasis

from say, production to marketing, systematic manpower planning becomes a necessity. A lack of adequate talent may be the single major constraint in the ability to sustain future growth. He has concluded that it is therefore imperative to link Human resource planning to strategic business planning to ensure an overall success in the business.

B.S.Chetty and K.N.Krishnaswamy in their article 'Skills of Human Resources: Need for Periodical Review' have focussed the need for periodical review of human resources and this study found that areas such as participation of management, employee turnover, job data, Training of employees, Retraining programme etc. need periodical review for effectiveness. Whenever there is a change in the level of organisational activity, either expansion of existing product range or addition of new products or services, the impact is felt on manpower allocation and requirements. The degree of impact depends upon the intensity of change in the activity levels. If periodical HR reviews are undertaken, the

The process of change and adjustments with regard to human resource development and utilisation is greatly facilitated.

Dr. S.S. Jyothi in his article 'Training and Development of Human Resources' has explained that HRD is a broad term which indicates all activities designed to get employees to work more effectively within a given organisation. It builds knowledge, skill and capacity of human resources to develop their competence. The development of human skill automatically increases business productivity. His opinion is that HRD or development of people lies in the organisational growth and progress. There is general agreement that national productivity and corporate efficiency lie in the better management of human resources. It was therefore found that training being the most vital tool of human resource development, naturally forms the major part of the present human resource development. The performance of the human resource in business, industry or any other institution will mainly depend on the system of selection and training.

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Dr. S.S. Jyothi, Training and Development of Human Resources, HRD - Strategic Approaches and Experiences (Edited by Dr. B.L. Mathur), Arihant Publishers, Jaipur, 1990, p 143
Dr. T.V. Rao in his study 'HRD practices in Indian Industry' has stated that the need for focussing attention on the development of human resources is increasingly being felt in Indian Industry. The study highlights the manner in which some of the HRD sub-systems are being practised and utilised in Indian organisations. The author has analysed the responses of senior executives from 45 organisations to a questionnaire on HRD and the trends are analysed. The trends indicate that a lot of innovative activities are going on in Indian organisations (both in the private and public sector) indicating a modernising trend in the personnel function.

T.K. Gupta in his study 'HRD-Key to improve productivity' has stated that the productivity of any organisation can be improved by application of capital intensive high technology, scientific and modern technique and attitudinal change of employees by improving

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work culture. The author has said that the study in many organisations in developed and developing countries have proved that technology or technique itself may improve productivity but it cannot sustain it for a long time. It is necessary that an integration of high technology, scientific technique and work culture is continuously followed up through detailed HRD process covering every section of employees. High technology is playing an important role and this has to be imparted to lower level of employees by training them in theory as well as practice so that the knowledge is applied in work situation. This requires massive and continuous education programme.

Dr. V. Krishnamoorthy in his article 'People Productivity' has identified three vital elements that influence productivity, viz., capital, technology and people. He has analysed this scenario in Steel Authority of India (SAIL), Bharat Heavy Electricals Ltd., (BHEL) and Tata Iron and Steel Company (TISCO). He found that the productivity of an organisation is determined by two aspects i.e., its internal efficiency and external

constraints. If we analyse in depth the causes for low manpower productivity, it becomes clear that while external constraints may be one of the causes, managerial input to increase the productivity is lacking. He concluded that productivity is simply a way of thinking of every individual in a country - a desire to achieve higher productivity levels and only when all of us are genuinely committed to improving our own performance and also contributing to the improved performance of larger systems of which we are a part, we can hope to achieve our objectives for higher productivity.

Dr. Subratesh Ghosh in his article 'Participative Management for Higher Productivity' has attempted to study the lessons drawn from the experiments in different countries including India. In the light of these experiments the author has identified the problem areas and the role of participative management in the productivity improvement. He has stressed that participative management may be an effective approach for

raising the level of productivity, provided certain pre-conditions are fulfilled and the problems are sought to be encountered seriously. For that, of course the scheme should be meaningful and significant in coverage so as to make the workers interested in participation and the management also must be ready in spirit to involve the workers in the process of decision making for improving labour productivity.

Parthasarathi in his article 'Manpower Planning', has analysed the different stages of manpower planning and observes that in the present era of rapidly changing political and economical activities forecasting of any resource is difficult and manpower is no exception. To have an accurate and reliable forecast, an organisation should have systematic personnel records and rational personnel policies. He has observed that manpower forecasting is the most complex part of the exercise for which the use of scientific technique is a must.

