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THE IMPACT OF TRANING AND DEVELOPMENT ON TECHNICAL COMPETENCE IN OPEN CAST MINES OF CCL

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Abstract - *Training is the process of increasing knowledge and skills of employees in relation to a task. The main objective of training is to bridge the gap between the present skills and the desired skills and to bring a positive change in the skills behavior attitude and knowledge. The present study highlight the development of coalmining to formulate a comprehensive scheme for training of all supervisory staff and workers for achieving the objective of vocational training to handling the equipment's and enhancing the productivity of coal. Training has to be provided to maintenance personnel in their respective working areas and should be planned in such a way that an employee is updated with the new techniques and challenges in maintenance of equipment's in an effective way. The present study is confined to the employees of CCL Ranchi and it aims to know the present condition of Training& Development programmes to increase efficiency and effectiveness to achieve the target production of coal in opencast mines.*

Keywords: Effective Management, Training and development, Technology Management, Open Cast Coal Mining

1.0 INTRODUCTION

In the era of globalization technology has gained overriding importance and has accelerated the rate of competition (David and Krit, 2001). In the contemporary, business environment needs latest technology and is imperative for maintaining quality standards. Business house demand two aspect of technology:

- ***Selection of appropriate / suitable technology***
- ***Effective management***.

Suitable technology is indicative to be a good match between technology utilized and resources required for its optimal use (Akhilesh, 2013). Simply taking up of new technologies is a difficult task due to innumerable alternatives available both indigenously as well as internationally. However, second aspect needs to be more focused to understand the effective management of technology for capitalizing it to the maximum extent (Monica, 2014).

Technology has become backbone of corporate sustainability after the pro-market reforms due to immense competition worldwide in prime sectors (Muthuraman, 2004). Management of technology is a practice that entails classification, selection, adoption and exploitation of the technologies needed to maintain organization's current and future survival. Manufacturing sector though invested lot in technological part is still lacking as per their expectation in terms of overall performance. Coal mining sector in India is one of the core sectors which are far behind comparing with global standards inspite of implementation and use of best technologies. Presently, open cast coal mining industries warrants for state of the art technology. The problem lies in the implementation and its effective management through proper training. The way in which internal planning and implementation processes are managed could greatly influence the outcome of new technology. Technology implementation and planning refers to the extent how organization has strategically designed the deployment of new technology(s) prior to its implementation (Noori, 1990). The processes incorporated within this design influence the overall effectiveness of technology deployment and utilization. Throughout implementation process, effective management signifies supporting the project team, selecting the right technology and designing / providing appropriate training. This will ensure that new technology will complement to existing processes and systems and will allow more productivity throughout (Narayanan, 2001).

Especially the coal mining sector/ Industry can be considered as an example where the management of technology can be considered for effective study. In coal mining sector the open cast coal mining uses advanced technology but still it falls far behind in global standards. Indian coal industries have witnessed a series of technological changes but it is still struggling in extracting coal suitable for the domestic consumption rather depending on the imported coal (Roy and Singh, 2014). The technology cannot be effective unless it has been supported by appropriate organizational changes as well as changes in human skills and training. Researchers feel that the coal mining industries under government control lacks effective management of new technology and not able to justify the returns on investment (Perrino and Tipping, 1989).

Technology cannot play itself but it can bring a change and has to be supported by appropriate interventions and an advanced human skill. There is no denying of the fact that wrong choice of technology leads to dismal consequences affecting the overall health of the organization nonetheless fact also lies in the effective management of technology (Steele, 1989). This study attempts to highlight the problems encountered while managing technology for adoption, implementation to productive utilization through proper training and development.

Technology is essentially a starting point for knowledge and it is required for taking initiative and decision making. It provides new tools to deal with knowledge and its result will have far reaching implication on the future decision-making process. On the other hand, technology is becoming increasingly knowledge-intensive. Knowledge-intensity of production is increasing rapidly, and research-intensity in the development of modern technologies is growing. With rising complexity and globalization, technology has gained overriding objectives in the fast-changing competitive environment. In the contemporary, business environment needs latest technology is imperative for maintaining quality standards. Business house demands two aspect of technology: first one is the selection of appropriate/ suitable technology and the second one is the effective management of the same. Suitable technology is indicative to be a good match between technology utilized and resources required for its optimal use. Simply taking up of modern technology is a difficult task due to innumerable alternatives available both indigenously as well as internationally. However, second aspect needs to be more focused to understand the effective management of technology for capitalizing it to the maximum extent.

The present study highlights the development of technology effectiveness training and development in Indian open cast coal mining industries. Indian open cast coal mining is still far behind in global standards in spite of implementation and use of best technologies. Researchers feel that the coal mining industries under government control lacks effective management of the technology and not able to justify the returns on investment. The technology cannot play itself but it can bring a change and has to be supported by appropriate interventions and an advanced human skill (Which can be attained through proper training). Indian coal industries have witnessed a series of technological changes but it is still struggling in extracting coal suitable for the domestic consumption rather depending on the imported coal. The technology cannot be effective unless it has been supported by appropriate organizational changes as well as changes in human skills and training.

The present study explores the strategies and methods adopted in a Coal mining industry for Training& Development programmes to increase efficiency and effectiveness to achieve the target production of coal in opencast mines.

For this, we follow survey based empirical analysis; consists of data collection primarily via structured questionnaires. The study pertains to find out the reasons for low productivity of coal in open cast mines in CCL.

The study also attempts to highlight the problems encountered while managing technology for adoption, implementation to productive utilization. The background of the research is based on the effective training and development programe is based on the utilization of machine in effective way and to achieve target production of coal.

2.0 IMPORTANCE OF TRAINING AND DEVELOPMENT

Training and development refer to the imparting of specific skills, abilities and knowledge to an employee. It is an attempt to improve current or future employee performance by increasing an employee's ability to perform through learning, usually by changing the employee's attitude or increasing his or her skills and knowledge. The need for training and development is determined by the employee's performance deficiency.

Workers must be trained to operate machines, reduce scrap and avoid accidents. Supervisors, managers and executives also need to be developed in order to enable them to grow and acquire maturity of though and action. Training and development constitute an ongoing process in any organization.

Whenever there is a gap between the actual performance and whatever is needed i.e. the standard, productivity suffers. Training can reduce, if not eliminate this gap. It does so by changing the behavior of individuals by giving them additional specific items of knowledge, skill or attitude they need to perform up to that standard. Emphasis has been laid on the training and development of employees with a view to productivity contributes to the performance of the organization. The revised training system aims to optimally utilize various agencies of training instruments, in an effort to transforming the company into a learning organization. Training shall include a training programme, seminar convention, or any other structured learning or development programme based on training need analysis.

Human Resource Development is growing steadily in size, outreach and impact. Increasingly, the HRD professional is recognized as a prime contributor to organizational effectiveness and individual and satisfaction productivity. HRD aims at securing commitment of the employees and building competence in them. For building up a team of dedicated and committed employees, a strong and supportive culture exists where performance is duly recognized. Any training and development programme must contain inputs, which enable the participants to gain skills, learn theoretical concepts and help acquire vision to look into the distant future. In addition to these, there is a need to impart ethical orientation emphasizes on attitudinal changes and stress upon decision making and problem solving abilities. There is a greater stability, flexibility and capacity for growth in an organization. Employees become efficient after undergoing training. Efficient employees contribute to the growth of the organization. Training makes the employees versatile in operations. Training makes the employees versatile in operations. Well trained employees can contribute to the prosperity of an enterprise.

Accidents, scrap and damage to machinery and equipment can be avoided or minimized through training. Even dissatisfaction, complaints, absenteeism and turnover can be reduced if employees are trained well. Future needs of employers will be met through training and development programmes. Training serves as an effective source of recruitment. Training is an investment in human resources with a promise and it serves as an effective source of recruitment. Training is an investment in HR with a promise of better returns in future. Another component of a training and development programme is development which is less skill oriented but stresses on knowledge. Knowledge about business environment, management principles and techniques, human relations, specific industry analysis and the like is useful for better management of a company.

2.1 BENEFITS OF TRAINING EMPLOYEES FOR AN ORGANIZATION

- Leads to improved profitability and more positive attitudes towards profit orientation
- Improves the job knowledge and skills at all levels of the organization
- Helps employees identify with organizational goals
- Helps create a better corporate image
- Fosters authentically, openness and trust
- Improves relationship between boss and subordinates
- Aids in organizational development
- Improves workforce efficiency

2.2 BENEFITS OF TRAINING FOR AN INDIVIDUAL

- Helps individuals in making better decisions and effective problem solving
- Develops a sense of growth in learning
- Improves communication between groups and individuals
- Provides a good climate for learning, growth and coordination
- Makes the organization a better place to work and live

3.0 RESEARCH PROBLEM

In the context of present research work and stated facts despite of having ample coal deposit, imported machinery/ technology as well as ample demand in market the actual production of coal is less than the targeted. In spite of such a huge natural coal reserve there is a gap in target and actual production. Based on the above statement, a basic line of study has been framed and some facts were discovered which are further described below:

- Coal has been recognized as the most important source of energy for electricity generation. In addition, other industries like steel, cement, fertilizers, chemicals, paper and thousands of medium and small-scale industries are also dependent on coal for their works and energy requirements. Despite such a convincing situation and demand, the production of coal from CCL and its trend is a matter of great concern. Probable reasons for such a poor show can be categorized as below (these reasons were found after conducting an extensive survey and review of the open cast (Piparwar and Ashoka) mines which are considered for the study).

- The intention of this research is to analyze and evaluate the effectiveness of Training & Development programmes in CCL, Ranchi (Head office) and its opencast mines (Piparwar and Ashoka).
- The production was less despite having modern fleet of technology.

- The problems associated with the implementation of modern technology can lead to a complex situation due to lack of experience and expertise in the new area of operation. This may result in overdependence on technology, supplier's project delays and other related problems.
- In order to survive and grow in the present industrial scenario, it is imperative for CCL to gear up its strategies

for increasing the quality, quantity and cost effectiveness requirements of its customers.

- Some of the important problems of open cast mines like in Piparwar mines there is stoppage of coal transportation due to siding and other illegal activities. This problem is slapped as a result of poor law and order condition which further prevents the management in achieving the targeted production and finally resulted into less production of coal.
- Old Heavy earth moving machinery has not been replaced at desire scale, which has caused increase in population of old fleet of HEMM with poor reliability and efficiency, because of this the wastage has increased and productivity has further dipped.
- Shortages of skilled and statutory personnel also contribute to the problem. Equipment's not properly handled and there is a decrease in production due to lack of technical skills, efficient supervisory manager and the workers has also reduced the overall productivity.
- Human resource is a major factor in increasing production and productivity of the company.The focus area is job oriented training and re-training of the employees to develop specific skills of the manpower. A special emphasis was given to attitudinal development amongst the employees. Well-trained employees with increased level of job satisfaction are added advantage to the company in ensuring higher safety levels, maximum HEMM utilization, and increased coal production.

4.0 OBJECTIVE OF THE STUDY

With all extensive literature survey and preliminary discussion had with shop floor managers, we fix our specific research objectives in the line of understanding

- To evaluate the effectiveness of training and development programs in open cast mines and CCL Head office in the state of Jharkhand.
- To identify the skills required by employees to perform the job or operate a machine efficiently and effectively.
- To assess the satisfaction level of employees regarding effective training.

5.0 SCOPE OF THE STUDY

The present study is confined to the employees of CCL Ranchi and it aims to know the present condition of the Training & Development programmes, Ranchi and it's opencast mines (Piparwar and Ashoka). Piparwar project is Indo- Australian joint venture which has played an important role in meeting the demand of coal in power generation sectors. The Piparwar mining unit has came into picture because of signing of agreement between Australian Coal Mining Company, Coal India Limited and White Industries Australia Limited. At Piparwar a Coal Handling Plant and a Coal Processing unit has been successfully installed and commissioned. Mobile Inpit Crushing and Conveying Technology are the prime important aspects which differentiate piparwar mines from other mining units. The production capacity of piparwar mines is about producing 10 Mt of Coal. Other mines Ashok OCP produces coal by adopting 'surface miner technology. The technological growth has been phenomenal because a number of OC mines used to be worked with manual labor in the past. The Ashoka opencast total target production of 10. Mty. The proposal of this report 6.5Mty to 10 Mty for incremental production of 3.5 Mty of non-coking coal.

6.0 LITERATURE REVIEW

Technological progress has changed the life of everyone today scenario and it has also changes made in the coal mining industries. In other words coal mining industry requires the high-technological power that is equipped with all the necessary machinery for raise the productivity of the coal. Today in the dynamic business scenario it is the importance of the state of the art technology is observed to raise and enhance the productivity of coal mining to gain the desired production. Almost every industrial sector today warrants for the best use of technology in order to remain competitive for sustainability (Hunt, 2007). The production of coal involves open cast mining technique and surface mining technique, as compared to the underground technique the open cast mining is more popular and the method of open cast has gained importance in USA since 1970. The method is useful to extract the coal deposit near the surface. From this moment the coal exploration, extraction and delivery to the market has become secure, effective, clean and not harmful for the environment. Nowadays coal mining industries are greatly dependent on technology, organizations such as Globaltex Industries including applying all the advances of technology in their business. In the early days, coal was mined by hand, with individuals wielding a pick and shovel. By the Industrial Revolution, coal-cutting machines and steam shovels designed for coal mines were common, making the work more efficient and throughout the 20th century, improvements in equipment design led to a dramatic increase in productivity and safety (Ghatak, 2002).

Now a day, new advancements in technology are driving even higher levels of performance and material management-especially in open-pit, or surface, coal mines, where miners are focused on removing most of the material

as quickly and safely as possible. As dragline operators work to extract coal, simply by glancing at an in-cab display that shows the position of the bucket and tub relative to the design plan, as well as whether each dig point is above or below plan. That helps them to move the material accurately and efficiently (Khalil, T.M, 1992).. Machine health data are also available in the cab, so operators can identify potential problems like tilt due to an unstable pad-and act quickly to prevent failures. Likewise, production monitoring tools provide site planners with real-time information on dragon activities, right down to individual bucket loads and damp locations. By monitoring performance, productivity and payload, they can optimize dragline output and minimize operating costs. Some mines are even using this type of information for teaching purposes, identifying operators who need additional training and helping them understand how variations in operating practices can affect dragline production and material management (Kate, S.R. 1996).

On the other hand operators of support equipment, dozers, graders, excavators, loaders and other machines that remove overburden and load coal for transport have similar technology at their disposal. On-board machine guidance systems deliver real-time information they can use to monitor ore bodies, bench height, cycle times and volume of material cut and filled and mine planners can use these systems to map mines, create terrain models, locate machine position, and track volume and productivity with complete accuracy. Apart from improved material management and productivity, another benefit of today's new technologies is safety at the top priority of coal mining sites worldwide. Many machines feature in-cab digital displays of avoidance zones and surfaces, as well as other tools that alert workers to hazardous situations before accidents can happen. Technology can serve to expand coal markets, improve coal production and decrease cost of production of coal. It can produce cost-effective solutions to certain environmental problems (Flynn, 2000).

6.1 TECHNOLOGICAL SKILLS REQUIRED FOR ADOPTION OF TECHNOLOGY

It refers to a person's knowledge and proficiency in any type of process or technique. In a production department this would mean an understanding of the technicalities of the process of production. Whereas this type of skill and competence seems to be more important at the lower level of management (Kumar and Bhat, 2008). The enhancement of skills of employees and workers will not only improve quality but also bring down the cost of production through efficient use of machines and materials and reduction of wastages. The employee must also be conscious about the need for improvement in the quality of work. Coal mining introduces a foreign technology in different open cast mines to extract coal. If the workers don't have a technical skill to handle the equipments it can be affect on production. The technical skills are being transformed from the existing skills through training in order to match with the requirement of the desired skills for the effective operation as well as effective management of the installed new technology (Tripathi et.al., 2009).

6.2 REAL TIME TRAINING NEEDS FOR TECHNOLOGICAL UP-GRADATION

Training is the process of increasing knowledge and skills of employees in relation to a task. The main objective of training is to bridge the gap between the present skills and the desired skills and to bring a positive change in the skills behavior attitude and knowledge (Edwin, 1980). The open cast coal mining should formulate a comprehensive scheme for training of all supervisory staff and workers for achieving the objective of vocational training. Training has to be provided to maintenance personnel in their respective working area and this training should be planned in such a way that an employee is updated with the new techniques and challenges in maintenance. Under the training needs safety training is also important (Daltan, 1982). The establishment of safety policy objective within an organization must be accompanied by the clear allocation of responsibility within the management structure. It is generally accepted that the primary operational responsibility for ensuring safe working must rest with line management. On the other hand other area like quality and productivity real progress in safety is impossible without the full co-operation and commitment of all employees. If they are to accept their full share of responsibility, however they must be able to participate fully in the making and monitoring of arrangements for safety and health at their place of work (Ritson, 1983).

6.3 SAFETY NEEDS FOR CONTINUOUS TECHNOLOGY

Safety is an integral part of efficient production and without safety there cannot be maximum efficiency. Strict supervision is essential for observing that all works are done in safe way and also safety observation checks effectiveness of training helps prompts correctional and develops good safety attitudes. Safety procedure should lay more emphasis on the human aspect of accident with a view to elimination human errors. Workers should be given vocational training to include safety habit and to use safety devices. Systematic planning is a basic requirement for health and safety in all workplace. For a safety plan to be effective, it must be part

of a continuous review process which has as its objective zero accident, through a strategy of never ending improvement. The overall safety training cycle should include the basic element set out in following figure.

Safety Training Cycle

(Source:Safety Training Cycle Muhlemann, 1994)

It is generally believed that training is an important factor in improving safety performance. For training to be effective, however it must be planned in a systematic and objective manner. Safety training must be continuous to meet not only changes in technology but also changes in the environment in which an organization operates. Safety training activities can be considered in the form of a Plan-Do-Check-Act continuous improvement cycle the element which is the above figure 2.8.The review process is essential for even if the overall safety policy remains constant, there is a need to ensure that new safety training objective are set, either to promote work changes or to raise the standard achieved. So, Safety is an integral part of efficient production and without safety there cannot be maximum efficiency.

6.4 COAL MINING INDUSTRY- A SNAPSHOT

The coal mining industry in India has not been fostered well by historians and researchers. It is generally neglected by the national media. There is a little documentation available on India's 300 year of coal industry. Coal mining has progressed far and ahead in the past 50 years, especially following the nationalization of the industry in the early 1970s. India today proudly claims a higher position among major coal producing countries in the world say as the third largest producer of coal after China being the first and the USA the second, with an output of 376.78 million tones in 2004-05. It applies the most advanced technologies in various spheres, from exploration to exploitation. Coal being the primary source of energy supply in India dispatching about 73% of the total production, it also accounts for almost 60% of the electricity generation in the country. The world's third largest coal reserves of 247.86 billion tones are located in India as recorded on 1.1.2005. They serve a source to manage secure energy supplies to cater to the requirements of a growing economy, expanding population and rapid urbanization. The coal reserves in India are expected to last over 235 years at the current rate of production. In contrast, the recorded reserves of oil and natural gas in the country are expected to last for hardly 17 years & 25 years respectively (Kumar Shashi, 2005).

6.4.1 CURRENT COMPANY PROFILE - CENTRAL COAL FIELDS LTD

The central division of CMAL was converted into individual coal company named CCL(Central Coal Fields Ltd), a subsidiary of CIL.CIL is engaged in mining of coal, beneficiation of medium coking and non-coking coal, supply and distribution of coal, and development of new coalfields. The operations of the company are spread over the coal reserve areas in various districts of the state of Jharkhand with its headquarters situated in the capital city of Ranchi and have a workforce of 60,000 plus employees on its rolls. There are 15 different working areas under this company. These are Barkakana, Sayal, Argada, NK ajhara, Piperwar, Rajrappa, Kuju, Hazaribagh, Bokaro & Kargali, Giridih, Dhori, Kathara, Bokaro, Washeries, and Central Repair

Workshop. At present, CCL is the owner of 58 operating mines (21 Underground and 37 Open Cast), 7 washeries (4 Coking, Kathara, Rajrappa, Kedla & Sawang with throughput capacity of 9.35 Mty and 3 Non-Coking, Piparwar, Kargali & Gidi with a throughput capacity of 11.72 Mty, 6 workshops (1 Central Workshop at Barkakana and 5 Regional Repair / Workshops at Jarandih, Tapin North, Dakra, Giridih & Bhurkunda. The total command area of the coalfield is about 2600 Sq Km spread of 6 major coalfields all falling within the mineral rich state of Jharkhand.

Central Coalfields Limited was formed on November 1, 1975 as a subsidiary of Coal India Limited (CIL) with 49 collieries. CCL is continuously engaged in developing its band of power professionals, through intensive training with a view to optimum utilization of manpower for achieving the corporate objectives.

The company is the major source of coal in India. All its projects lay down certain basic objectives and target for growth and development, consumption, investment and resources to be mobilized.

7.0 RESEARCH METHODOLOGY

Research Methodology comprises of two words basically meant for how we can validate the collected information in a systematic manner. Methodology is a systematic analysis of methods applied to a field of study, or the theoretical analysis of the body of methods and principles associated with a branch of knowledge whereas research deals with a systematic process of collecting and analyzing information to increase the understanding of the phenomenon under study. Research Methodology is a branch of science which specifies how research is done systematically and scientifically. It enables to understand the various steps that have been adopted by a researcher in studying / analyzing the research problem along with the logic behind them. Basic components of research methodology are: Research Design, Sample Design, Questionnaire design, Data Collection, Data Analysis, Interpretation and Hypothesis of the study.

7.1 RESEARCH DESIGN

Methodology adopted in the present research is a combination of both exploratory as well as descriptive research design. The main purpose of exploratory studies is to formulate a problem for more précised investigation from an operational point of view. Major emphasis in exploratory studies is on the discovery of ideas and insights. The present study is exploratory in nature as it develops identification and formulation of a problem that has not yet manifested itself conscientiously and prominently but in all probabilities is lying dormant in context of the present research problem. This study also seeks to establish priorities regarding the potential significance of various problems and opportunities. The methods adopted for exploratory purposes are to explore the possibilities of survey based experiment in the area of technology management that was carried out to formulate the basic framework of this present research. Primary data are obtained by framing questionnaires; whereas Secondary data was obtained from relevant books, journals and company documents.

In order to gain a practical insight to the problem, experienced personnel working in industries were interviewed. The researcher's personal working experience in industry as well as in academics has also facilitated the formulation of the problem. Descriptive research studies are surveys conducted for enquiring the facts required to describe the state of affairs as it exists. It is concerned with the specific predictions and narration of facts and characteristics of individuals, groups, or situations.

7.2 SAMPLE DESIGN

The field of study comprised of CCL including its headquarters in Ranchi and the surrounding open cast coal fields located in the state of Jharkhand. There are some sampling units in this study and are based on Non-probability Sampling or Judgmental sampling; taken from Open cast Coal Mines of CCL, Ranchi. for identifying the targeted respondents within the organization, Stratified random sampling method was adopted. In order to obtain representative samples of homogeneous groups, different strata of executives were formed based on their functional areas departments. These peoples are directly or indirectly involved in nurturing management of technology within the organization for a specific time period. The functional areas were: Materials / Purchase, Production / