P-2471

A STUDY ON THE IMPACT OF EMPLOYEE TRAINING AND DEVELOPMENT PROGRAMMES

By P-2471

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KCT Business School

Department Of Management

Kumaraguru College of Technology

(An ISO 9001: 2000 Certified Institution)

Coimbatore – 641006

BONAFIDE CERTIFICATE

Certified that this project titled **'A STUDY ON THE IMPACT OF EMPLOYEE TRAINING AND DEVELOPMENT PROGRAMMES'** is the bonafide work of **Miss. SHANMUGAPRIYA.M (Reg no: 71206631051),** who carried out this research under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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Project Guide

.....
Director

Evaluated and Viva-voce held on...02.07.08.....

.....
Examiner I

.....
Examiner II

स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED
सेलम इस्पात संयंत्र
SALEM STEEL PLANT

Ref No TR-15(6)/832

March 31, 2008

CERTIFICATE

Certified that
Miss M. Shanmugapriya
Second year MBA student of
Kumaraguru College of Technology, Coimbatore
has done a Project on
"A STUDY ON THE IMPACT OF EMPLOYEES TRAINING AND DEVELOPMENT PROGRAMMES"
in Human Resource Development Department
of Salem Steel Plant
From 03/01/2008 to 12/03/2008

T Sivaramachandran
31/3/2008.

T Sivaramachandran
Dy Manager(HRD)

DECLARATION

I, hereby declare that this project report entitled as "**A STUDY ON THE IMPACT OF EMPLOYEE TRAINING AND DEVELOPMENT PROGRAMMES**", has undertaken for academic purpose submitted to Anna University in partial fulfillment of requirement for the award of the degree of Master of Business Administration. The project is the record of the original work done by me under the guidance of Prof. V.S. Elamurugan during the academic year 2007-2008.

I, also declare hereby, that the information given in this report is correct to the best of my knowledge and belief.

Place: Coimbatore

Date: 02.07.08

(M.SHANMUGAPRIYA)

ACKNOWLEDGEMENT

ACKNOWLEDGEMENT

I thank sincerely **Dr. Joseph. V. Thanikal**, Principal, Kumaraguru College of Technology for providing this opportunity to carry out this project.

I wish to express my deep sense of gratitude for permitting me to do the project to **Dr. S .V. Devanathan**, Director, KCT Business School.

I owe my reverential gratitude to my faculty guide **Prof. V. S. Elamurugan** Professor, KCT Business School, for his valuable suggestion and constructive ideas at each stage of the project.

I express my sincere thanks to **Mr. T. Sivaramachandran**, HRDC, Salem Steel Plant, Salem and all the staff members for providing me necessary information for the successful completion of this project.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The study on impact of training programmes among the employees of SALEM STEEL PLANT, Salem, is mainly aimed at finding out the existing training development programmes in the workplace. The study was undertaken to find out the level of satisfaction among the employees.

Descriptive research is used in this research. The primary data is collected from 150 employees of SALEM STEEL PLANT, using the structured questionnaire method. The sampling technique that was adopted for the study is stratified random sampling. The collected data was analyzed using percentage analysis, chi square analysis and weighted average method.

The questionnaire covered the demographic details of the respondents such as age, department, educational qualification and years of work experience. The questionnaire also sought information from the respondents regarding their level of satisfaction in training programmes, opinions and feedback about the training programmes, effectiveness of training programmes, and also the efficiency of the faculty.

The information regarding the existing training programmes, course content, training environment and performance of employees after training programme is also collected.

The study revealed that maximum number of the respondents has more than 20 years of experience in the company and it is found from the analysis that only 52.5% of the respondents are satisfied with the training programmes provided. The study also identified that the opportunities for developing the skill through training programmes is maximum the organization.

Suggestions were provided in order to provide the training programmes more effectively in the long run.

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INTRODUCTION

1.1 BACKGROUND

1.1.1. ABOUT THE INDUSTRY

In the fast changing world, steel scenario has opened up a new opportunities and challenges for India. Out of the total world crude steel production of over 790 million tons, above 50% is producing in developing countries. While production in the western countries has reached a plateau, the emerging demand would boost further production in the developing world. The Indian steel industry has competitive advantages, like abundance of raw materials, highly skilled technical manpower and cheap labour.

Iron and steel industry in India is over 125 years old. India is the tenth largest producer of crude steel in the world with production of 24 million tons and investment of Rs.1000 billion. The country produced 23.82 million tons of finished steel in 1998-99, compared to a meagre one million tons in 1947. In 1999-2000 it produced 26.48 million tons of finished steel showing an increase of 11.16 per cent against the previous year.

The first steel plant was set up by iron work company at Kulti in 1870.however, large scale production got underway only when the Tata iron and steel company (TISCO) were set up at Jamshedpur in 1970.The Indian iron and steel company (IISCO) were set up at Burnpur in 1919.The first unit in the public sector, now known as Visveswaraya iron and steel limited (VISL) began production at Bhadravati in 1923. After independence, three integrated steel plants were set up in the public sector at Bhilai, Durgapur and Rourkela with one million tonne capacity. Later two more public sector integrated steel plants came up at Bokaro and Visakhapatnam and several steel units in private sector.

SAIL-steel authority of India limited is one of the "Navrathna" companies in business of steel with an annual turnover of around 19,000 crores. SAIL ranks 15th position among the steel producers of the world and it has the capacity to produce India's most precious raw material-12.5 million tons of crude steel and saleable steel capacity around 9.8 million tons.

1.1.2. ABOUT THE STUDY

Training is the process of learning a sequence of programmed behaviour. It is an application of knowledge. It is an awareness of the rules and procedures to guide the behaviour. It attempts to improve their performance on the current job or prepare them for an intended job.

Training is an organized producer for increasing the knowledge skill for the people for a definite purpose. In industrial situation this means that the trainee will acquire new skills, technical knowledge, problem-solving ability and attitude.

Training is that organized process concerned with the acquisition of capability or the maintenance of existing capability. Training is, increasing specific job performance, simplification of the system, trump card of the take off stage in the process of the development and drilling in quicker performance.

1.1.3. OBJECTIVES OF TRAINING IN SAIL

- Attaining growth through self-reliance and internal generation of resources
- Achieve international competitiveness in the cost and quality through modernization and technology up gradation.
- Promote energy conservation, environment and safety.
- Meet customer needs.
- Continue HRD for modernization of mind competence building.
- Develop a culture of achievement with emphasis on performance and discipline.

1.1.4. NECESSITY OF TRAINING

For any job training is must, because there only do's and don'ts will be taught.

- To create working confidence within the employees.
- To improve productivity.
- To refresh skills and knowledge according to the technological changes that occurs day by day.
- To exchange the views.

1.1.5. TRAINING AND DEVELOPMENT IN SAIL

The vision:

- Achieve a continuous crude steel production growth.
- Attain growth through self-reliance and internal generation of resources.
- Achieve international competitiveness in cost and quality through modernization and technology up gradation.
- Promote energy conservation, environment and safety.
- Meet customer needs.
- Develop a culture of achievement with emphasis on performance and discipline.

1.1.6. ROLE OF TRAINING IN SAIL

- Conduct specific training modules on priority areas like cost reduction and quality.
- Interaction will be continued between line and training department to make training line-driven so that organization goals are achieved.
- Training packages are developed and employees are trained and then they join the redeployed area.

- Employees will be trained in multi-skills so that flexibility improves at shop floor.
- Training in thrust areas such as unit training, basic engineering skills, systematic maintenance will be implemented in all units of SAIL.
- Training programmes conducted in-house will be designed to cater to organizational needs as well as occupational and individual needs of employees.
- Packages for integrating operational and maintenance trades.

The various training scheme in vogue at the plant/unit training centre of SAIL are

a) **Training of new entrants**: Management trainees (tech), management trainees (admn), junior manager (finance), senior operative trainees, junior operative trainees, artisan trainees and trade apprentices. The training periods of these categories vary between 3 months to 3 years.

b) **Training of executives**: Need based general management, functional training programme; micro planning, action leadership training for up gradation etc., is conducted at plant management training centres and management institute at Ranchi. These programmes are short duration of 1 to 4 weeks where eminent outside guest faculty and specialists are invited to share their experience.

c) **Training of non-executives**: Supervisory development functional programme, shop floor skill development programme (e.g.) unit training, refresher training, training schemes, redeployment training in basic maintenance skills are organized at plant/unit level as per the organizational needs and developmental needs of employees.

d) **Training within India**: In orders to keep abreast with the development in various specialties/functions a number of employees both executives and non-executives are deputed to reputed training establishment/professional agencies/institutes/supplier organization for training within India. Under this, around 8-10% executives are deputed each year.

e) **Training abroad**: For the transfer and absorption of advanced and new technologies, a good number of qualified technologists and specialists of SAIL plants are deputed every year for training abroad in countries like USA, USSR, west Germany, UK, Austria, Australia etc.

f) **Man power development**: Looking at the short term and long term developmental needs of man power; a number of in-house programmes are conducted in each unit/plant training institutes and the management training institute, Ranchi.

It may also be mentioned here that the training plans drawn and implement in different units of SAIL are tailor made to meet the needs of each plant/unit continuous efforts are being made to train the man power through systematic approach to training.

The training and development of SSP assist in the following areas:

- Bring about a change in attitude of the employees to promote a network ethos conductive to productivity.
- Ensuring optimal utilization of the existing manpower.
- Enhancing efficiency of human resources.
- Ensuring continuity of skill and operation.
- Imparting proper orientation.

1.1.7. TRAINING METHODS IN SSP

There are many training among trainees. The choice of any method depends upon the cost, depth of knowledge required, background of trainees and many other factors. Training methods followed in Salem Steel Plant are as follows:

- Induction training
- On-the-job training
- Classroom training

Induction training:

Induction training was given for a newly appointed employee. When the employee joins, the organization helps him to get a general idea about the rules and regulation, working conditions. The range of information that covered in this training are company's profile, product of the company, company organization, location of departments, personnel policies, employees activities, rules and regulation, safety, special training.

On-the-job:

These training are given "learning by doing". Under this method the employee is trained on the job and at his work place. This helps to get training under the same working condition and with the actual work environment and associate with the same people with whom they will work after training. They are coached and instructed by skilled co-worker.

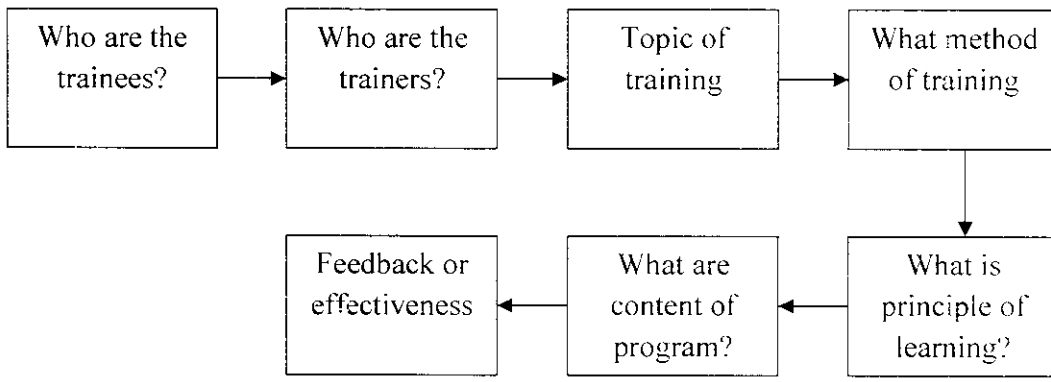
Classroom training:

Classroom instruction is the most useful where concept, attitudes, theories and problem-solving abilities are to be taught. Orientation about organization and safety training are accomplished most effectively in the classroom.

The standard instructional method suitable for operational employee is a "formal method" by an instructor to the trainees. This method possesses a considerable depth of knowledge of the subject at hand. The trainees generally take notes as aid to learning.

1.1.8. STEPS IN TRAINING PROGRAMME

Figure 1.1: steps in training programme



1.2 REVIEW OF LITERATURE

A literature review discusses published information in a particular subject area, and sometimes information in a particular subject area within a certain time period. A literature review can be just a simple summary of the sources, but it usually has an organizational pattern and combines both summary and synthesis. A summary is a recap of the important information of the source, but a synthesis is a re-organization, or a reshuffling, of that information. It might give a new interpretation of old material or combine new with old interpretations. And depending on the situation, the literature review may evaluate the sources and advice the reader on the most pertinent and relevant.

A literature review has a number of purposes .It enables to:

- Define and limit the problem you are working on.
- Place the study in a historical perspective.
- Evaluate promising research methods.
- Relate your findings to previous knowledge and suggest further research.

Ian Roffe[1], Journal of European Industrial Training; 1999 Vol. 23 Issue 4/5 "Reviews the contributions to the understanding of creativity and innovation in organizations and interprets the implications for training and development. Highlights key and recurrent principles: the benefits of an integrated organizational approach, the right climate for creativity, appropriate incentives for innovators, a structured means of search and a systematic way to convert an opportunity into an innovation. It implies a broad range of skills development including: team working, communications, coaching, project management, learning to learn, visioning, change management and leadership. Even though techniques for the development of innovation and enhancing creativity in individuals are well founded, there are relatively few reports on the practice of mainstreaming creativity in an organizational setting. Likewise, although the transition from idea to innovation can be systematised, problems arise from customised applications that involve the management of the change process. The application of Internet and intranet communications for innovation is beginning to emerge but the literature base lags the speed of applications. The paper concludes with a synopsis of the training and development implications of stimulating creativity and innovation in organizations".

Thomas N. Garavan, Noreen Heraty, Bridie Barnicle[2], Journal of European Industrial Training; 1999 Vol. 23 Issue: 4/5 "Reviews the state of current HRD literature in terms of definitional issues, alternative models, dominant justifications and biases. Articulates the view that the literature is fragmented, multifaceted, and reflects a diverse range of perspectives and models".

Mary Kay Meyer and Vicky Elliott[3], Training Evaluation, 2003 issue has said that "The purpose of this paper was to identify measurement methods of training program evaluation. Evaluation measures the extent to which programs, processes, or tools achieve the purpose for which they were intended. Cronbach described evaluation as the process by which a society learns, whether personal and impressionistic or systematic and comparatively objective (Torres, Preskill, & Piontek, 1996). In this review, evaluation is defined as a study

[1] Ian Roffe, "Journal of European Industrial Training"; 1999 Vol. 23 Issue 4/5
[2] Thomas N. Garavan, Noreen Heraty, Bridie Barnicle, "Journal of European Industrial Training"; 1999 Vol. 23 Issue: 4/5
[3] Mary Kay Meyer and Vicky Elliott, "Training Evaluation", 2003 issue

designed and conducted to assist some audience to assess an object's merit and worth (Stufflebeam, 2001). One major model of evaluation was identified. This model, developed by Kirkpatrick in 1952, remains widely used today (ASTD, 1997). The model includes four levels of measurement to assess reaction, learning, behaviour, and results as related to specific training. Developing evaluation strategies based on the Kirkpatrick Model holds the greatest promise for systematic assessment of training within organizations".

Sharon Pells, Doug Steel and Mark Cox[4] in Industry training and productivity 2004 issue has said that "The purpose of this literature review is to identify the macro-economic benefits of industry training, and, from the literature, attempt to estimate the possible impact of industry training on productivity. It is very much an initial investigation into this area. Industry training is essentially an investment in human capital, the economic benefits of which can be thought of as being shared between:

- The individual trainee, through higher wages (a proxy for labour productivity)
- The firm, through enhanced profitability (a proxy for capital productivity)

Society as a whole, through "externalities" (returns over and above the private returns to the individual trainee or firm who pays for the training)".

George T. Solomon, Lloyd W. Fernald and Ayman Tarabishy[5], an analysis of small business training and development in the United States by years in business, "The rise of a highly competitive, technology-based information society has caused a great need for skilled workers. A large proportion of jobs are shifting away from the manufacturing industries. As the service sector expands, proportionately more jobs are being created that demand higher skill levels and advanced training. Fifty eight percent of reporting companies have a shortage of skilled workers and 64 percent of manufacturers believe entry-level workers lack the necessary skills to positively impact their company.

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[4] Sharon Pells, Doug Steel and Mark Cox. "Industry training and productivity", 2004 issue

[5] George T. Solomon, Lloyd W. Fernald and Ayman Tarabishy, :An analysis of small business training and development in the United States by years in business". Issue 2003

According to the results of the study and a review of current literature. employees need training in a variety of areas and are not receiving adequate training in today's small business environment. The study provides data regarding the extent to which training is conducted, formally and informally, according to years in business. in a sample of small businesses". Joseph S. Lee and Ping-Lung Hsin[6], Journal of World Business 2004 Vol 39. Issue 4 has said that "Although globalisation, liberalization and the development of the network economy have undoubtedly enhanced the competitiveness of the Taiwanese economy, with the island's citizens benefiting enormously from lower prices on a wide range of products, the downside has been the obvious increase in unemployment, and the accompanying instability of employment amongst the island's remaining workforce. Policies adopted by the Taiwanese government to tackle this and improve human capital in the human resources development (HRD) process on the island, give rise to many questions, however, such as whether employee training programs can really provide Taiwan's workforce with sustainable employability and whether such programs can effectively reduce the probability of unemployment. They also raise the questions of whether employee training programs can help unemployed workers to shorten their unemployment period, thus reducing the overall number of structurally-unemployed workers, and whether these programs can ultimately lead to increases in overall income levels for successful trainees. These are the questions to be investigated in this paper".

George Stalcup (2003)[7],human capitala guide for assessing strategic training and development efforts in the federal government, has said that "summary observations on the training and development process section 3our examination of major issues to consider when assessing an agency's training and development efforts revealed certain core characteristics that constitute a strategic training and development process. We identified these core characteristics by analyzing and categorizing the various "look for" elements associated with the key questions, as described in section 2 of this guide. Figure 4 lists and summarizes the eight core characteristics of the training and development process that we identified as part of preparing this guide. We believe that a concerted effort to integrate these core characteristics

[6] Joseph S. Lee and Ping-Lung Hsin, "Journal of World Business", 2004 Vol 39, Issue 4
[7] George Stalcup, "Human capitala guide for assessing strategic training and development efforts in the federal government", issue July 2003

can further each agency's efforts to continually improve its training and development process. Conversely, identifying where an agency's training and development process lacks these core characteristics can help address barriers that hinder its ability to achieve meaningful results".

Lloyd W. Fernald, George T. Solomon (2004)[8] has undertaken a study on small business training and development an empirical investigation. The paper reviews as companies in the United States spend more money annually on training than do all the public school systems in the country, about $210 billion in 1990 dollars. This is even more astounding in view of the fact that only 15,000 companies account for 90 percent of these training dollars. This suggests that most organizations, especially small businesses, do not offer any type of formalized training. This study provides data regarding the extent to which training is conducted, formally and informally, in a sample of small businesses in central Florida. According to the results of the study and a review of current literature, employees need training in a variety of areas and are not receiving adequate training in today's small business environment. The study also includes the following information: (1) the areas of training that small business owners believe need to be more successful, (2) the training methods used by these small businesses, (3) the various training delivery mechanisms currently used in training both employees and managers, and (4) the primary approaches used by the small business to overcome their "lack of management expertise".

1.3 STATEMENT OF THE PROBLEM

Employee training and development programmes are conducted to increase the efficiency of employees. Hence the study is conducted to identify the impact of training and development programmes among the employees working in Salem Steel Plant.

The overall productivity of the organization also depends upon the employee's involvement and efficiency so it is very essential to provide proper training to the employees. So, a study on the employee training and development programmes has undertaken in Salem Steel Plant.

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[8] Lloyd W. Fernald, George T. Solomon, "Small business training and development an empirical investigation", issue 2004

1.4 OBJECTIVE OF THE STUDY

Primary objectives:

- To study on the impact of employee training and development programmes with special reference to Salem Steel Plant.

Secondary objectives:

- To study the existing training development programmes provided by Salem Steel Plant.
- To assess the training environment, course content and faculty efficiency of the training programmes.
- To assess the level of satisfaction among the employee on the training provided by Salem Steel Plant.
- To analyse the effectiveness of training programmes among the employees of Salem Steel Plant.
- To offer suggestion to the organization based on the findings.

1.5 SCOPE OF THE STUDY

The study is limited and it covers employee training and development among the employees of Salem Steel Plant. The study mainly finds the impact of employee training and their opinion for the improvement of effectiveness of training and development among the employees of Salem Steel Plant.

1.6 METHODOLOGY

Nature of the Study

The research design is descriptive in nature.

Sampling design

The Sampling design adopted for this study is stratified random sampling.

Sample Size

120 Employees have been taken as sample size

Data Collection Method

Primary data:

1. Questionnaire method has been used to collect the primary data.

2. Direct one to one interaction with respondents and got information.

Secondary data:

The Secondary data mainly consists of information collected form company records, Internet Materials, Books and etc.

Analytical Tool Used

1. **Percentage analysis**
2. **Chi-square analysis**
3. **Weighted Average Method**

1.7 LIMITATIONS OF THE STUDY

- The conclusions derived do not have universal applicability as this study was undertaken only with Salem Steel Plant.
- Some employees are not willing to express their views genuinely for certain questions.
- The study was restricted to deal only with training programme of employees.
- It is very difficult to meet employees and also due to their busy schedule it took a long time for their response.

1.8 CHAPTER SCHEME

Chapter ONE is introductory in nature. This chapter tells about the objectives and scope of the study and its limitations.

Chapter TWO deals with history of the organization, management and organization structure, product profile, competitive strength of the company and brief description on various functional areas of the organization.

Chapter THREE covers macro micro analysis of the study.

Chapter FOUR includes data analysis and interpretation through representation of various tables and graphs.

Chapter FIVE gives the key Findings and conclusions emerging from the study. This chapter also attempts to make suggestions to increase the effectiveness of employee training and development programmes in the organization.

CHAPTER 2

CHAPTER-2

COMPANY PROFILE

2.1 HISTORY OF THE ORGANIZATION

Steel Authority of India Limited (SAIL) is the leading steel-making company in India. It is a fully integrated iron and steel maker, producing both basic and special steels for domestic construction, engineering, power, railway, automotive and defence industries and for sale in export markets.

Ranked amongst the top ten public sector companies in India in terms of turnover, SAIL manufactures and sells a broad range of steel products, including hot and cold rolled sheets and coils, galvanised sheets, electrical sheets, structurals, railway products, plates, bars and rods, stainless steel and other alloy steels. SAIL produces iron and steel at five integrated plants and three special steel plants, located principally in the eastern and central regions of India and situated close to domestic sources of raw materials, including the Company's iron ore, limestone and dolomite mines. The company has the distinction of being India's largest producer of iron ore and of having the country's second largest mines network. This gives SAIL a competitive edge in terms of captive availability of iron ore, limestone, and dolomite which are inputs for steel making.

SAIL's wide ranges of long and flat steel products are much in demand in the domestic as well as the international market. This vital responsibility is carried out by SAIL's own Central Marketing Organization (CMO) and the International Trade Division. CMO encompasses a wide network of 34 branch offices and 54 stockyards located in major cities and towns throughout India. With technical and managerial expertise and know-how in steel making gained over four decades, SAIL's Consultancy Division (SAILCON) at New Delhi offers services and consultancy to clients world-wide.

SAIL has a well-equipped Research and Development Centre for Iron and Steel (RDCIS) at Ranchi which helps to produce quality steel and develop new technologies for the steel industry. Besides, SAIL has its own in-house Centre for Engineering and Technology

(CET), Management Training Institute (MTI) and Safety Organization at Ranchi. Our captive mines are under the control of the Raw Materials Division in Kolkata. The Environment Management Division and Growth Division of SAIL operate from their headquarters in Kolkata. Almost all our plants and major units are ISO Certified.

Steel Authority of India limited is one of the "Navrathna" companies in the business of steel with an annual turnover of around Rs.39, 000 crores in 2006-2007. Steel authority of India limited ranks 10th position among the steel producers of the world and it has the capacity to produce India's most precious raw material at 13 million tons of crude steel and saleable steel capacity around 9.8 million tons.

2.1.1. MAJOR UNITS OF SAIL

INTEGRATED STEEL PLANTS

- Bhilai Steel Plant (BSP) in Chattisgarh
- Durgapur Steel Plant (DSP) in West Bengal
- Rourkela Steel Plant (RSP) in Orissa
- Bokaro Steel Plant (BSL) in Jharkhand
- IISCO Steel Plant (ISP) in West Bengal

SPECIAL STEEL PLANTS

- Alloy Steels Plants (ASP) in West Bengal
- Salem Steel Plant (SSP) in Tamil Nadu
- Visvesvaraya Iron and Steel Plant (VISL) in Karnataka

SUBSIDIARY STEEL PLANTS

- Maharashtra Elektrosmelt Limited (MEL) in Maharashtra.

JOINT VENTURES

SAIL has promoted joint ventures in different areas ranging from power plants to E- Commerce.

NTPC SAIL Power Company Pvt. Ltd

A 50:50 joint venture between Steel Authority of India Ltd., (SAIL) and National Thermal Power Corporation Ltd., (NTPC Ltd.), it manages the captive power plants at Rourkela, Durgapur and Bhilai with a combined capacity of 314 megawatts (MW).

Bokaro Power Supply Company Pvt. Limited

This 50:50 joint venture between SAIL and the Damodar Valley Corporation formed in January 2002 is managing the 302-MW power generation and 1880 tons per hour steam generation facilities at Bokaro Steel Plant.

Mjunction Services Limited

A joint venture between SAIL and Tata Steel on 50:50 bases. this company promotes e-commerce activities in steel and related areas.

SAIL-Bansal Service Center Ltd

SAIL has formed a joint venture with BMW industries Ltd. on 40:60 bases to promote a service centre at Bokaro with the objective of adding value to steel.

Bhilai JP Cement Ltd

SAIL has also incorporated a joint venture company with M/s Jaiprakash Associates Ltd to set up a 2.2 MT cement plant at Bhilai SAIL has signed an MOU with Manganese Ore India Ltd (MOIL) to set up a joint venture company to produce ferro-manganese and silico-manganese at Bhilai.

2.2 MANAGEMENT

2.2.1. OWNERSHIP AND MANAGEMENT

The Government of India owns about 86% of SAIL's equity and retains voting control of the Company. However, SAIL, by virtue of its 'Navratna' status, enjoys significant operational and financial autonomy.

2.2.2. VISION

To be the market leader and prosper in business through satisfaction of customer needs by continued improvement in quality, cost and delivery of products and services.

2.2.3. MISSION

Sustained growth through internal generation of resource is the hallmark of corporate mission of SAIL.

2.2.4. SALEM STEEL PLANT

The history of Salem Steel Plant can be traced to the early 70's when Mrs. Indra Gandhi, the prime minister of India laid the foundation stone for the plant on the foothills of Kanjamalai, Salem in September 1970. The government of India decided in May 15, 1972 to set up an integrated special steels plant at Salem in the State of Tamil Nadu for the production of sheets and strips of electrical, stainless and other special and mild steel on the basis of sound techno-economic considerations.

The construction of the plant was inaugurated in June 13, 1972 by the late Shri. Mohan Kumaramangalam, the then minister for steel and mines. The company Salem steel limited was registered on October 25, 1972. It was a government of India undertaking and the subsidy of SAIL. The plant was designed to roll out 32000 tons of cold rolled stainless steel strips and wide sheets per annum in the first phase, situated in Tamil Nadu, in September 1981. A decade later in 1991 was augmented to 70000 tons per annum with the addition of a second rolling mill.

Stainless steel from Salem finds its application in much industries-nuclear, petroleum, chemicals, fertilizers, food processing, pharmaceuticals, diary, household appliances and cutlery. The plant is actively pursuing development activities to promote use of stainless steel in new areas such as coinage, coaches, buildings, furniture, automobiles, etc. In addition to the cold rolling mills, blanking line was commissioned during the year 1993 with a capacity of producing 3000tons coin blanks per annum and the provision to make utility blanks is present.

Today the product, "Salem Stainless" is accepted in national and international markets as a symbol of quality.

Backward integration was done with the addition of the hot rolling mill, which was commissioned during November 3, 1995 with an installed capacity of around 2 lakhs tons with an investment of Rs. 839 crores. This mill is capable of rolling both stainless and non stainless steels. The mill is also capable of producing carbon grade slabs for rolling sourced from Salem's sister units (i.e.) Alloy steel plant Durgapur and Bhilai steel plant. Salem Steel Plant has contributed over 45000 tons of steel for infrastructure development of the country in different sectors.

Exports alone accounted for around 82000 tons with foreign exchange realization of about 500 crores. The plant has supplied 15600 tons of coin blanks to government mints. They have been put into circulation after minting into currency denominations. Besides these products, conversion scheme was launched for producing value added products like dinner sets doorframes. These products have gained popularity with the general public. Quality is the hallmark of Salem Steel. Strong adherence to quality is followed in the plant since inception. Salem is the first among steel plants to get ISO 9002 accreditation. The plant has also achieved ISO 9002 accreditation for its hot rolling mill within one year of its commissioning.

2.2.5. QUALITY POLICY

Salem Steel Plant is committed to build and sustain itself as an organization, which is customer oriented and innovative, where quality is the hallmark of every activity. SSP assures quality of their products by keeping the requirements of the customers as a main consideration and by perfecting the systems and procedures followed through involvement of their employees. SSP also develops sprit of partnership with their suppliers for enhancement of business and quality objectives. SSP continuously upgrades the knowledge and skills of its workers to maximize the efficiency of its operations and improving the quality of its products. It has got ISO 9002 certification for the whole plant from RWTUV Germany.

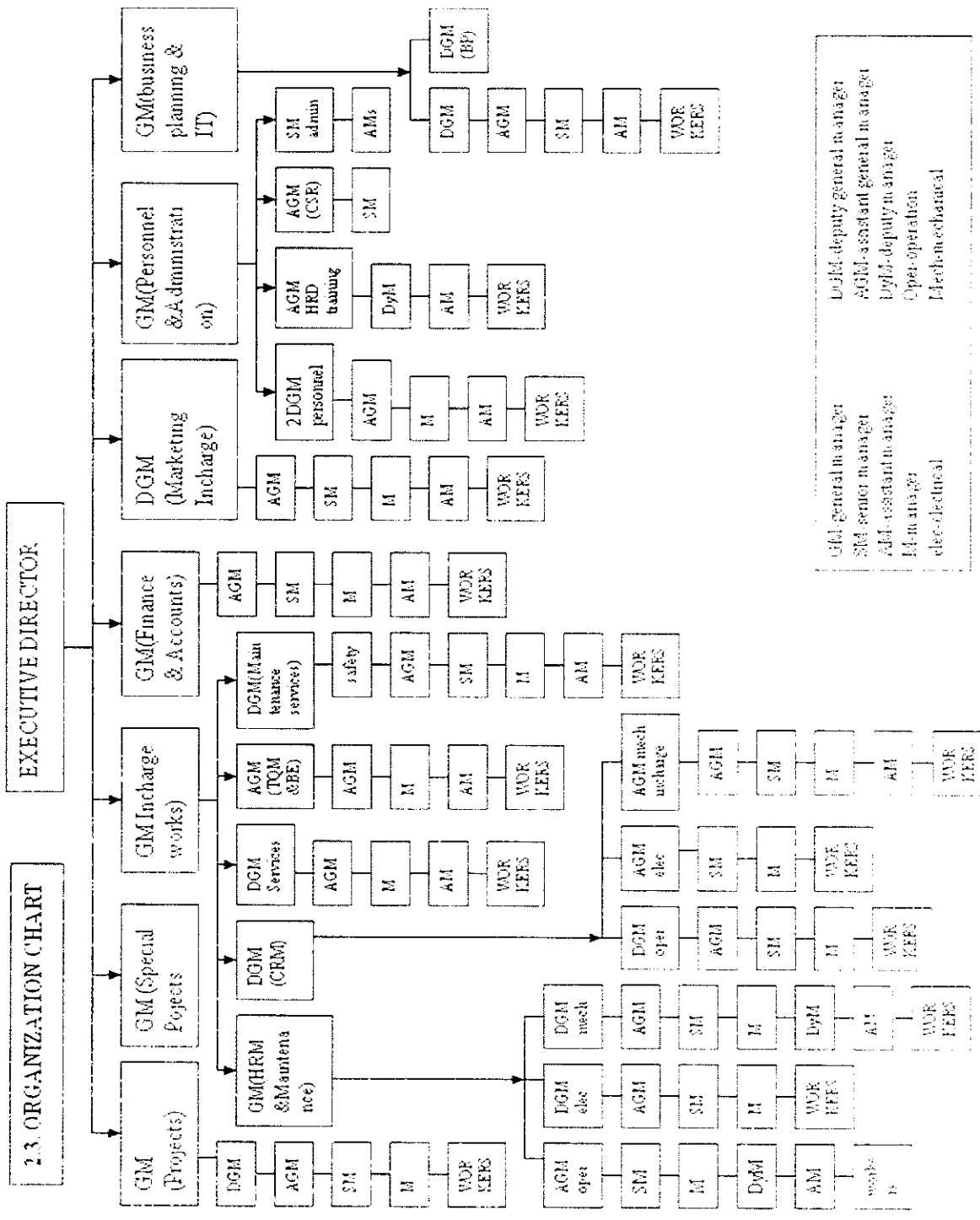
2.2.6. SAFETY POLICY

The safety policy has been formulated to take care of its employees and the people associated with it including those living in the neighbourhood. It is implemented by pursuing the safety goals and demanding accountability from workers for various actions performed.

2.2.7. GUIDING PRINCIPLES

- SSP believes that all actions are preventable.
- All employees are responsible for maintaining laid down safety standards.
- Safety standards are incorporated in the procedures.
- SSP performs all works taking into account local, state and central laws on safety
- Comprehensive improvement in safety performance is necessary for success.

2.3 ORGANIZATION STRUCTURE



2.4 SAIL ORGANIZATION PRODUCT MIX

SAIL produce a variety of products that meet the exact requirements of a wide variety of both overseas and domestic customers. The products can be divided into main products (primary products), alloys and special steels and coal chemicals.

2.4.1. MAIN PRODUCTS

Flat products: Plates, HR coils & sheets, CR sheets, TMBP Coils, Galvanised sheets, Electrolytic tin plates, CRNO electrical sheets.,

Long products: Rounds, TMT bars, Ribbed twisted bars, Angles Channels, Beams Joists, Wire Rod.

Railway materials: High conductivity rails and crane rails, long / heavy rails, light rails, crossing sleeper bars, Wheels and Axles, Wheel sets.

Semis: Blooms Billets and Slabs.

Pig Iron: All grades.

Special sections: MS Arch sections, Z piling, Z bar, Bulb Bars.

2.4.2. ALLOY AND SPECIAL STEELS

Blooms, billets, bars, flats, forgings of different shapes and sizes, plates and continuous cast slabs, blooms with EMS and billets spread over 400 varieties of alloy steel grades confirming to BI, EN, BS, DIN, SAE, ASTM, JIS etc standards for steels of different types.

Also have hot and cold rolled coils, sheets, plates of austenitic, ferrite and martensitic grades of stainless steels in various finishes, coin blanks and utility bianks and also hot rolled carbon steel coils and plates of superior surface finish.

Ferro alloys: high carbon ferro manganese, medium carbon ferro manganese, low carbon ferro manganese, and silico-manganese.

2.5 COMPETITIVE STRENGTH OF THE COMPANY

2.5.1. ACHIEVEMENTS

- SAIL has won the "Paryavaran Award" for the third time in succession to refractory material plant and sintering plant for the best environmentally managed plant.
- SAIL has won the CII award (eastern) for the year 1999.
- SAILCON the consultancy division of SAIL was awarded the ISO 9002 certification from RWTUV, Germany at a function held on august 19, 1999 at the company's corporate office.
- It has won the Jawaharlal Nehru Memorial Award for pollution free energy conservation methods from the international Greenland society.
- Salem Steel Plant has been awarded ISO 14001 certification for its environment management system.
- Salem Steel Plant has won the "sword of honour" for the years 1984 and 1985 in recognition for the safety standards and performance.

2.5.2. ENHANCING COMPETITIVENESS

The objective however remains the same. Beside capacity enhancement, the growth plan addresses the need of the SAIL plants and other units towards eliminating technological gaps in the production process, improving productivity levels for all stages right from raw materials to rolling mills, bringing in technologies for energy savings, yield improvement, pollution control and automation. The long term plan is to build sustainable competencies.

MECON, a leading consultant in the field of metallurgical industry, has been assigned the task of preparing Composite Project Feasibility Reports (CPFRs) for Bhilai, Durgapur, Rourkela and Bokaro Steel Plants of SAIL, indicating various schemes required to be implemented along with all requisite auxiliary services, essential utilities logistics and infrastructure support necessary to achieve the enhanced production.

2.6 FUTURE PLANS

2.6.1. SAIL'S GROWTH PLAN 2010

Much has happened ever since SAIL's Corporate Plan was announced in 2004. Investment plans for the three speciality steel plants have been firmed up. Company has grown in size with the amalgamation of IISCO (now renamed as IISCO Steel Plant). Production targets have been revised from 19 million tons (MT) of steel to about 24 MT. Estimated investments has increased from Rs 25,000 crores to around Rs 40,000 crores. And the time period has been squeezed by two years, bringing the targeted year of completion of major projects from 2012 to 2010.

Table 2.1: Capacity of saleable steel in 2010.

Saleable Steel Capacities (MT)	
Plant	**2010**
Bhilai Steel Plant	**6.21**
Durgapur Steel Plant	**2.85**
Rourkela Steel Plant	**2.90**
Bokaro Steel Plant	**6.50**
IISCO Steel Plant	**2.37**
Alloy Steels plant	**0.43**
Salem Steel Plant	**0.36**
Visvesvaraya Iron & Steel Plant	**0.22**

2.6.2. DYNAMIC ADJUSTMENTS

SAIL's Growth Plan is essentially a directional document. With the changing market scenario and technological advancements the company shall continue to fine-tune our growth plans keeping in mind the steel plants' operational requirements. As such, the company's growth plan is in tune with the boom being experienced by the global steel industry and the high rates of growth being established by the Indian economy and the major steel-consuming sectors. The endeavour is not only in tandem with India's National Steel Policy of achieving a production level of 110 MT of crude steel by the year 2020, but also amply reflects the company's Vision of achieving market leadership. The target of 110 MT of steel has been worked out on the basis of a compounded annual growth rate of 7.3% per annum.

2.6.3. ENSURING RAW MATERIALS

The iron ore production has been estimated to go up to the level of 35 MT per annum. The plan includes developing two major mechanised iron ore mines at Rowghat in the western region and Chiria in the east. Both the mines will be developed with latest technology to ensure assured supply of required quantity of quality iron ore to SAIL plants. Under its corporate plan SAIL aims at setting up of pellet plants (one at Bhilai and another near Manoharpur), which would enable utilisation of huge iron ore fines generated during the mining operations, apart from reducing cost of hot metal production.

SAIL has adopted the following four pronged strategy to meet the enhanced requirement of iron ore:

1. Developing new blocks/mines

2. Maximising production from existing mines

3. Improving the quality of iron ore by suitable beneficiation, and

4. Achieving operating efficiencies by economic scale of operations

The total coking coal requirement is likely to increase from the current level of 15 MT to around 28 MT by 2010. Plans are on the anvil to enter into strategic investments/ tie-ups for coking coal blocks in India and abroad to ensure assured supply of coking coal. SAIL's corporate plan envisages investment in collieries at Tasra, Ramnagore, Chasnalla and Jitpur.

2.6.4. SALEM STEEL PLANT (SSP)

Table 2.2: Production in Salem Steel Plant

MT		
	2005-06	**After Expansion**
Crude Steel	-	0.18
Saleable Steel	0.17	0.35

2.6.5. IMPORTANT PROJECTS

- Installation of Steel Melting and Continuous Casting facilities to produce 180.000 tons of slabs along with single strand slab caster.
- Expansion of Cold Rolling Mill Complex (to enhance Cold Rolled Stainless Steel capacity from 65,000 TPAto146, 000TPA).
- Additional Roll grinding machine for Hot Rolling Mill for enhanced production of 370,000 TPA.
- Up gradation of existing Sendzimir Mills for quality & productivity improvements.

2.6.6. MAJOR FUNCTIONS IN SALEM STEEL PLANT

Salem Steel Plant has two major functions like hot Rolling steckel Mill and Cold Rolling Mill (HRM & CRM).

HOT ROLLING STECKEL MILL:

The Hot Rolling Mill Complex consists of a Slab Yard, a walking Beam Reheating Furnace, and a Roughing Mill, a Single Stand 4 High Reversible Steckel Mill, a down coiler and coil yard for making, cooling & dispatch. The major equipments excepting for the walking Beam Reheating Furnace have been supplied by M/s SCHLOEMANN – SIEMAG (SMS) of Germany.

COLD ROLLING MILL:

In the phase I & II, hot bands (hot rolled stainless steel coils) of 4 mm to 6 mm thickness as input material were imported to produce cold rolled stainless coils and sheets. With the commissioning of the Hot Rolling Mill, this route has been redundant.

As part of reverse integration, the Hot Rolling Steckel Mill supplies the required Hot Rolled Coils (HRC) input to CRM and also produces HRC of non-stainless steels (carbon steel).

Salem Steel Plant is producing cold rolled stainless steel coils and sheets of thickness ranging from 0.3 mm to 6.0 mm with a width up to 1250 mm in austenitic, ferrite and martensitic grades.

A part from cold Rolled (CR) products Hot rolled (HR) products of stainless steel of different thickness and HR products of Non-stainless steel (carbon steel) are also produced.

CHAPTER 3

CHAPTER-3

MACRO-MICRO ANALYSIS

3.1. STEEL INDUSTRY - A GLOBAL PERSPECTIVE

Global steel production has now crossed 1 billion tonne mark due to an upturn in steel demand during the last two years on the back of recovery in the global economy. The recovery has largely been led by increased demand for steel in China as the country focuses on strong infrastructure led growth and prepares for Olympics 2008. There has also been partial recovery in key sectors such as housing, construction and automobiles in the USA and Europe and the Japanese economy is also promising to turn around after a prolonged phase of recession. In 2002 China became the largest producer and consumer of steel in the world. The current Chinese demand is estimated over 250 MT. China is now followed by Japan and the USA in terms of production.

But at the backdrop of this recovery has been one of the most turbulent phases for the global steel industry. The industry went through one of its most difficult phases between 1997 and 2001, as it faced severe recession in the global economy leading to imbalance between capacity, demand and production. After the breakup of USSR many new countries turned into net exporters from net importers and the world market had an excess capacity of 50 MT. Steel started getting traded at lower and lower prices. The Asian economic meltdown in 1997-98 had a further impact on steel demand and supply. Demand in Southeast and Fareast was reduced by 35-40 MT. Japan was faced with a weak Yen and lower demand. These events coupled with similar developments across the world led to a situation where producers had much higher capacity than they could sell. Prices of steel during this period touched a 20-year low (with HR Steel going below $200 mark in 2001) and most producers made heavy losses. Many companies were forced to shut down leading to loss of many jobs. New capacities became uneconomical and surplus. Fresh expansion plans had to be abandoned as financial sector withdrew support from the steel sector. The period also witnessed major steel producing nations resorting to tariff and non- tariff barriers to safeguard their domestic industry.

Pushed to the wall, in 2001 advanced countries were forced to call for a global agreement organised by the Organization for Economic Co-operation and Development (OECD) to limit the world output of steel and stem the slide in steel prices. Only in 2002 the global steel industry witnessed a turnaround led by growth in China and prices of steel recovered to realistic levels once again.

Table 3.1: World Crude Steel Production

Period	Production (MT)	Growth
1995	752	-0.50%
1996	750	-0.30%
1997	799	6.50%
1998	777	-2.80%
1999	788	1.40%
2000	848	7.60%
2001	850	0.20%
2002	902	6.10%
2003e	1000	9.70%

A look at the world steel production figures (Table 3.1) shows the difficult phase between 1995 and 2001 (with 2000 being the exception) and recovery that took place 2002 onwards. Another important development in the global steel market in the last few years has been the emergence of steel intensive technologies in various user industries leading to increased usage of steel. The consumption is showing a shift from long products to flat products and special quality steels. Global steel trade has now increased to 350 MT. The industry though continues to be fragmented with top 5 players accounting for less than 20% of the total industry capacity. Global steel manufacturers are increasingly realizing the need to

have alliances and consolidation activity has picked up all over the world during the last 2-3 years. Today, Arcelor (Europe) is the largest producer of steel in the world followed by LNM-Ispat Group, Nippon Steel, JEE Holdings, Posco and Shanghai.

3.1.1. INTERNATIONAL STEEL PRODUCERS

- Arbed - LUXEMBOURG
- ARMCO Incorporated - Now AK Steel - UNITED STATES
- Bethlehem Steel - UNITED STATES
- BHP - AUSTRALIA
- CORUS Group plc - UNITED KINGDOM
- Dofasco - CANADA
- Ispat Inland Inc - UNITED STATES
- Kobe Steel - JAPAN
- Nippon Steel - JAPAN
- Nucor Corporation - UNITED STATES
- Outokumpu Oyj - FINLAND
- POSCO - Republic of KOREA
- P.T. Krakatau Steel - INDONESIA
- Rautaruukki Oyj - FINLAND
- ThyssenKrupp - GERMANY
- Usinor - FRANCE
- USX Corporation - UNITED STATES

3.1.2. INTERNATIONAL STEEL ORGANIZATIONS

- AISE - Association of Iron and Steel Engineers (AISE)
- Indian Steel Alliance
- AISI - American Iron and Steel Institute
- AIME - American Institute of Mining, Metallurgical and Petroleum Engineers
- American Bureau of Metal Statistics
- CISR - Carnegie Mellon University Center of Iron and Steel Research (US)
- CRU International
- EEVL - Edinburgh Engineering Virtual Library
- Eurofer - European Confederation of Iron and Steel Industries.
- IISI - international Iron and steel institute
- Indian Institute of Metals
- Institute of Materials (United Kingdom)
- Iron & Steel Society
- ISIJ - Iron and Steel Institute of Japan
- Jernkontoret - Sweden
- MEFOS - The Foundation for Metallurgical Research
- MEPS - Consultancy supplying information on steel, markets, prices, etc. (UK)
- OECD Steel - Steel Section of the Organization for Economic Co-operation and Development.
- SEAISI - South East Asia Iron and Steel Institute.
- UK Steel Association

3.2. INDIAN STEEL INDUSTRY

AN INTRODUCTION

The Indian Steel industry is almost 100 years old now. Till 1990, the Indian steel industry operated under a regulated environment with insulated markets and large scale capacities reserved for the public sector. Production and prices were determined and regulated by the Government, while SAIL and Tata Steel were the main producers, the latter being the only private player. In 1990, the Indian steel Industry had a production capacity of 23 MT. 1992 saw the onset of liberalization and the Indian economy was opened to the world. Indian steel sector also witnessed the entry of several domestic private players and large private investments flowed into the sector to add fresh capacities.

The last decade saw the Indian steel industry integrating with the global economy and evolving considerably to adopt world-class production technology to produce high quality steel. The total investment in the Indian steel since 1990 is over Rs 19,000 crores mostly in plant equipments, which have been installed after 1990. The steel industry also went through a turbulent phase between 1997 and 2001 when there was a downturn in the global steel industry. The progress of the industry in terms of capacity additions, production, consumption, exports and profitability plateau off during this phase. But the industry weathered the storm only to recover in 2002 and its beginning to get back on its feet given the strong domestic economic growth and revival of demand in global markets.

With a current capacity of 35 MT the Indian Steel Industry is today the 8th largest producer of steel in the world. Today, India produces international standard steel of almost all grades/varieties and has been a net exporter for the past few years, underlining the growing acceptability of its products in the global market.

Steel is a highly capital intensive industry and cyclical in nature. Its growth is intertwined with the growth of the economy at large, and in particular the steel consuming industries such as manufacturing, housig and infrastructure. Steel, given its backward and forward linkages, has a large multiplier effect. Economists quantify the economic impact of

any sector through measures such as the output multiplier effect, forward and backward effects etc. Based on the Indian input-output model, the Iron, Steel and Ferro Alloys sector (sector code 72 of CSO Table) reveals high output multiplier of 2.64 and ranks 4 out of 115 sectors into which the economy is divided. The output multiplier effect is defined as the total increase in output generation (in case of sector 72, total increase of 2.64 units including unitary increase of the sector's own output) for one unit increases of final demand in the particular sector.

The Forward Linkage refers to the inter relationship between the particular sector and all other sectors which demand the output of the former as their inputs. In the CSO table of 60 sectors (where all iron and steel sub sectors have been merged to one sector), the Forward Linkage of the Iron and Steel sector at 4.79 is quite significant (ranks 4 out of 60 sectors into which the economy is divided). The significant output multiplier effect and the forward linkage effects are the compelling reasons propelling various economies to set up domestic plants to satisfy the local demand. Economists have estimated that for every additional one lakhs rupees output (2002-03 prices) in the Iron, Steel and Ferro alloys sector, an additional 1.3 man years of employment are created. With capital investments of over Rs 100, 000 crores, the Indian steel industry currently provides direct/indirect employment to over 2 million people. As India moves ahead in the new millennium, the steel industry will play a critical role in transforming India into an economic superpower.

3.2.1. BACKGROUND OF THE INDIAN STEEL INDUSTRY

If we were to pause for a moment to think about the growth of human civilization, we would find that the pace of social and economic growth has been closely linked to the proficiency with which people have been able to use and shape materials. Steel is one such material that has played an important role in the development of mankind in the last century. Today, it is difficult to imagine a world without steel. Steel has become vital to our everyday life. It is at the root of the quality of life that each of us enjoys today, helping to shelter us, to feed us and to facilitate both our working day and leisure activities. We depend on steel for

almost everything from our houses and buildings, the cars we drive, roads, bridges, agricultural equipment, machines, the list is endless.

Steel is a versatile, constantly developing material that underpins all manufacturing activity. Even if a product is not made entirely from steel, it will undoubtedly have steel as a component at some point in the manufacturing process. There are currently more than 3,500 different grades of steel with many different properties - physical, chemical, environmental, 75% of which have been developed in the last 20 years. Steel is also an environment friendly material and has the distinction of being the most recycled material in the world today. Today, consumption of steel is also regarded as an indicator of development of a nation. Per capita steel consumption is now universally accepted as an index of economic development of a nation. Given its role, steel has established itself as the backbone of any economy.

3.2.2. INDUSTRY STRUCTURE

The Indian steel industry can be divided into two distinct producer groups:

Major producers : Also known as Integrated Steel Producers (ISPs), this group includes large steel producers with high levels of backward integration and capacities of over 1 MT. Steel Authority of India Limited (SAIL), Tata Steel, Rashtriya Ispat Nigam Limited (RINL), Jindal Vijayanagar Steel Limited (JVSL), Essar Steel and Ispat Industries form this group.

SAIL, TISCO and RINL produce steel using the blast furnace/basic oxygen furnace (BF/BOF) route that uses iron ore, coal/coke as the basic input mix for producing finished steel. Other major producers such as Essar Steel, Ispat Industries and JVSL use routes other than BF/BOF for producing steel . While Essar Steel and Ispat Industries employ Electric Arc Furnace (EAF) route that uses sponge iron, melting scrap or a mix of both as input. JVSL uses COREX, a revolutionary technology for making steel using basically iron-ore and coal.

Other producers: This group consists of smaller stand-alone steel plants that include producers and processors of steel. Processors/Rerollers: Units producing small quantities of

steel (flat/long products) from materials procured from the market or through their own backward integration system. Stand alone units making pig iron and sponge iron. Small producers using scrap-sponge iron-pig iron combination produce steel ingots (for long products) using Electric Arc Furnace (EAF) or Induction Arc Furnace (IAF) route.

The Major producers are strategic in nature and account for most of the mild steel production in the country. The group produces most of the flat steel products in the country including Hot Rolled, Cold Rolled and Galvanised steel. The majors also produce a small proportion of Long products and other special steel being produced in the country. Other producers account for a majority of long products being produced in the country and some of the value added flat steel products like cold rolled steel and galvanized steel.

WAY FORWARD FOR THE INDIAN STEEL INDUSTRY

"We still have a number of persons in our country in SAIL, TISCO and other big and small steel plants who have the capabilities. They have the will to excel and transform the country, given a long term vision."

"We should be ready to compete in outside markets.....If our steel industry gears up in about 3 to 4 years, Indian steel can be both in Indian and foreign markets. Our vision should be towards this." - Indian 2020: A vision for the new millennium by APJ Abdul Kalam and YS Rajan

The Government envisions India becoming a developed nation by 2020 with a per capita GDP of $1540. For a nation that is economically strong, free of the problems of underdevelopment and plays a meaningful role in the world as benefits of a nation of over one billion people, the groundwork would have to begin right now. The Indian Steel Industry will be required and is willing to play a critical role in achieving this target. With abundant iron ore resources and well-established base for steel production in the country, steel is poised for growth in the coming decades. Production has increased from 17 MT in 1990 to 36 MT in 2003 and 66 MT is targeted for 2011. While steel will continue to have a stronghold in traditional sectors such as construction, housing, ground transportation, special steels will be

increasingly used in hi-tech engineering industries such as power generation, petrochemicals, fertilisers etc. Steel will continue to be the most popular, versatile and dominant material for wide ranging applications. While India may not become a leader in world steel market, it can become a powerful force.

To help the Indian Steel Industry achieve its potential and play a meaningful role in India's development some steps need to be taken

- Steel is yet to touch the lives of millions of people in India. Per capita consumption of steel in India is only 29 kg and has to go a long way to reach consumption levels of around 400 kg in developed countries like USA and world average of 140 kg.

- There is a need to continue the current thrust on infrastructure related activities and extend them to rural India. Rural Indian today presents a challenge for development of the country and the opportunity to increase usage of steel in these areas through projects such as rural housing etc.

- Current shortage of inputs has pushed up the costs for the steel industry. Government should ensure that quality raw material such iron-ore and coke are available to the industry. With Ministry of Steel targeting an output of 100 MT of steel by 2020 there is an urgent need to develop raw material resources for inputs like iron-ore and coal within or outside the country. Countries like Japan have already taken similar steps to safeguard their industries.

- Adequate enabling infrastructure such as power, ports, roads, rail transport is pre-requisite for the Indian steel industry to remain competitive.

- Government should not regulate prices and free market forces should prevail. Intervention by the Government is only a short-term solution to the issue of steel prices in the country. Once left alone, market dynamics will automatically ensure price corrections and determine the optimum price of steel.

- The Indian steel Industry is amongst the least protected in the world. While developed countries have put numerous tariff and non-tariff barriers on steel exports from the country, the domestic industry is exposed to cheaper imports from competing nations. As in case of other important industries, the Government should give reasonable levels of protection to the domestic steel industry. which is just starting to get back on its feet.

- Industry should be allowed to have a fair return on investment and contribute to the overall health of the Indian manufacturing segment. The steel industry has invested a capital of over Rs 90, 000 crores. CRISIL in a recent study has concluded that given the large exposure that banks and financial institutions have to the steel industry. a healthy steel sector is in the interest of the economy. Steel industry still continues to be unattractive for investors and a recent study by CRIS INFAC suggests that any new projects with target price below $270/MT will be economically unattractive.

- Today, Indian producers employ world-class standards of technology. Steel from Indian finds growing acceptability in international markets. But despite this India's share in world trade steel is a miniscule 2%. Given the capabilities of the Indian steel industry there is tremendous scope to increase this share further. While the steel industry will continue servicing the domestic demand there is a lot of untapped export potential with the industry. The Government, in line with EXIM policy 2002-07, should take steps to make Indian exports more competitive.

China's soaring demand (over the past five years China's demand for flat steel has risen at 17 percent as compared with just 2 percent for the rest of the world: the growth rate in China's demand for steel is expected to come down to 8 percent during 2003 through 2010) which had revived the long term suffering industry will eventually be satisfied by additional domestic capacity-hardly a long term solution to the fundamental problem of worldwide capacity. The basis for such a conclusion is the estimated lower cost of construction of steel mills in China by some 30 to 50 percent than comparable facilities in the developed world and the fact that currently the global flat steel industry has at least 100 MT of overcapacity. Add to this the worry of economists of slower economic growth in China and the fact that the country can become a net exporter with telling effects on future international prices. Adequate steps

must be taken right now to make the Indian steel industry more competitive in order to meet these challenges.

3.3 SAIL'S BACKGROUND AND HISTORY

3.3. 1. THE PRECURSOR

SAIL traces its origin to the formative years of an emerging nation - India. After independence the builders of modern India worked with a vision - to lay the infrastructure for rapid industrialisation of the country. The steel sector was to propel the economic growth. Hindustan Steel Private Limited was set up on January 19, 1954. The President of India held the shares of the company on behalf of the people of India.

3.3.2. EXPANDING HORIZON (1959-1973)

Hindustan Steel (HSL) was initially designed to manage only one plant that was coming up at Rourkela. For Bhilai and Durgapur Steel Plants, the preliminary work was done by the Iron and Steel Ministry. From April 1957, the supervision and control of these two steel plants were also transferred to Hindustan Steel. The registered office was originally in New Delhi. It moved to Calcutta in July 1956 and ultimately to Ranchi in December 1959.

A new steel company, Bokaro Steel Limited, was incorporated in January 1964 to construct and operate the steel plant at Bokaro. The 1 MT phases of Bhilai and Rourkela Steel Plants were completed by the end of December 1961. The 1 MT phase of Durgapur Steel Plant was completed in January 1962 after commissioning of the Wheel and Axle plant. The crude steel production of HSL went up from .158 MT (1959-60) to 1.6 MT. The second phase of Bhilai Steel Plant was completed in September 1967 after commissioning of the Wire Rod Mill. The last unit of the 1.8 MT phase of Rourkela - the Tandem Mill - was commissioned in February 1968, and the 1.6 MT stage of Durgapur Steel Plant was completed in August 1969 after commissioning of the Furnace in SMS. Thus, with the completion of the 2.5 MT stage at Bhilai, 1.8 MT at Rourkela and 1.6 MT at Durgapur, the total crude steel production capacity of HSL was raised to 3.7 MT in 1968-69 and subsequently to 4MT in 1972-73.

3.3.3. HOLDING COMPANY

The Ministry of Steel and Mines drafted a policy statement to evolve a new model for managing industry. The policy statement was presented to the Parliament on December 2, 1972. On this basis the concept of creating a holding company to manage inputs and outputs under one umbrella was mooted. This led to the formation of Steel Authority of India Ltd. The company, incorporated on January 24, 1973 with an authorized capital of Rs. 2000 crores. was made responsible for managing five integrated steel plants at Bhilai, Bokaro, Durgapur, Rourkela and Burnpur, the Alloy Steel Plant and the Salem Steel Plant. In 1978 SAIL was restructured as an operating company.

Since its inception, sail has been instrumental in laying a sound infrastructure for the industrial development of the country. Besides, it has immensely contributed to the development of technical and managerial expertise. It has triggered the secondary and tertiary waves of economic growth by continuously providing the inputs for the consuming industry.

3.3.4. SAIL TODAY

Sail today is one of the largest industrial entities in India. Its strength has been the diversified range of quality steel products catering to the domestic, as well as the export markets and a large pool of technical and professional expertise. Today, the accent in sail is to continuously adapt to the competitive business environment and excel as a business organization, both within and outside India.

CHAPTER 4

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

4.1. PERCENTAGE ANALYSIS

Table: 4.1.1

Age group of respondents

S. No	Age	No. of respondents	Percentage
1	<=30	37	30.83
2	31-50	39	32.5
3	>50	44	36.67
	Total	120	100

Interpretation:

It is noted that 30.83% of the respondents belongs to <=30 years of age group. 32.5% of the respondents belongs to 31-50 years of age group, 36.67% of the respondents belongs to >50 years of age group.

Chart: 4.1.1

Age group of respondents

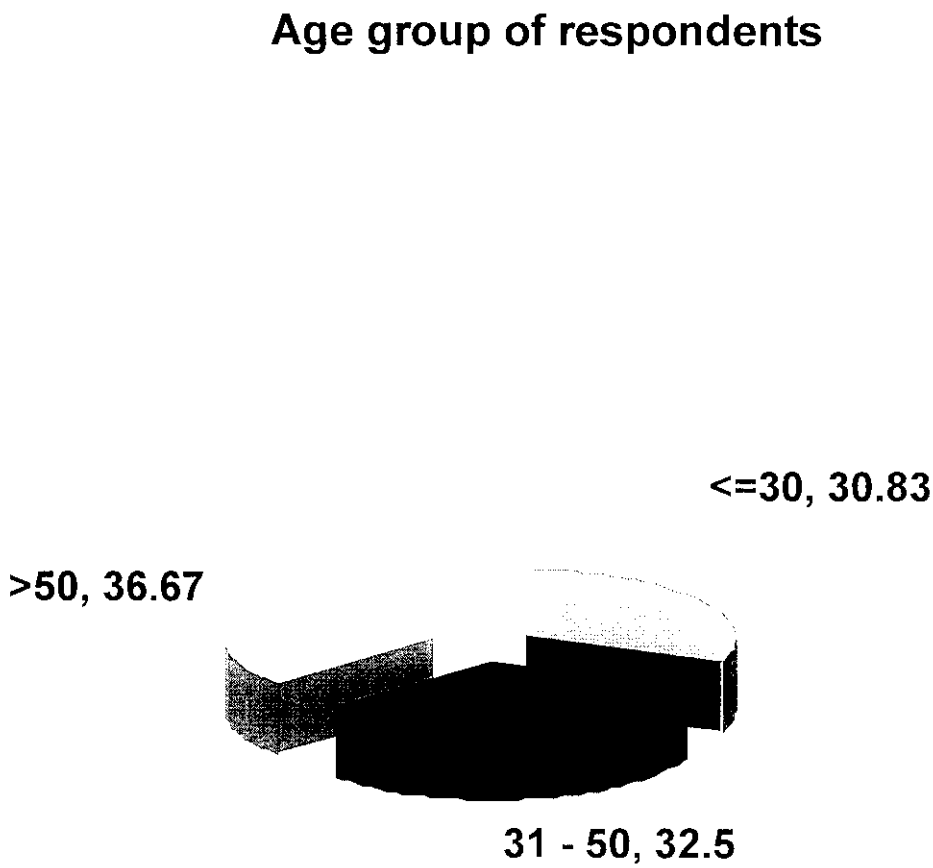


Table: 4.1.2

Educational qualification of respondents

S. No	Qualification	No. of respondents	Percentage
1	ITI	32	26.66
2	Diploma	41	34.17
3	Graduate/PG	47	39.17
	Total	120	100

Interpretation:

It is noted that 26.66% of the respondents are qualified ITI, 34.17% of the respondents are qualified diploma holders, 39.17% of the respondents are qualified graduates/PG.

Chart: 4.1.2

Educational qualification of respondents

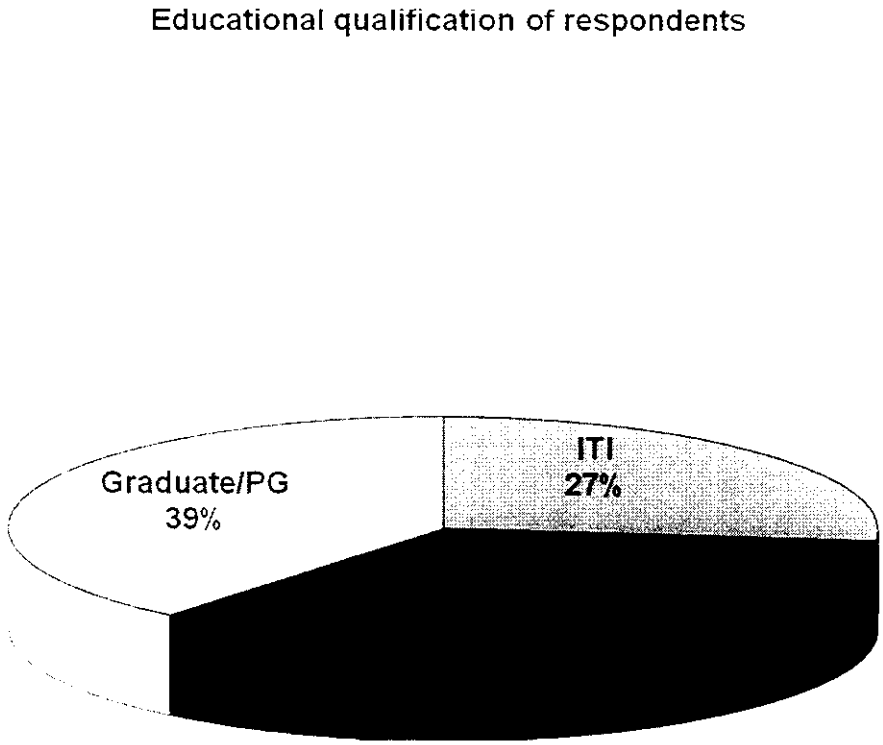


Table: 4.1.3

Experience of the respondents in years

S. No	Experience	No. of respondents	Percentage
1	<=5	24	20
2	6 – 10	5	4.17
3	11 – 15	35	29.17
4	16 – 20	19	15.83
5	>20	37	30.83
	Total	120	100

Interpretation:

It is noted that 20% of the respondents are <=5 years of experience, 4.17% of the respondents are 6 – 10 years of experience, 29.17% of the respondents are 11 - 15 years of experience, 15.83% of the respondents are 16-20 years of experience, 30.83% of the respondents are >20 years of experience.

Chart: 4.1.3

Experience of the respondents in years

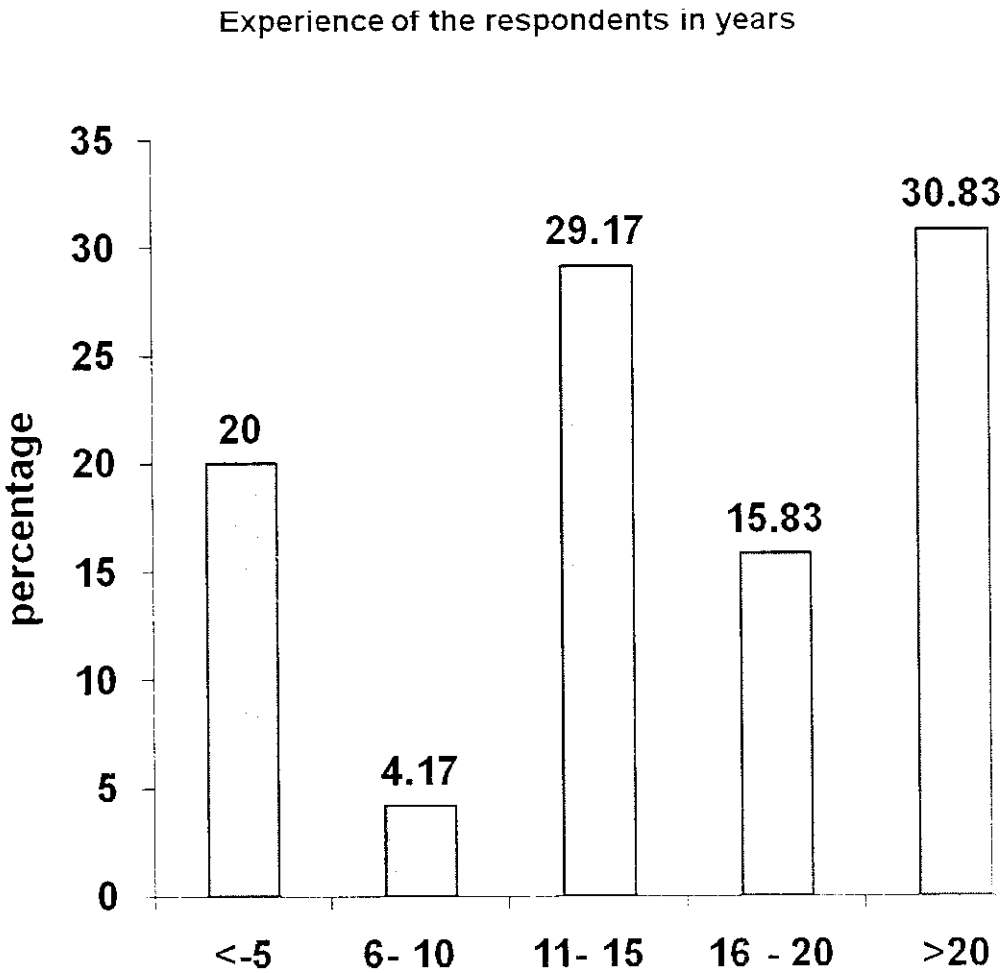


Table: 4.1.4

Training programmes conducted

S. No	Training programme	No. of respondents	Percentage
1	External	24	20
2	Internal	40	33.33
3	Both	56	46.67
	Total	120	100

Interpretation:

It is noted that 20% of the respondents prefer external training programmes, 33.33% of the respondents prefer internal training programmes, and 46.67% of the respondents prefer both type of training programmes.

Chart: 4.1.4

Training programmes conducted

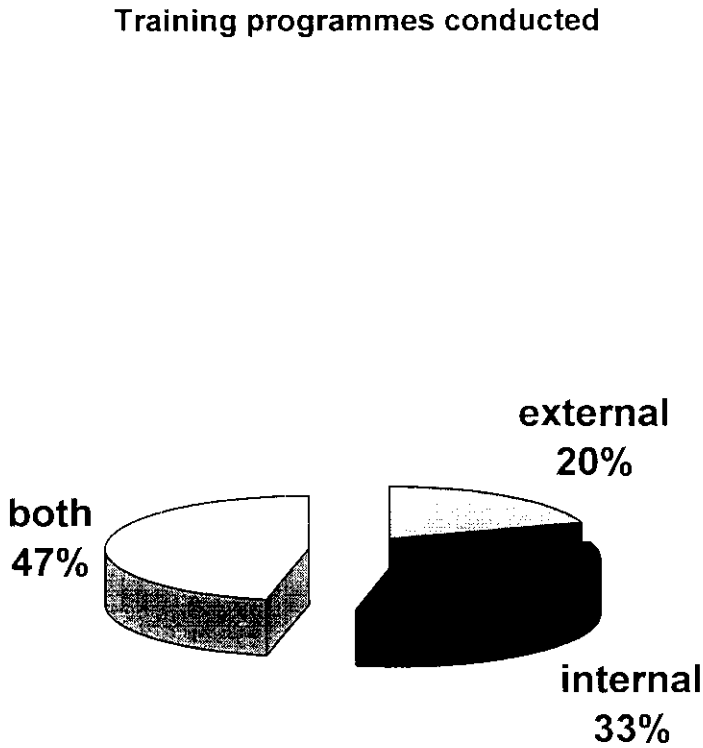


Table: 4.1.5

Frequency of training programmes sent

S. No	Frequency	No. of respondents	Percentage
1	Once in 3 months	14	11.67
2	Once in 6 months	20	16.67
3	Once in a year	34	28.33
4	Once in 2 years	15	12.5
5	More than 2 years	37	30.83
	Total	120	100

Interpretation:

It is noted that once in 3 months 11.67% of the respondents, once in 6 months 16.67% of the respondents are sent to attend training programmes frequently, once in a year 28.33% of the respondents and once in 2 years 12.5% of the respondents are sent to attend training programmes frequently, 30.83% of the respondents are sent to attend training programmes frequently more than 2 years.

Chart: 4.1.5

Frequency of training programmes sent

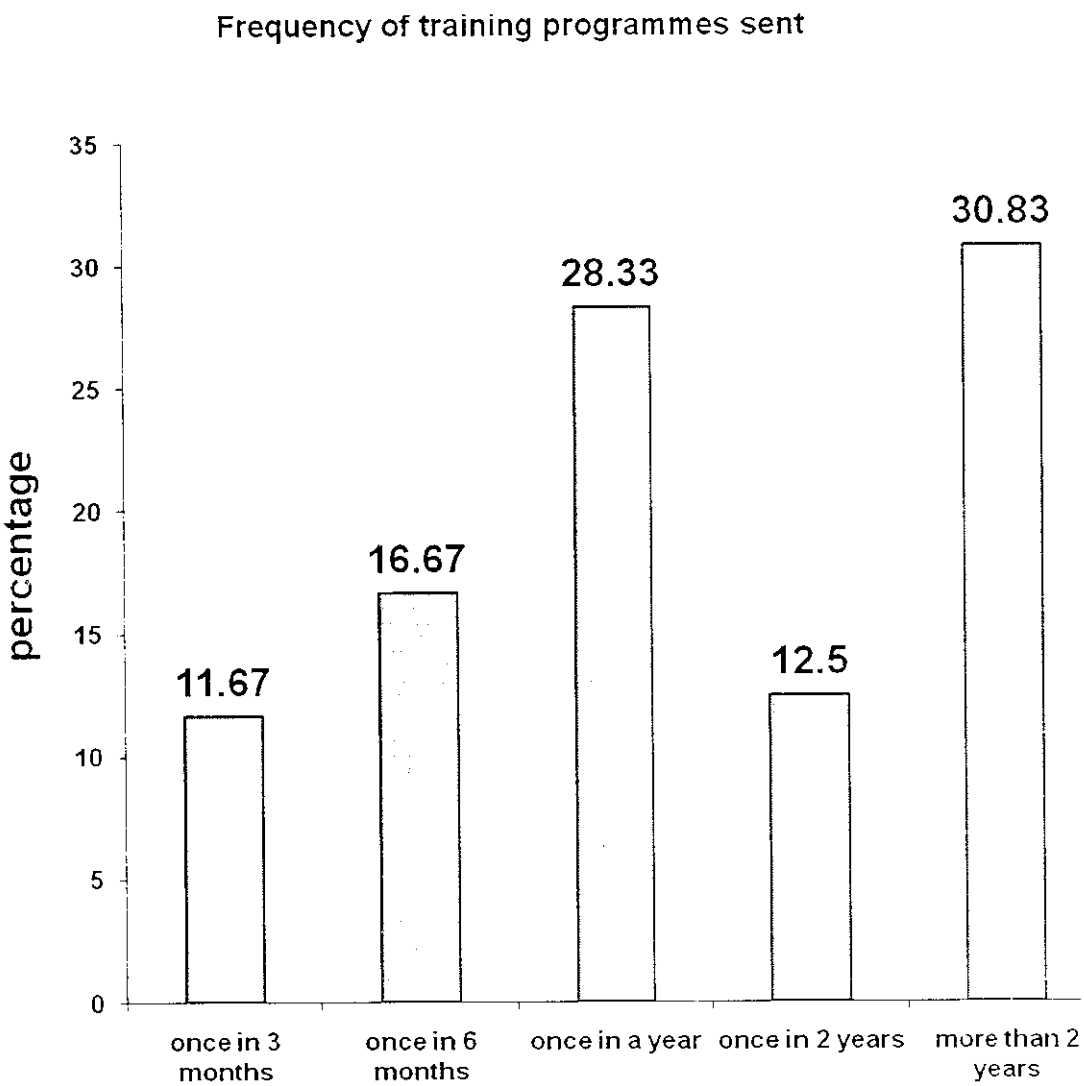


Table: 4.1.6

Training programmes attended for past 2 years

S. No	Past 2 years	No. of respondents	Percentage
1	None	14	11.67
2	1-5	88	73.33
3	6-10	18	15
4	11-15	0	0
5	Above 16	0	0
	Total	120	100

Interpretation:

It is identified from the above table that 73.33% of the respondents attended 1 to 5 training programmes for past 2 years, 15% of the respondents attended 6 to 10 training programmes for past 2 years.

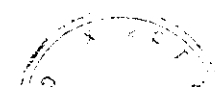


Chart: 4.1.6

Training programmes attended for past 2 years

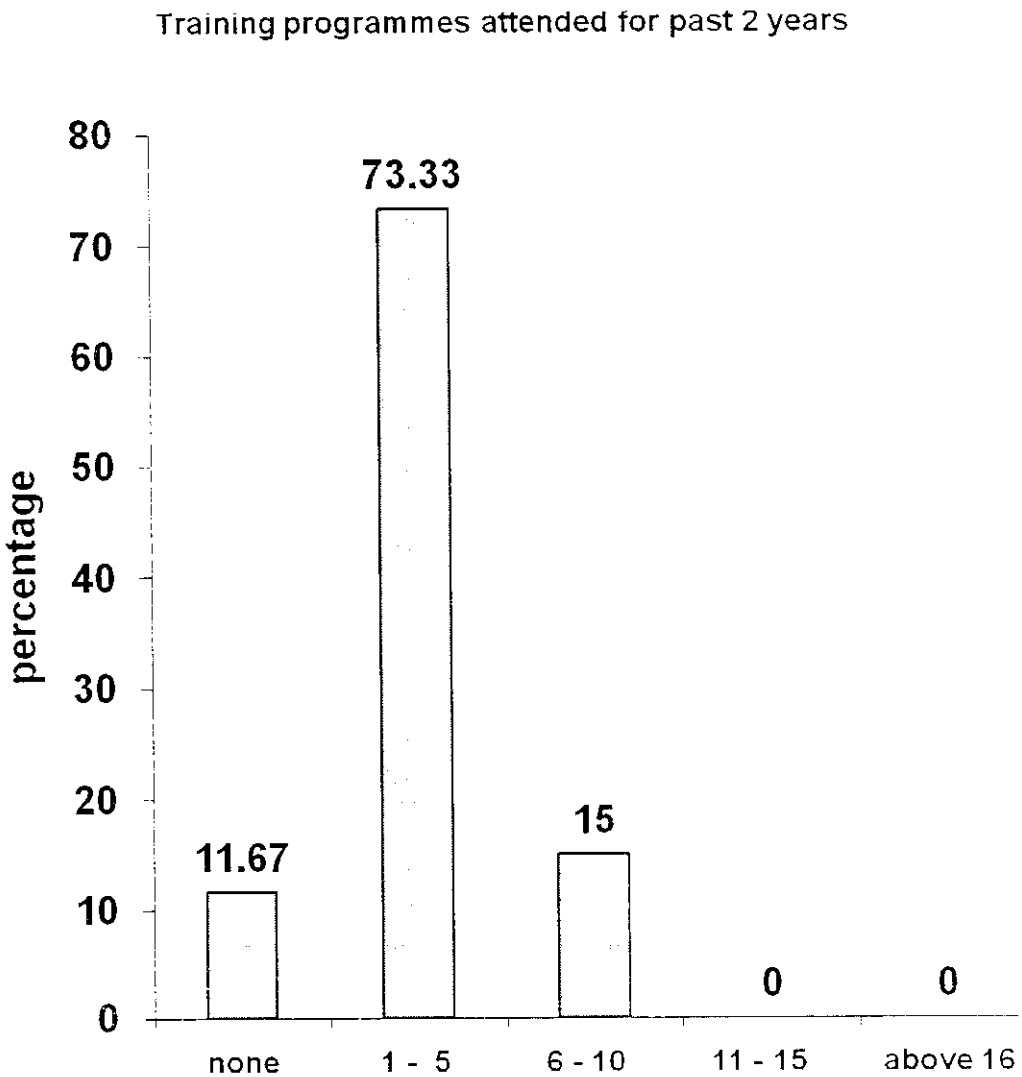


Table: 4.1.7

Training programmes exactly meet or match job requirements

S. No	Meet Job Requirement	No. of respondents	Percentage
1	Strongly agree	14	11.67
2	Agree	49	40.83
3	Neutral	57	47.5
4	Disagree	0	0
5	Strongly Disagree	0	0
	Total	120	100

Interpretation:

It is identified from the above table that 11.67% of the respondents strongly agree that they match their job requirement, 40.83% of the respondents agree that they match their job requirement, 47.5% of the respondents neutrally agree that they match their job requirement.

Chart: 4.1.7

Training programmes exactly meet or match job requirements

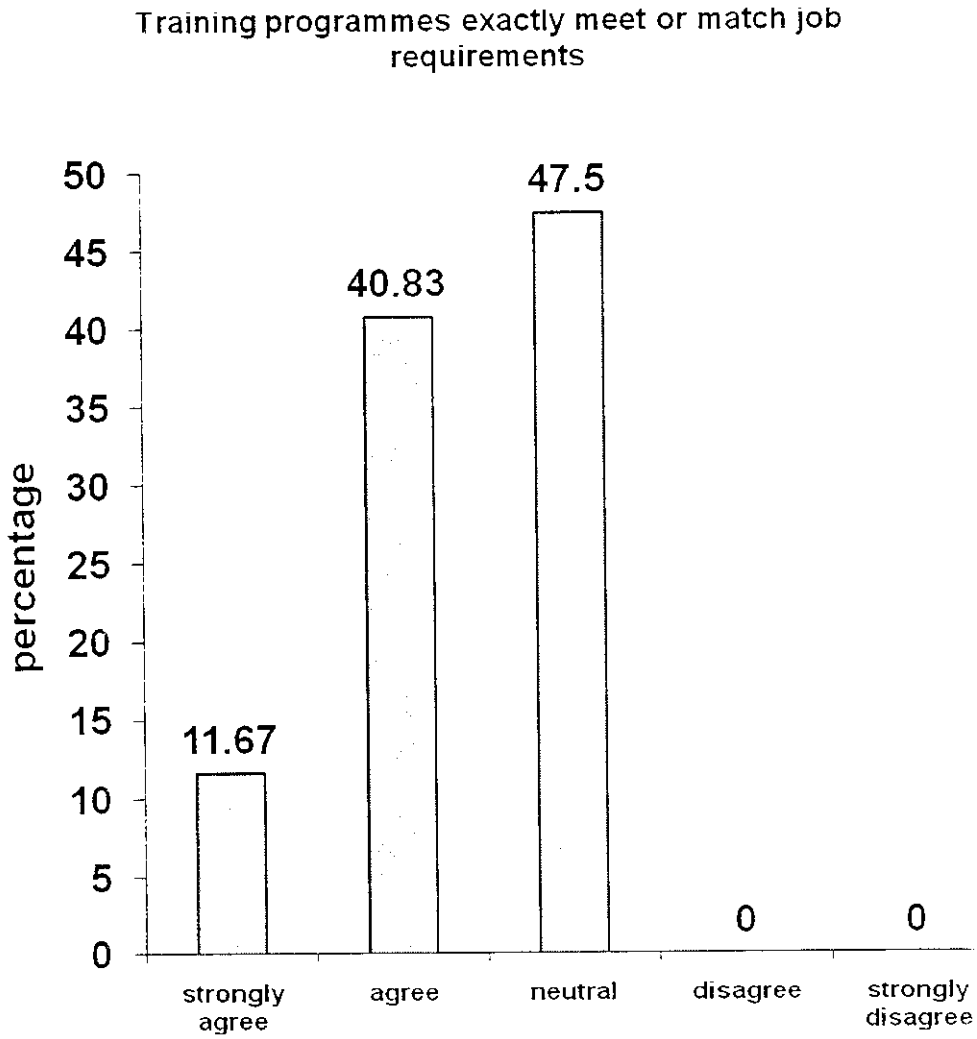


Table: 4.1.8

Evaluation of training environment

S. No	Training Environment	No. of respondents	Percentage
1	Highly Satisfied	9	7.5
2	Satisfied	47	39.17
3	Neutral	49	40.83
4	Dissatisfied	15	12.5
5	Highly Dissatisfied	0	0
	Total	120	100

Interpretation:

It is identified from the above table that 7.5% of the respondents are highly satisfied with their training environment provided, 39.17% of the respondents are satisfied with their training environment provided, 40.83% of the respondents are neutrally satisfied with their training environment provided, and 12.5% of the respondents are dissatisfied with their training environment provided.

Chart: 4.1.8

Evaluation of training environment

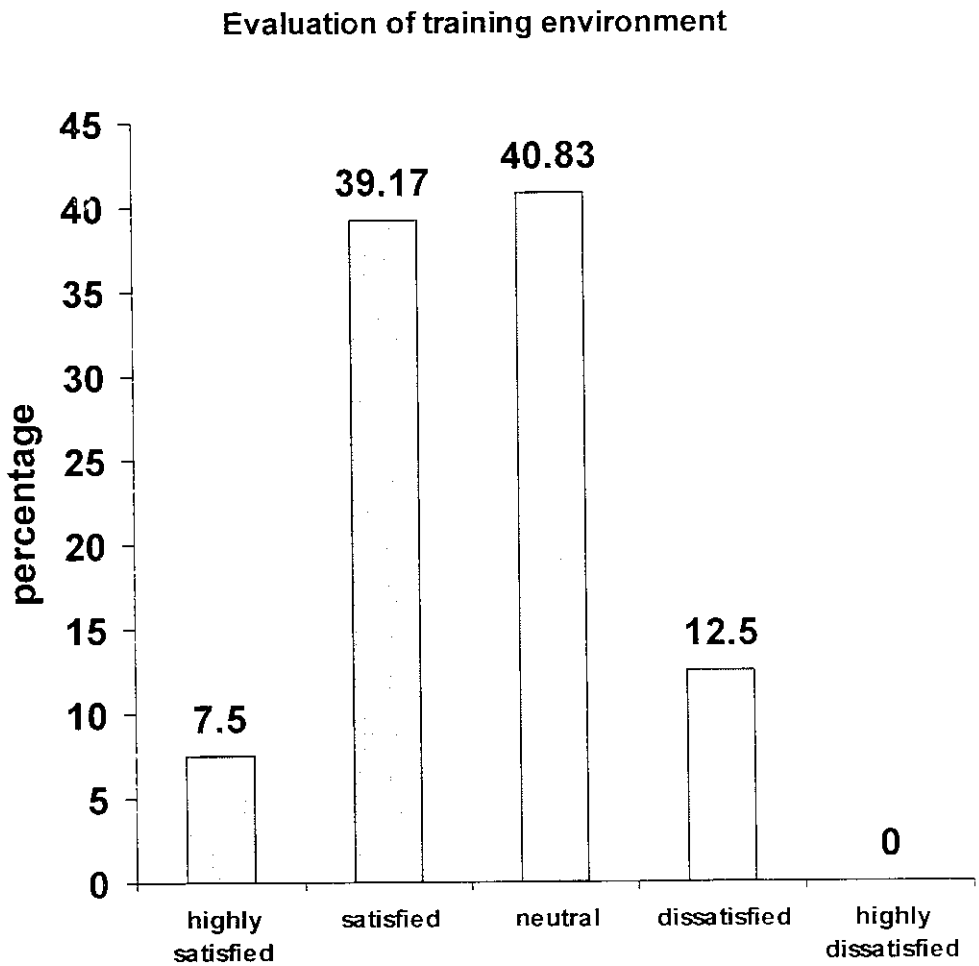


Table: 4.1.9

Effectiveness of training programmes

S. No	Effectiveness of Training	No. of respondents	Percentage
1	Very Effective	15	12.5
2	Effective	69	57.5
3	Not Effective	36	30
	Total	120	100

Interpretation:

Gaining of technical skills is very effective for 12.5% of the respondents, gaining of technical skills are not effective for 30% of the respondents, effective for 57.5% of the respondents.

Chart: 4.1.9

Effectiveness of training programmes

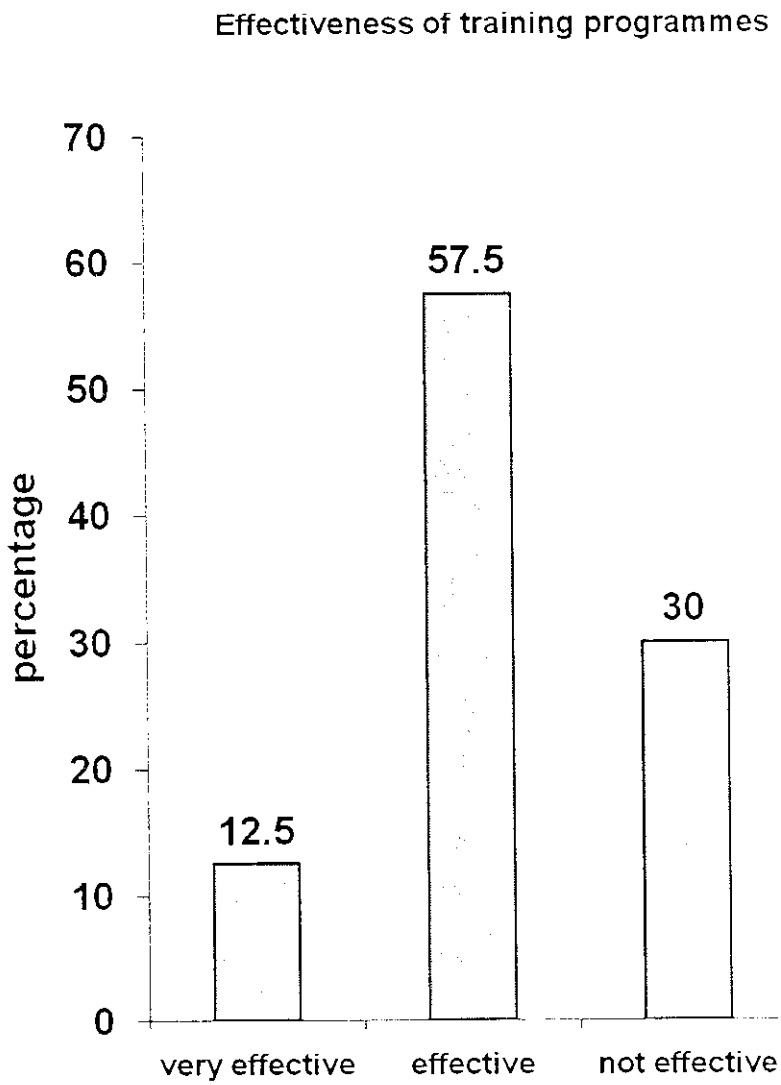


Table: 4.1.10

Faculty efficiency towards training programmes

S. No	Faculty efficiency	No. of respondents	Percentage
1	Excellent	12	10
2	Very good	19	15.83
3	Good	63	52.5
4	Fair	26	21.67
5	Poor	0	0
	Total	120	100

Interpretation:

Faculty efficiency is excellent for 10% of the respondents, faculty efficiency is very good for 15.83% of the respondents, faculty efficiency is good for 52.5% of the respondents. and faculty efficiency is fair for 21.67% of the respondents.

Chart: 4.1.10

Faculty efficiency towards training programmes

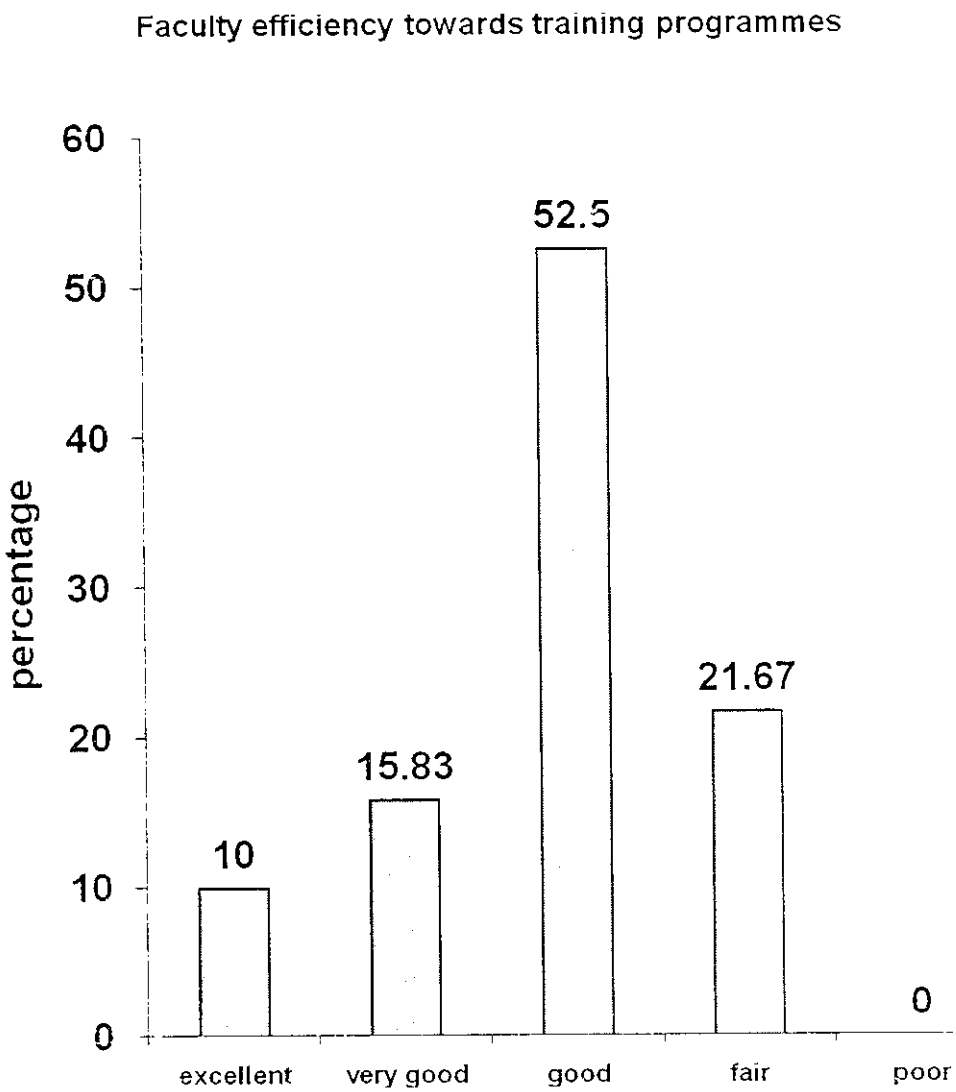


Table: 4.1.11

Adequate notes received in training programmes

S. No	Adequate notes	No. of respondents	Percentage
1	Yes	56	46.67
2	No	16	13.33
3	sometimes	48	40
	Total	120	100

Interpretation:

It is noted that 46.67% of the respondents receive adequate notes for training programmes. 13.33% of the respondents don't receive adequate notes for training programmes. and 40% of the respondents sometimes receive adequate notes for training programmes.

Chart: 4.1.11

Adequate notes received in training programmes

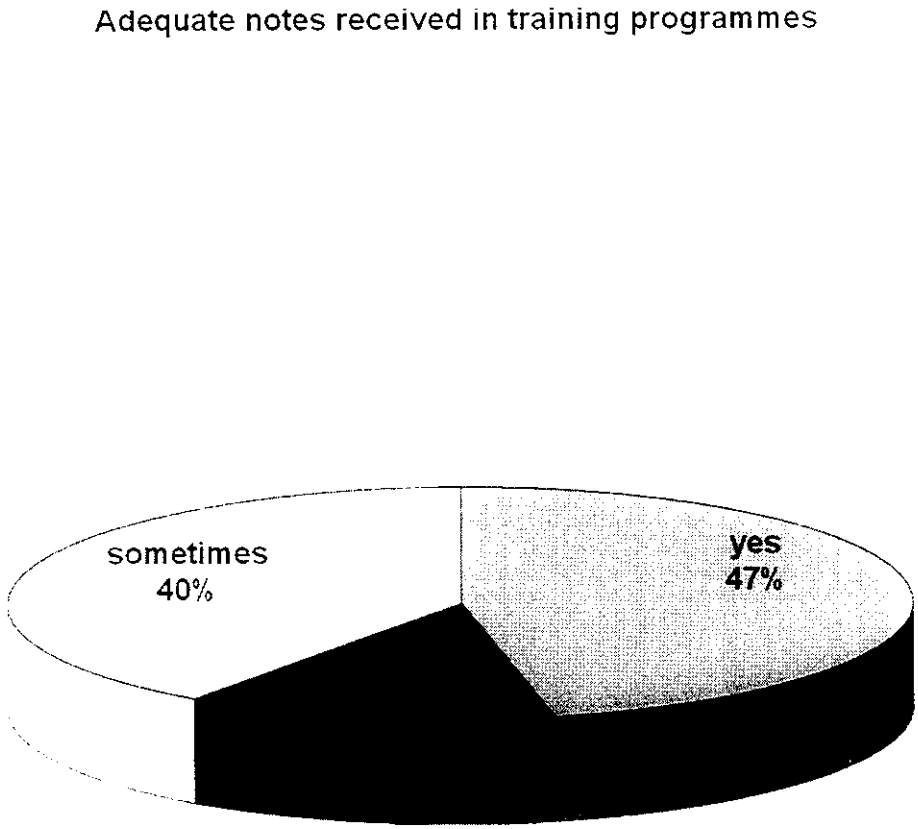


Table: 4.1.12

Satisfaction of doubts clarification

S. No	Doubts clarification	No. of respondents	Percentage
1	Yes	72	60
2	No	10	8.33
3	sometimes	38	31.67
	Total	120	100

Interpretation:

It is noted that 60% of the respondents doubts are clarified, 31.67% of the respondents doubts are sometimes clarified in training programmes.

Chart: 4.1.12

Satisfaction of doubts clarification

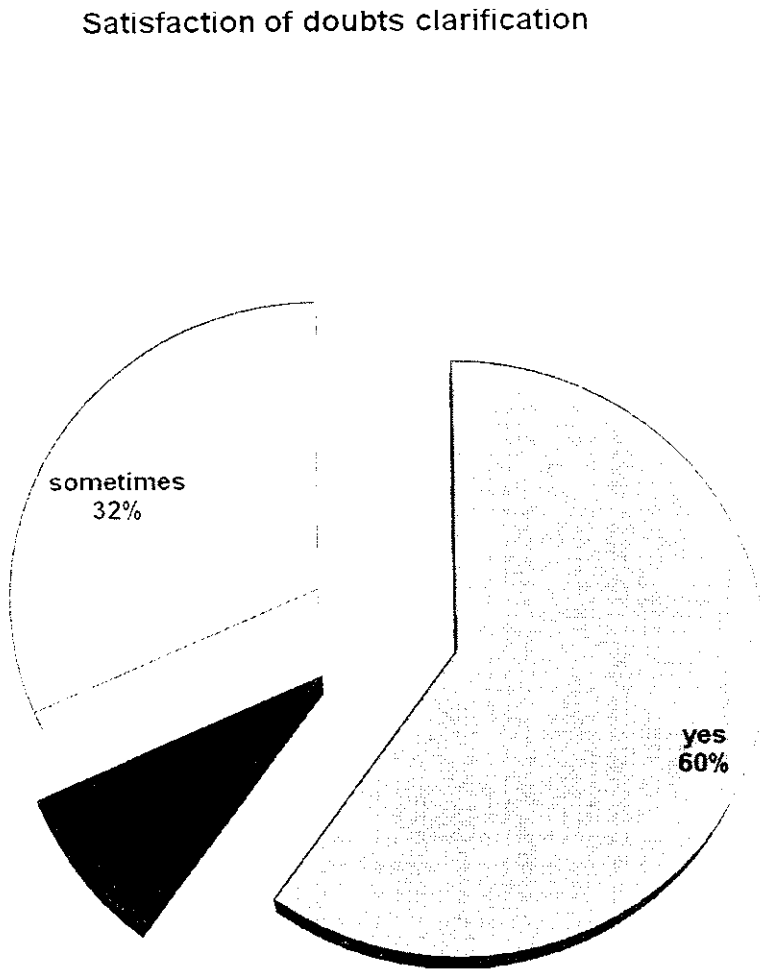


Table: 4.1.13

Work involvement after training programmes

S. No	Involvement	No. of respondents	Percentage
1	Yes	50	41.67
2	No	22	18.33
3	Sometimes	48	40
	Total	120	100

Interpretation:

It is noted that 41.67% of the respondents work involvement is improved. 18.33% of the respondents work involvement is not improved, and 40% of the respondents work involvement is improved sometimes.

Chart: 4.1.13

Work involvement after training programmes

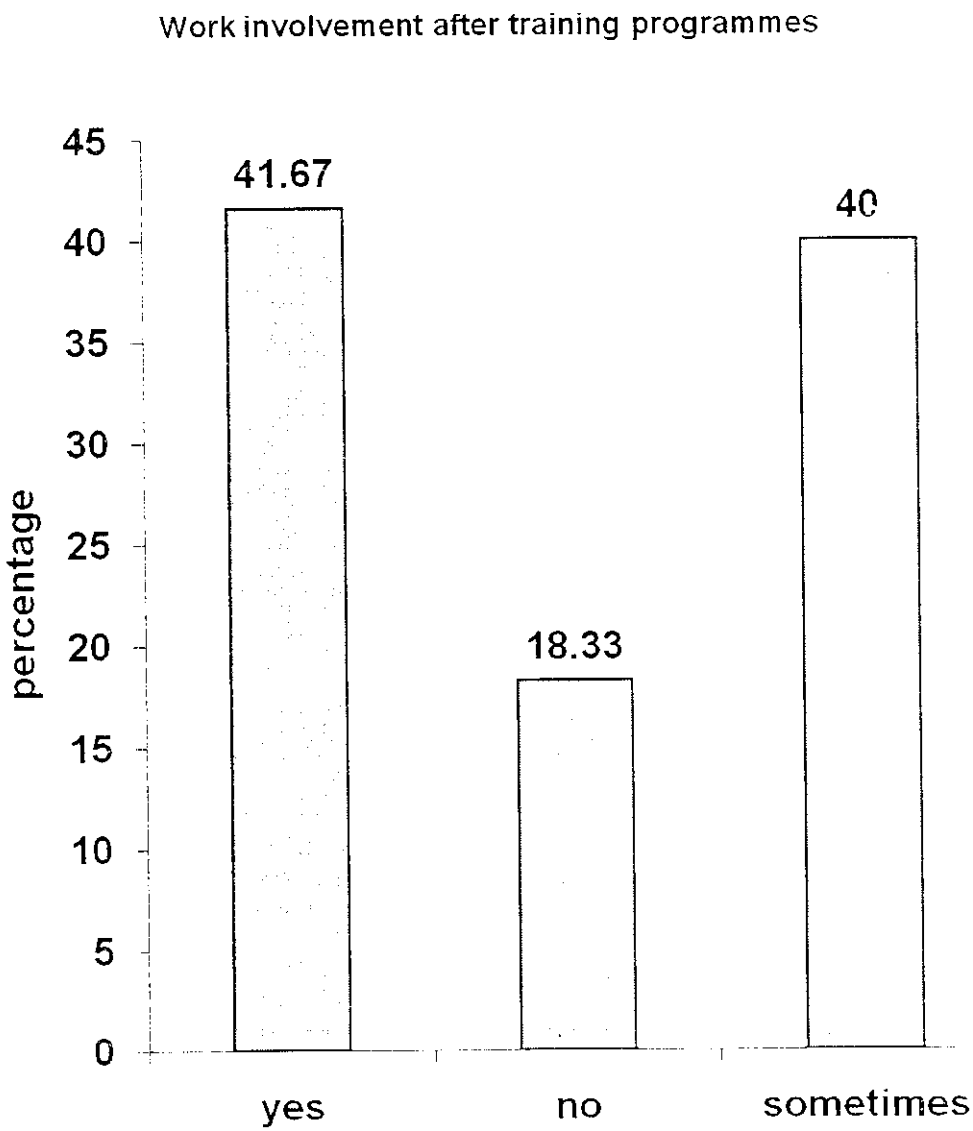


Table: 4.1.14

Notification of opinions and feedback

S. No	Opinions and Feedback	No. of respondents	Percentage
1	Yes	61	50.83
2	No	14	11.67
3	Sometimes	45	37.5
	Total	120	100

Interpretation:

Opinions and feedback are noted for 50.83% of respondents, opinions and feedback are sometimes noted for 37.5% of respondents, opinions and feedback are not noted for 11.67% of the respondents.

Chart: 4.1.14

Notification of opinions and feedback

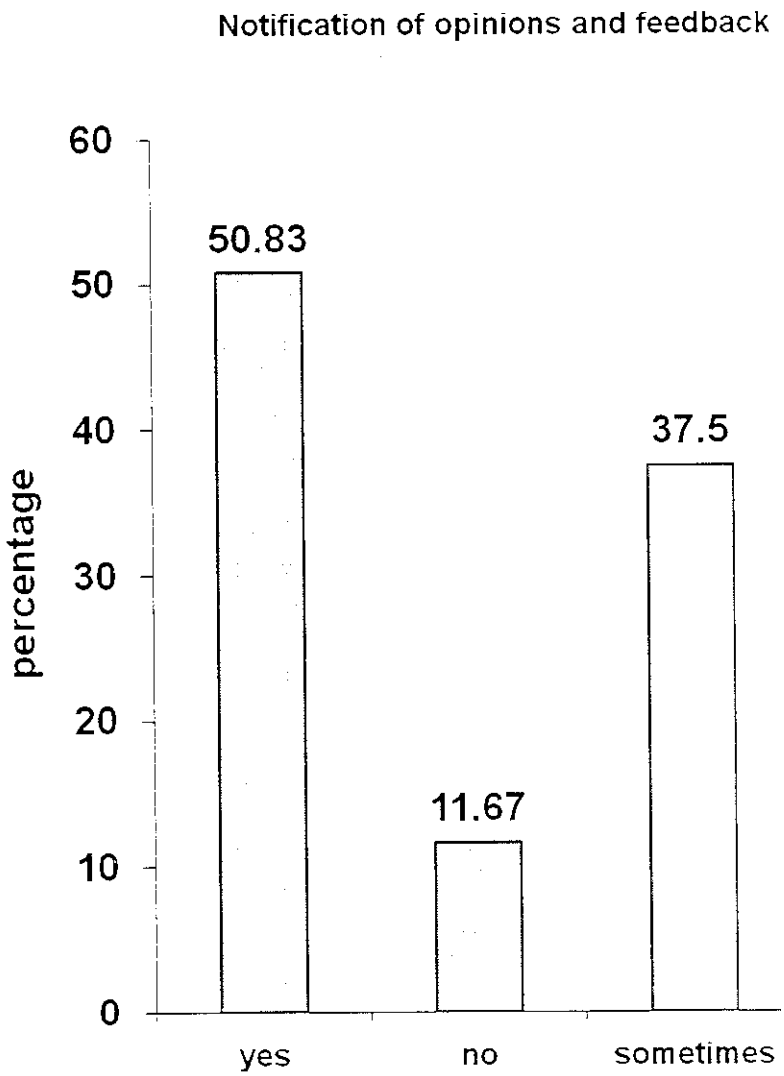


Table: 4.1.15

Opportunities for development through training programmes

S. No	Opportunities	No. of respondents	Percentage
1	Excellent	9	7.5
2	Very good	19	15.84
3	Good	61	50.83
4	Fair	31	25.83
5	Poor	0	0
	Total	120	100

Interpretation:

Opportunities for developing through training programmes is very good for 15.84% of the respondents, opportunities for developing through training programmes is good for 50.83% of the respondents, opportunities for developing through training programmes is fair for 25.83% of the respondents.

Chart: 4.1.15

Opportunities for development through training programmes

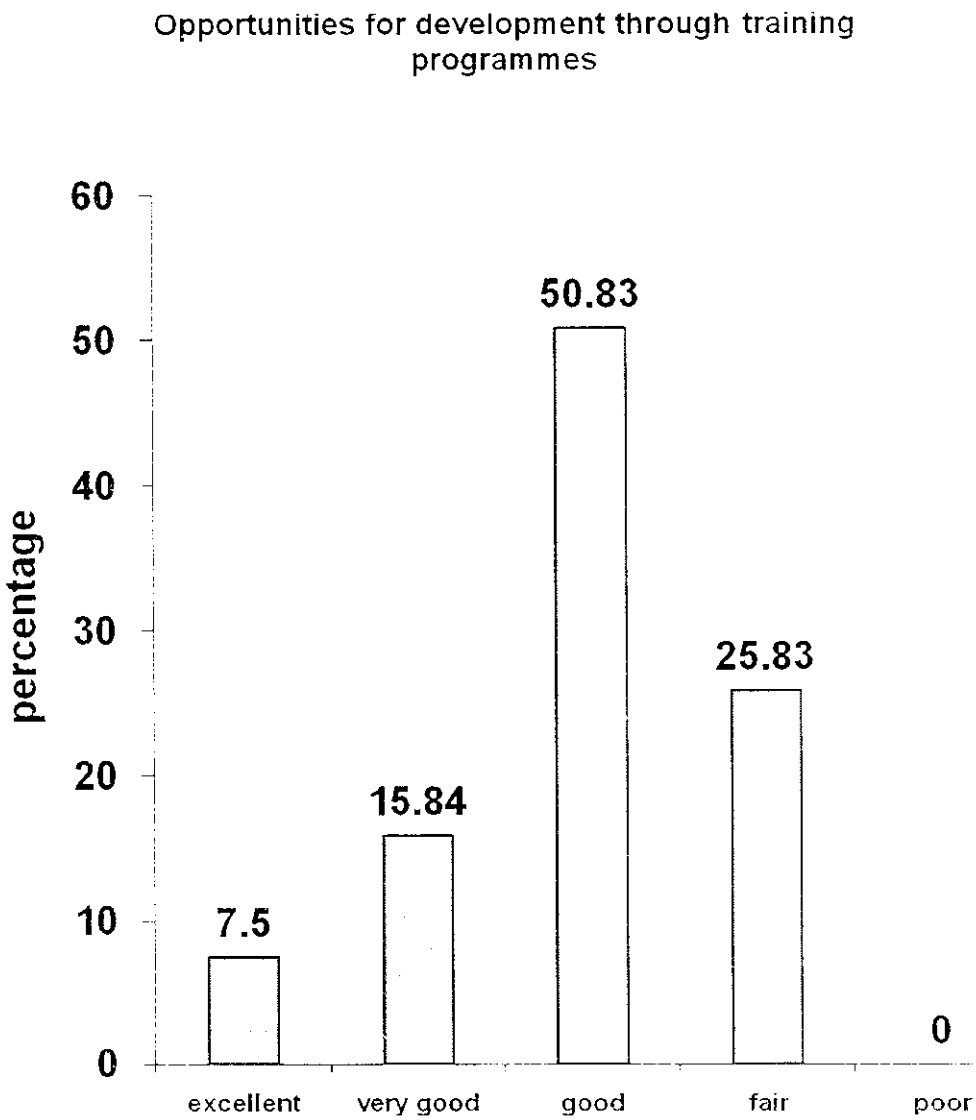


Table: 4.1.16

Overall impression about training programmes

S. No	Overall Impression	No. of respondents	Percentage
1	Excellent	10	8.33
2	Very good	18	15
3	Good	51	42.5
4	Fair	41	34.17
5	Poor	0	0
	Total	120	100

Interpretation:

Overall impression is excellent for 8.33% of the respondents, very good for 15% of the respondents, fair for 42.5% of the respondents, overall impression is good for 34.17% of the respondents.

Chart: 4.1.16

Overall impression about training programmes

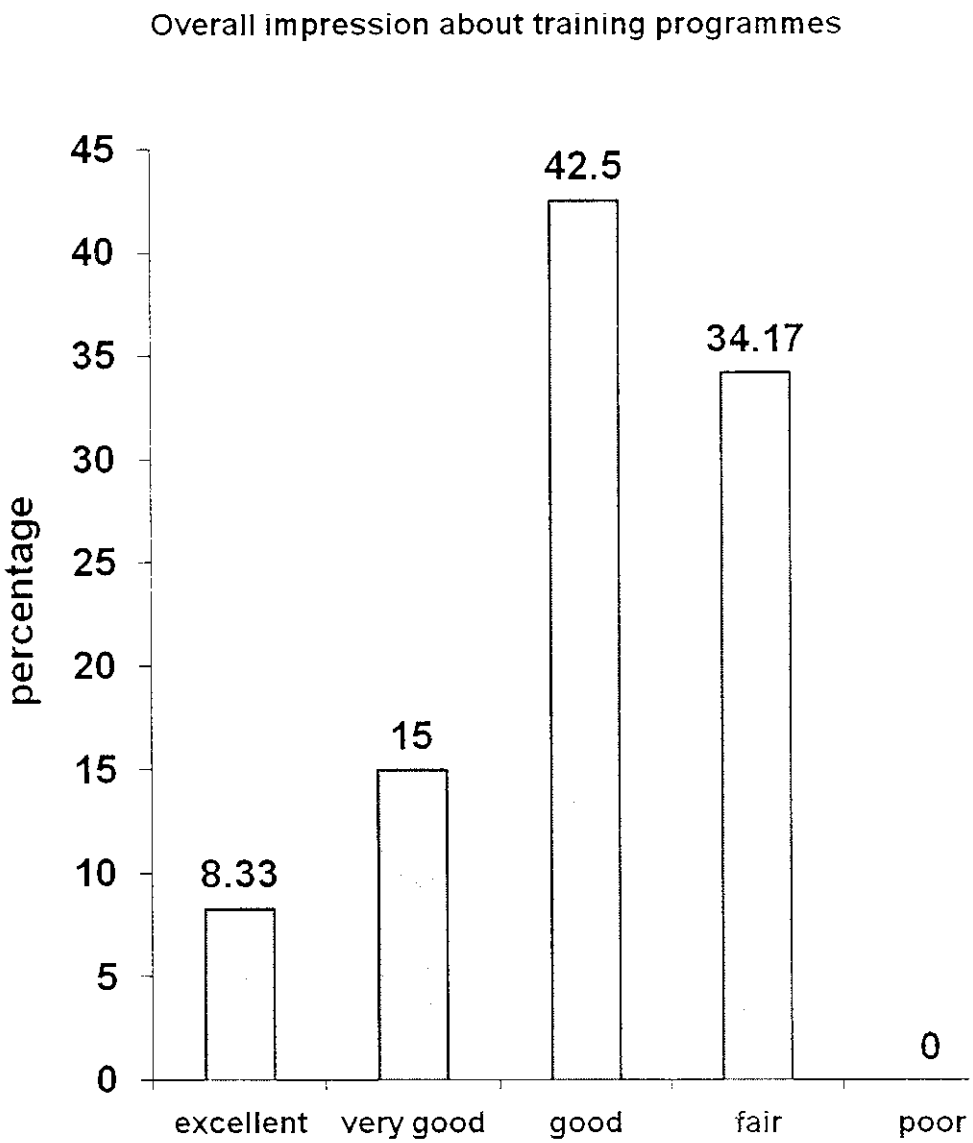


Table: 4.1.17

System of evaluation in improvement of work

S. No	Evaluation	No. of respondents	Percentage
1	Yes	58	48.33
2	No	26	21.67
3	Sometimes	36	30
	Total	120	100

Interpretation:

System of evaluation is evaluated for 48.33% of the respondents, system of evaluation is done sometimes evaluated for 30% of the respondents, and system of evaluation is not evaluated for 21.67% of the respondents.

Chart: 4.1.17

System of evaluation in improvement of work

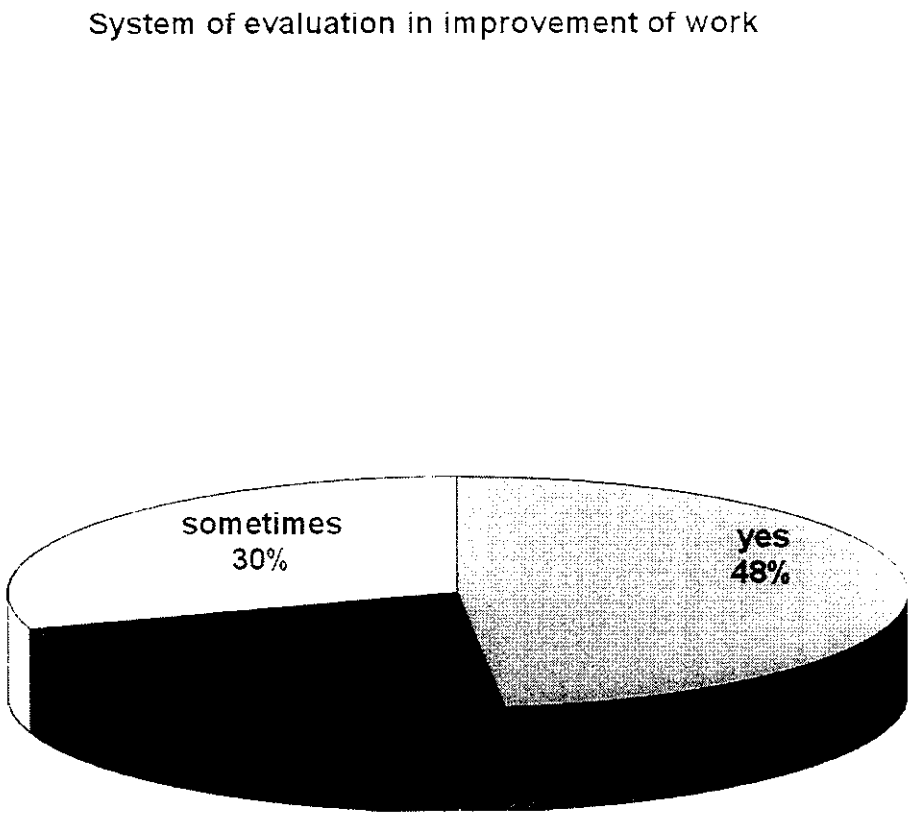


Table: 4.1.18

Satisfaction on training programmes

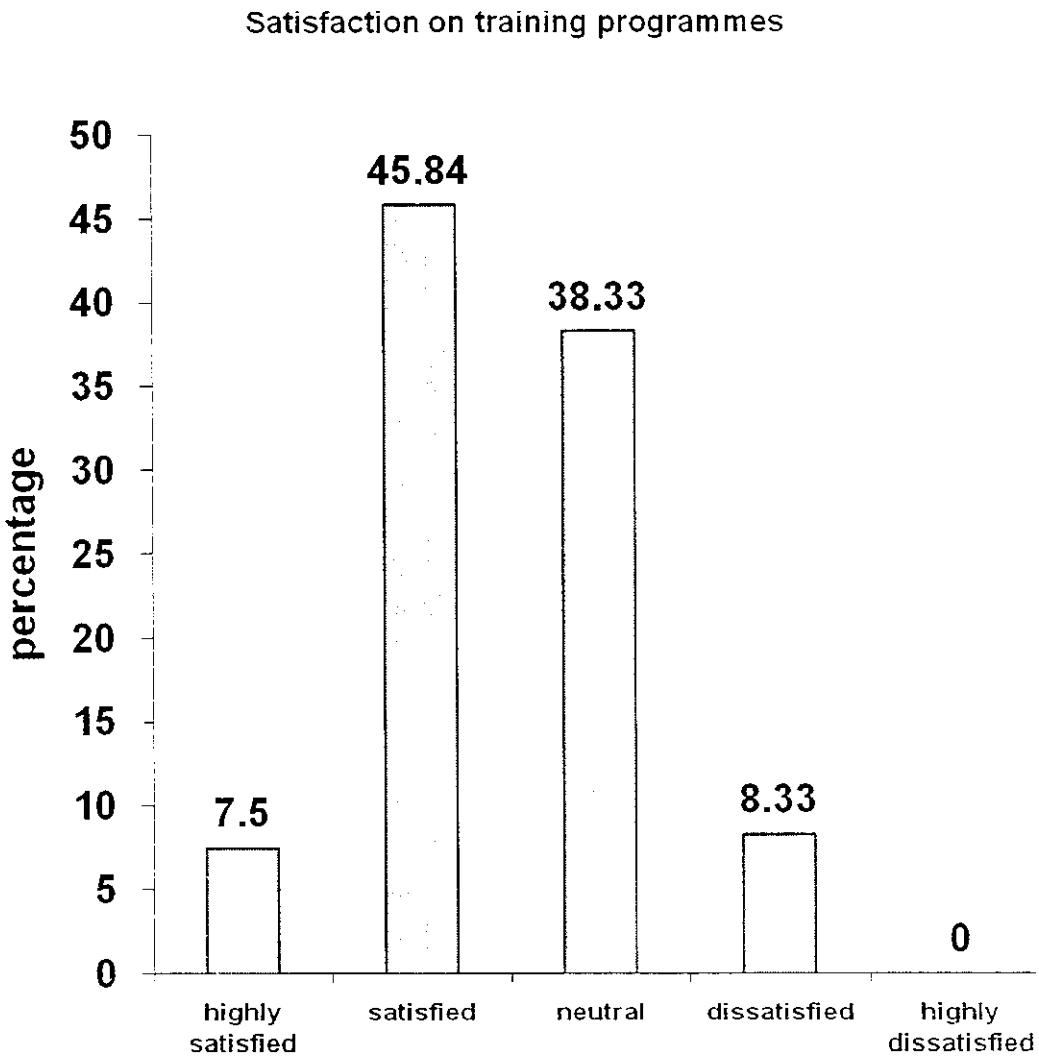
S. No	Satisfaction of training programmes	No. of respondents	Percentage
1	Highly Satisfied	9	7.5
2	Satisfied	55	45.84
3	Neutral	46	38.33
4	Dissatisfied	10	8.33
5	Highly Dissatisfied	0	0
	Total	120	100

Interpretation:

It is identified from the above table that 45.84% of the respondents are satisfied with the training programmes provided, 38.33% of the respondents are neutrally satisfied with the training programmes provided, and 8.33% of the respondents are dissatisfied and 7.5% are highly satisfied with the training programmes provided.

Chart: 4.1.18

Satisfaction on training programmes



4.2. CHI-SQUARE ANALYSIS

Table: 4.2.1 Age of workers and satisfaction in training programmes

Null hypothesis H_0 : Age of workers and the satisfaction of workers in training programmes are independent.

Alternate hypothesis H_1: Age of workers and satisfaction of workers in training programmes are dependent.

Age	Satisfaction					Total
	Highly satisfied	Satisfied	Neutral	Dissatisfied	Highly dissatisfied	
31 to 40	2	15	17	3	0	37
41 to 50	6	13	17	3	0	39
>50	1	27	12	4	0	44
Total	9	55	46	10	0	120

Calculated χ^2 value = 16.2125

Degrees of freedom = 8

Table value = 15.507

Significant result = significant at 5% level

Interpretation:

It is found from the above table that the chi-square value is greater than the table value. Hence, alternate hypothesis is accepted. So, we conclude that age of the workers and the satisfaction of workers in training programmes are dependent.

Table: 4.2.2 Areas of training needs to be improved and satisfaction of workers

Null hypothesis H_0 : Areas of training needs to be improved and satisfaction of workers are independent.

Alternate hypothesis H_1 : Areas of training needs to be improved and satisfaction of workers are dependent.

Areas	Satisfaction					Total
	Highly satisfied	Satisfied	Neutral	Dissatisfied	Highly dissatisfied	
Technical	5	22	29	4	0	60
Operational	2	9	2	1	0	14
Mechanical	2	4	7	2	0	15
Maintenance	0	20	8	3	0	31
other	0	0	0	0	0	0
Total	9	55	46	10	0	120

Calculated χ^2 value = 16.3789

Degrees of freedom = 16

Table value = 26.296

Significant result = significant at 5% level

Interpretation:

It is found from the above table that the chi-square value is lesser than the table value. Hence, null hypothesis is accepted. So, we conclude that areas of training needs and satisfaction of workers are independent.

Table: 4.2.3 Faculty efficiency towards training programmes and satisfaction of workers

Null hypothesis H_0 : Faculty efficiency towards training programmes and satisfaction of workers are independent.

Alternate hypothesis H_1 : Faculty efficiency towards training programmes and satisfaction of workers are dependent.

Faculty efficiency	Satisfaction					Total
	Highly satisfied	Satisfied	Neutral	Dissatisfied	Highly dissatisfied	
Excellent	1	5	6	0	0	12
Very good	1	13	5	0	0	19
Good	7	32	23	1	0	63
Fair	0	5	12	9	0	26
poor	0	0	0	0	0	0
Total	9	55	46	10	0	120

Calculated χ^2 value = 37.2897

Degrees of freedom = 16

Table value = 26.296

Significant result = significant at 5% level

Interpretation:

It is found from the above table that the chi-square value is greater than the table value. Hence, null hypothesis is accepted. So, we conclude that faculty efficiency and satisfaction of workers are dependent.

Table: 4.2.4 Areas of training needs to be improved and type of training programmes conducted

Null hypothesis H_0 : Areas of training needs to be improved and type of training programmes conducted are independent.

Alternate hypothesis H_1 : Areas of training needs to be improved and type of training programmes conducted are dependent.

Type of training programme	Areas					Total
	Technical	Operational	Mechanical	Maintenance	other	
External	13	0	4	7	0	24
Internal	21	6	2	11	0	40
Both	26	8	9	13	0	56
Total	60	14	15	31	0	120

Calculated χ^2 value = 7.1819

Degrees of freedom = 8

Table value = 15.507

Significant result = significant at 5% level

Interpretation:

It is found from the above table that the chi-square value is lesser than the table value. Hence, the null hypothesis is accepted. So, we conclude that areas of training needs and type of training programmes conducted are independent.

Table: 4.2.5 Areas of training needs to be improved and aim of training programmes

Null hypothesis H_0 : Areas of training needs to be improved and aim of training programmes are independent.

Alternate hypothesis H_1 : Areas of training needs to be improved and aim of training programmes are dependent.

Aim of training programme	Areas					Total
	Technical	Operational	Mechanical	Maintenance	other	
Accident	7	3	2	0	0	12
Scrap	3	1	4	2	0	10
Quality	6	1	0	16	0	23
Production	18	2	7	7	0	34
Cost	15	3	1	3	0	22
Technical	11	4	1	3	0	19
Total	60	14	15	31	0	120

Calculated χ^2 value = 32.9591

Degrees of freedom = 20

Table value = 31.410

Significant result = significant at 5% level

Interpretation:

It is found from the above table that the chi-square value is greater than the table value. Hence, the null hypothesis is accepted. So, we conclude that areas of training needs and aim of the training programmes dependent.

4.3. WEIGHTED AVERAGE METHOD

Table: 4.3.1 Table showing employee opinion about the training programmes

Weights	Yes	No	Sometimes	Weighted score	Mean score	Rank
	3 marks	2 marks	1 mark			
a) Receive adequate notes	56	16	48	248	82.67	3
b) Your doubts clarified	72	10	38	274	91.33	1
c) Work involvement has further developed	50	22	48	242	80.67	4
d) Opinions and feedbacks are noted	61	14	45	256	85.33	2

Interpretation:

It is found from the above table that the employees' doubts clarification has been given the first rank followed by adequate notes received, work involvement and notification of opinions and feedback.

CHAPTER 5

CHAPTER 5

CONCLUSIONS

5.1. FINDINGS

- It is noted that maximum number of the respondents belongs to >50 years of age group.
- It is noted from the analysis that 39.17% of the respondents are qualified graduates.
- It is noted from the analysis that maximum number of respondents are >20 years of experience.
- It is noted that 46.67% of the respondents prefer both internal and external training programmes.
- It is identified from the analysis that frequency of attending training programmes more than 2 years is 30.83% of the respondents.
- It is identified from the analysis that maximum number of the respondents attended 1 to 5 training programmes for past 2 years.
- It is noted from the analysis that 40.83% of the respondents agree that they match their job requirement.
- It is identified that 39.17% of the respondents are satisfied with their training environment provided, 12.5% of the respondents are dissatisfied with their training environment provided.
- Gaining of technical skills is not so effective for 30% of the respondents and effective for 57.5% of the respondents.
- It is noted that faculty efficiency is good for maximum number of respondents.

- It is noted that 46.67% of the respondents receive adequate notes for training programmes, 13.33% of the respondents don't receive adequate notes for training programmes.
- It is noted from analysis that 60% of the respondents doubts are clarified. 31.67% of the respondents doubts are sometimes clarified in training programmes.
- It is identified that minimum number of respondent feel that their work involvement is not improved.
- It is identified from the analysis that more number of opinions and feedback are noted.
- Opportunities for developing through training programmes are good for more number of respondents.
- It is identified that the overall impression is excellent for 8.33% of the respondents. and good for 42.5% of the respondents.
- It is identified from the analysis that maximum number of respondents feel that the system of evaluation is good.
- It is identified that 45.84% of the respondents are satisfied with the training programmes provided, and 8.33% of the respondents are dissatisfied with the training programmes provided.
- It is clearly noted from the chi-square analysis that there is relationship between satisfaction of workers and age of employees.
- It is clearly noted from the chi-square analysis that there is relationship between faculty efficiency and satisfaction of employees.
- It is clearly noted from the chi-square analysis that there is relationship between areas of training needs and the aim of training programmes.

- It is clearly noted from the chi-square analysis that there is no relationship between satisfaction of workers and areas of training needs. There is no relationship between areas of training needs and type of training programmes conducted.
- It is found from the above table that the employees' doubts clarification has been given the first rank.

5.2. SUGGESTIONS AND RECOMMENDATIONS

- Total number of training should be increased and training should be conducted periodically with equal intervals of time. So, frequency of sending the employees to training programmes can be improved.
- Periodical test to be conducted after each and every training programme, so that it is easy to evaluate how much the employee could grasp the content of the training.
- Programme list should be furnished in advance so that opportunities for developing required skills can be increased.
- Employees feel that the environment for training should be improved because pleasant environment will create high satisfaction and motivates the involvement of trainees in training. They need more practical exposure.
- The relationship between the areas of training needs and the level of satisfaction of employees may be improved.
- The relationship between the areas of training needs and type of training programmes conducted may be improved.

5.3. CONCLUSION

The study reveals the attitude of workers with the help of training programmes conducted by the organization.

The study also identified that there is no relationship between the satisfaction level and area in which training is to be done. It has been inferred from the study that the opportunities for developing relevant skills can be improved. Total number of training programmes can be improved in order to increase the level of satisfaction in the organization. Periodic test can be conducted.

Suggestions were provided in order to provide a healthy training programme in the work environment.

ANNEXURE

ANNEXURE – I

QUESTIONNAIRE

1. Name (optional) : .....

2. Department : .....

3. Gender : □ Male

□ Female

4. Age : (a) <=30 (b) 31-50 (c) >50

5. Qualification : (a) ITI (b) Diploma (c) Graduate / PG

6. Experience in years : (a) <=5 (b) 6-10 (c) 11-15

(In the organization) (d) 16-20 (f) >20

7. How are the training programmes conducted?

- ☐ External
- ☐ Internal
- ☐ Both

8. How frequently are you sent for training?

- ☐ Once in 3 months
- ☐ Once in 6 months
- ☐ Once in a year
- ☐ Once in 2 years
- ☐ More than 2 years

9. Total number of training programmes attended for past 2 years?

- ☐ None
- ☐ 1 to 5
- ☐ 6 to 10
- ☐ 11 to 15
- ☐ Above 16

10. What are the objectives of training programmes?

- ☐ Improve the technical skill
- ☐ Improve the productivity
- ☐ Improve quality
- ☐ To reduce time
- ☐ To reduce spoilage

11. Do you agree that the training programme exactly meet or match your job requirements?

- ☐ Strongly agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly disagree

12. Evaluate the training environment provided to you?

- ☐ Highly satisfied
- ☐ Satisfied
- ☐ Neutral
- ☐ Dissatisfied
- ☐ Highly dissatisfied

13. According to you the aim of training programme?

- ☐ To reduce accidents
- ☐ To reduce scrap
- ☐ To reduce quality
- ☐ To increase production
- ☐ To reduce the cost of production
- ☐ To improve technical skills
- ☐ If any other, specify .....

14. Whether the training programme is more effective in gaining technical skills?

- ☐ Very effective
- ☐ Effective
- ☐ Not effective

15. What about the faculty efficiency towards the training programmes?

- ☐ Excellent
- ☐ Very good
- ☐ Good
- ☐ Fair
- ☐ Poor

16. The opportunities for developing through training programmes?

- ☐ Excellent
- ☐ Very good
- ☐ Good
- ☐ Fair
- ☐ Poor

17. Kindly tick the opinions about the training programmes conducted?

Training programmes	Sometimes	Sometimes	Sometimes
a) Do you receive adequate notes of the training programme?			
b) At the time of training programmes, whether your doubts clarified to your satisfaction?			
c) Whether the work involvement has further developed after the training program?			
d) Whether the opinions and feedback as the training given by you are noted by your department head?			

18. The improvement of your performance after attending the training programme?

- ☐ Has improved production control
- ☐ Has improved quality control
- ☐ Has improved safety practices
- ☐ Has improved machine management
- ☐ Has improved record keeping
- ☐ Overall improvement
- ☐ None

19. Which of the following areas, training is to be improved?

- ☐ Technical
- ☐ Operational
- ☐ Mechanical
- ☐ Maintenance
- ☐ If any other, specify .....

20. What is your overall impression about the training programme?

- ☐ Excellent
- ☐ Very good
- ☐ Good
- ☐ Fair
- ☐ Poor

21. Is there any system of evaluation in improvement of work, after attending the training programmes

- ☐ Yes
- ☐ No
- ☐ Sometimes

22. Are you satisfied with the training programmes conducted?

- ☐ Highly satisfied
- ☐ Satisfied
- ☐ Neutral
- ☐ Dissatisfied
- ☐ Highly dissatisfied

23. Any other suggestions for improving the effectiveness of training programmes in Salem Steel Plant .....

.....

.....

ANNEXURE – II

CHI-SQUARE TEST

Chi-square test is used to find out whether there is relationship among various groups chi-square can be calculated using the formula.

$$\chi^2 = \sum \frac{(O_i - E_i)}{E_i}$$

O = Observed frequency

E = Expected frequency

i=1, 2...n.

$$E_i = \frac{(Row\ Total \times Column\ Total)}{Grand\ Total}$$

To calculate degree of freedom

$$Degree\ of\ freedom = (number\ of\ rows - 1) \times (number\ of\ columns - 1)$$

PERCENTAGE ANALYSIS

Percentage refers to a special kind of ratio. Percentage is used in making comparison between two or more series of data. Percentage is used to describe relationship.

$$Percentage\ of\ Respondents = \frac{No.of\ Respondents}{Total\ No.of\ Respndents} \times 100$$

WEIGHTED AVERAGE METHOD

When the relative importance of the difference observations is not the same, we compute weighted arithmetic mean. The term "weight" stands for the relative importance of the difference observations.

$$\bar{X} = \frac{\sum W X_i}{\sum W_i}$$

Where,

X = Weighted arithmetic mean

X_i = Variable

W_i = Weights attached to the variable Xi (i=1, 2....n)

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