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19 Parthasarathy, Manpower Planning, Lok Udyog, Bureau of Public Enterprise, August 1982, Vol.16, No.5, p 23
Ashok Pratap Singh in his study 'Human Resource in Industrial Productivity - A psychological perspective'\textsuperscript{20} has observed that productivity is influenced not only by physical aspects but demographic, situational, attitudinal variables which are not less important for the productive efficiency of employees. The author surveyed 800 blue-collar industrial workers of a large textile mill situated in Kanpur to make an intensive study of the effects of alienation, anxiety and job involvement on the performance of the workers. It was found that 'alienation' has a negative relationship with the productivity of workers; a high degree of 'anxiety' exerts a deteriorating effect on productivity and high 'job involvement' is the necessary condition for the employees to enhance their productivity level. He has observed that the relationship of job involvement and employee's performance is significantly influenced by alienation and anxiety.

R.N.Dravid in his article 'Importance of Values in HRD'\textsuperscript{21} has stated that HRD practitioners in India


\textsuperscript{21}R.N.Dravid, Importance of Values in HRD, The Hindu, Thursday, August 1, 1991, p 18
have a few understanding as to how human resource management activities contribute to the effectiveness of a business organisation and have become increasingly obsessed with the development of tools and technologies only. HRD professional will have to take an active role in influencing the political and cultural systems of the organisation. He has stressed the fact that the element of human resource planning should be meshed with strategic planning, and human resource staff should be taught to support the strategic planning process.

N.V. Krishna in his article 'Human resource obsolescence in organisations - issues and strategies,' has observed that with the emergence of electronics and computers, the rate of obsolescence in human skills is increasing. The profile of the working force, their demands and aspirations are constantly changing. HRD is meant to focus on the motivational aspect of professionals and help in creating environments for their continuing education and updation of skills and knowledge and prevent them from becoming obsolete. Human resource obsolescence is a phenomenon which takes place

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gradually and not abruptly without warning. There is advance intimation, which can be forecast, detected and planned for. Any attempt at detection or prevention has to begin with a general understanding of the factors responsible for obsolescence and their effect on the company's personnel and manpower planning policies. For this, continuing education can be said as a means of tackling obsolescence and would be useful when they are planned well and tailor made to meet specific needs.

G.K. Suri in his study 'Training for Productivity in Industry',\textsuperscript{23} has stated that an effective use of materials, money, machines and human resources is essential for achieving a higher level of productivity in industry; whereas other resources have limitations, the human resources has unlimited potential. Its quality can be improved by intervention of training. He has concluded that our knowledge on the impact of training on productivity, facilitators and constraints is highly inadequate and a comprehensive research on this aspect needs to be initiated.

\textsuperscript{23}G.K. Suri, Training for Productivity in Industry, HRD and Productivity - New Perspectives, National Productivity Council, New Delhi, 1988, p 63
A.Gani in his article 'Personnel Challenges by 2000 A.D.' \(^{24}\) has stated that the effective and efficient management of human resources plays a key role in increasing productivity and establishing a strong and progressive economic base. The year 2000 will present an interplay of various economic, social, cultural, legal and technical challenges which would require not only dedicated efforts and optimum utilization of scarce resources but also considerable changes in the attitude, working system, strategy and human relations skill. To be a world leader in 2000 A.D., his opinion is, India should think of HRM to take care of challenges which the 21st century will bring with it.

C.S.N.Raju in his study 'Team work and Harmonious employee relations lead to better productivity' \(^{25}\) has expressed productivity as the degree of effective utilization of each of the major factors of production viz., land, capital, labour and organisation. He feels that


\(^{25}\) C.S.N.Raju, Team work and Harmonious employee relations lead to better productivity, Improvement in Productivity in Public enterprises, Centre for Public Sector Studies, New Delhi, 1985, p 69
productivity of an organisation depends on the state of technology and working capital utilisation. He has stressed on the fact that human resources is the most important of all resources. Notwithstanding excellent machines, technology and a layout provided in an enterprise, the man behind the machine matters the most. His motivation, morale and creative culture could make all the difference between success and failure of the enterprise. Therefore, the author has said, that the management should create a climate of trust and concern for the men in the organisation; where there is no trust, employees would take no worthwhile initiatives. Team work and harmonious but effective industrial relations are essential for excellence in performance.

Ashok Arya in his study 'Management Training - Its impact on organisation' has observed that effective management training and influence over the behaviour, skill, potential and capabilities of the employees will act as effective tools for manipulating the internal business environment. It is essential for an organi-

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sation to assess the effectiveness management training from time to time to ensure that it is giving the optimum results. While making the various physical arrangements, the emphasis should be on overall cost effectiveness without compromising the comforts of the participants, so that within same budget allocation Training and Development department could conduct more programmes.

A survey of the earlier studies has focussed the importance of HRM and the role of HRD factors in business organisations, but they have not attempted to establish the relationship between these factors and productivity and to measure the impact of these factors on the organisation.

Moreover, no concerted attempt has so far been made to study the impact of HRM on productivity in a public sector heavy engineering industry like BHEL. This has induced the researcher to take up the present study in BHEL, Trichy. The present study is thus a pioneering effort and is based more on a case study method.
Methodology

For any systematic inquiry application of appropriate methods and a scientific bent of mind are a sine-qua-non. This has an important bearing on the collection of reliable and accurate information as also on the outcome of the study. The main burden of the present study is to make an intensive inquiry into the major aspects of HRM and its impact on productivity by the use of an empirical approach. For the purpose of the present study, the case study method is used.

Case study is a method of exploring and analysing the life of a social unit, be that of a person, a family, an institution, cultural group or even an entire community.27 The unit of study may also be an organisation. In the present inquiry, the unit of study is BHEL, Trichy. On the basis of case study approach, a micro study has been made of the various aspects on HRM in BHEL, Trichy. The study in this context has utilised the available material about various aspects of HRM data collected through well planned interviews with the executives and workers of BHEL, Trichy.

27 Pauline V. Young, Scientific Social Surveys and Research, Prentice Hall of India, New Delhi, 1968.
Tools used

The researcher had identified the key areas of HRM as manpower planning, training and development, labour-management relations, participative management and labour welfare measures in BHEL, Trichy. For each key area, the researcher has adopted different method for collecting data.

In the case of manpower planning, the researcher has referred to the manpower manual in BHEL, Trichy and had a number of discussions with the executives of BHEL and interviewed the employees in BHEL. For analysing Training and development practices the researcher has keenly observed in person, the training classes conducted in the Training centre at BHEL and has also attended some training programmes in BHEL. Besides these, an interview schedule was prepared for HRDC to know the objectives of training, methods and contents of training, its effectiveness and the cost of HRDC.

To understand the effect of labour welfare measures in BHEL, an interview schedule was prepared and a detailed interview of the staff of the personnel department in BHEL was conducted. Another interview
schedule was prepared for executives and workers seeking their opinions for understanding the quality of labour-management relations and the importance of participative management in BHEL.

Besides these, the researcher interviewed the executives and workers in the concerned departments in BHEL at random, for the purpose of understanding the prevailing HRD practices in BHEL.

Construction of tools and pretest

The tools used for the study were constructed in consultation with the experts in the relevant field and researcher pre-tested them to know the validity and reliability.

After pre-testing the tools, the researcher analysed them thoroughly to know the reliability of the data obtained. For the purposes of this pilot study, the employees of BHEL were interviewed with an interview schedule used at random in the concerned departments viz., industrial engineering department, personnel department and HRD department and on the basis of this, the interview schedule was modified and improved to ensure objectivity and precision.
Sampling Design

There were 1500 Executives and 10000 workers in BHEL, Trichy as on March 1989. The study has covered 115 Executives and 200 workers as the sample. The sample used by the researcher is more than 2% of the total population in case of Executives and it is exactly 2% in case of workers. The following table shows the universe and sample:

Table 1.1

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<thead>
<tr>
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<th>Universe</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executives</td>
<td>1500</td>
<td>115</td>
</tr>
<tr>
<td>Workers</td>
<td>10000</td>
<td>200</td>
</tr>
</tbody>
</table>

The sampling method used by the researcher is convenience sampling. Since it was very difficult to interview the Executives in BHEL due to time constraints on the part of the Executives, the researcher interviewed the Executives at random in the selected departments and was able to cover a sample size of 115 Executives which is 7.6% of the total population. As regards workers, out of 10000 workers, it was possible to interview 200 workers at random in various departments which is exactly 2% of the total population.
Reference period

The study covers a period of just five years from 1984-85 to 1988-89.

Field work and Collection of data

For the purpose of collecting data, the researcher visited all the concerned departments such as Personnel department, Industrial Engineering department, Accounts department and HRDC at BHEL, Trichy. Thus the field work was extended by the researcher throughout the work centres at BHEL, Trichy and also the libraries at BHEL, Trichy.

The present study is based on analysis of the primary and secondary data collected during the period of study. The primary data were collected from interviewing employees of BHEL, Trichy.

The secondary data on all key areas of study were collected from files, records, journals, documents and reports of BHEL, Trichy. Other sources through which the secondary data were collected, consist of the reports of the National Productivity Council (NPC), daily News-papers, Journals published by BHEL and by various institutions and in BHEL Books and unpublished
research materials having a bearing on the present study.

Besides, the researcher has also adopted the technique of non-participant observation to perceive and observe important activities (having a bearing on the study) taking place in BHEL.

Data Processing

The data processing was done with utmost care to ensure proper organisation of data analysis. The tabulation was made depending upon the nature and size of data obtained. The data were processed using percentage analysis, to consolidate the results. Besides these, the data were also presented in such a way to use the correlation technique for the purpose of analysing the data.

Framework of analysis

Analysis of data was done very carefully. The enquiry is essentially in the nature of a qualitative study. As the main burden of the study is to deal with the factors of HRM and productivity, it implies understanding of various determinants of human resource factors, which accounted for increased productivity. As such it involves an analysis and description of
the factors such as human resource planning, Training and development, Labour welfare measures and labour-management relations. Although the enquiry is in the nature of qualitative study, statistical techniques like percentages, correlation etc., have been used wherever necessary to give the data necessary precision and systematisation. To evaluate the HRM's impact on productivity, the researcher has used the correlation technique which shows whether there exists an relation between the two variables HRM factors and productivity.

**Operational definition of concepts**

Productivity - Productivity is the ratio between the output of wealth produced and the input of resources used in the process of production.

Value added

Value added is the wealth created by a business. It measures the business performance and manpower productivity, organisation use the concept of value added in product mix decision and profit planning, formulation of marketing strategies and formulation of wage policy value added is the difference between the sale value of production (i.e., sale turnover adjusted for changes
in stock in trade and work in progress) and the cost of materials consumed plus the services purchased. The purchased services include power and fuel, freight, advertising and legal expenses etc. But in practice many companies consider only the material consumption to arrive at added value because in most manufacturing companies materials constitute more than 50% of the total cost of the impact of purchased services is negligible in the decision making process.

Value added can be used meaningfully in productivity measurement in combination with various physical parameters as well as other related variables. Value added at the enterprise level can have several forms. Selection of each form depends upon management objectives. Value added represents value added to materials by the production process.

Value added concept refers to the surplus value that arises after the costs of purchasing goods and services are deducted from revenues. In other words, the VA amount is an excess of turnover (or sales revenue) over the costs of goods and services. As such VA is also being titled as 'wealth generated and distributed'.
Value added as its name suggests is a measure of enhancement to the value of sales dependent inputs as they got converted to sales. Value added gives us the most direct method of measuring the level of use to which we put the sales-dependent inputs and the resources at our command. Value added is measured as follows:

\[
\text{Value added} = \text{Sale value of production} - \left(\text{Value of raw material components consumed} - \text{Value of power and fuel consumed}\right)
\]

VA may be Gross value added (GVA) or Net value added (NVA). The excess of sales revenue over the costs of bought in goods and services is called as GVA whereas NVA is the difference between GVA and depreciation.

More precisely, VA can be presented as

\[
\begin{align*}
\text{GVA} &= \text{VP} - \text{M} \\
\text{NVA} &= \text{VP} - (\text{M} + \text{D}) \text{ or } \text{GVA} - \text{D}
\end{align*}
\]

Where \(\text{VP}\) - Value of production

\(\text{M}\) - Cost of Materials

\(\text{D}\) - Depreciation
Manpower productivity

Manpower productivity is the ratio of value added to the cost of obtaining the manpower. The cost includes the cost of obtaining and maintaining the human factor of production.

Capital productivity

Capital productivity is the ratio between the cost of capital and value added. Capital for this analysis refers to the cost of capital.

Energy productivity

Energy productivity refers to the ratio between the value of power and fuel consumed and value added.

Overall Factoral productivity

The overall factorial productivity is a measure of the cumulative effects of labour, capital, material and energy resources on productivity and is worked out by the ratio of the cost of labour, capital, material and energy to value added.
Scheme of the Report

The report is presented in nine chapters which are carefully designed to project the observations, analysis and findings of the study.

The first chapter highlights the importance of productivity and the relevance between Human Resource Development and Human Resource Management and productivity. The objectives of the study, its scope, the methodology used, the survey of related literature and the chapter design are the contents of the first chapter. It is found that no concerted attempt has so far been made to study the impact of HRM on productivity in a public sector heavy engineering industry, like BHEL and hence this study.

The second chapter gives a conceptual background and highlights the significance of HRM and productivity. The significance of HRM is viewed from three stand points viz., Social, Professional, Individual enterprise. The function of HRM is dealt under three broad perspectives viz., managerial function, operative function and integrating function. The significance of the key areas of HRM viz., Human resource planning, training and development, Labour welfare and Labour Management relation and their impact on productivity have been
presented in this chapter. This chapter also focusses its attention on the prevailing Human resource development and Human resource Management practices in BHEL, Trichy.

The third chapter presents the productivity profile of the study unit. BHEL today is one of the largest Engineering and manufacturing organisations of India and has an international repute. It ranks among the top ten international manufacturers in terms of annual production of power equipment. The productivity in BHEL is looked upon as a comprehensive measure of how efficiently and effectively organisations satisfy their basic five aims viz., Objectives, Efficiency, Effectiveness, Comparability and Progressive trends. Further, the productivity growth of the unit for the past five years (1985-1989) is presented and analysed, with a view to quantify the growth in productivity. A positive climate for productivity improvement exists at BHEL, Trichy. There has been a total realisation of the potential of the productivity improvement activities and the need for appropriate organisational support for productivity growth in the unit.
The fourth chapter elaborates the functions of the Manpower planning cell in BHEL, Trichy. Norms are developed for predicting the Manpower demand and supply in the study unit. Manpower audit guides the organisation to develop a suitable Manpower planning model for each manufacturing unit and to make an action plan for implementation and review. Manpower planning objectives of BHEL aims at building up a good Manpower planning system.

It is found that labour productivity which can be achieved in an organisation depends to a greater extent on the labour input and to a lesser extent on the technology adopted. It may be possible for a large organisation like BHEL to switch over to a sophisticated technology within a short notice. But it is certainly impossible to change the workforce to adapt to the change in technology overnight.

The concept of Manpower planning has got a great emphasis in the Manpower productivity. Through the process of adequate and timely manpower planning, an organisation can be assured of the availability of right people at the right time in required quantity.
Given this condition of availability of skilled workforce and also the technology, an organisation can easily look for increased labour productivity.

The fifth chapter describes how Training can enhance productivity. Training plays an important role in BHEL. There is a Human Resource Development Centre (HRDC) which takes care of all aspects of Training and its main aim is to develop all the employees and to bring in the required changes in their behaviour and promote a productivity culture within. Identification of Training modules and the selection of the Trainer and Trainees are need based. Inductional Training, Promotional Training and Developmental Training are the different facets of a comprehensive training programme implemented by the unit.

The effectiveness of training is constantly watched and evaluated by the study unit on a scientific approach. This chapter brings out the fact that there is a significant impact of Training on productivity, as there exists a positive correlation between the total training costs and the 'value added'.
The sixth chapter brings out the importance of labour-management relations in enhancing the productivity in a large scale public sector unit like BHEL. A good labour-management relations is a sine-qua-non, of industrial progress and development. The most important factor in this relations is the human factor i.e., labour factor which appreciates in value and tones up the productivity of the organisation. This has been fully understood by the organisation.

The study revealed that the employees in BHEL are generally satisfied with their job, position and status in the company eventhough there is a desire to get more wages than at present, which is a human tendency prevailing in any unit and at any level.

The seventh chapter highlights the fact that participation of employees in management leads to involvement and this involvement leads to commitment without which no measure of improving productivity can prove to be a success. The researcher has made an indepth study of the various participative fora functioning in BHEL and their effectiveness.
An attempt was also made to study the industrial relation variables and the chief reasons for industrial unrest. It is found that the best way of settling dispute is by way of direct negotiation between management and employees. Thus the chapter reveals how labour productivity can be maintained by maintaining a cordial relationship between the management and labour force.

The study emphasises the need for the management to take necessary initiatives to promote the concept of productivity through a system of participative management and through mutual faith and trust between the management and workforce.

The eighth chapter describes the various welfare measures provided in BHEL and their impact on productivity. The word 'labour' refers to any activity which is productive. Thus in a broader sense, the labour welfare refers to the adoption of measures to promote physical, social and psychological and general well-being of the working force so that it can contribute to greater productivity.

It is found that BHEL, Trichy lays a lot of emphasis on employee welfare. The analysis revealed
that the statutory welfare cost and productivity are positively correlated, indicating the fact that the provision of welfare measures has a telling effect on productivity. It was also found through the correlation technique, that there exists a positive correlation between non-statutory welfare cost and value added reinforcing the view already held.

The final chapter summarises the study and presents the findings and suggestions of the researcher. The study proves that manpower productivity is the result of an organised and systematic manpower planning, training, compensation and welfare and labour management relationship. The study unit has recognised this fact and considers the human factor as its most valuable resources and has been developing it systematically whole managing it productively. There is no wonder that BHEL, Trichy stands high in the national and international scene and stands as a model public sector unit contributing quite significantly to the industrial development and economic prosperity of India.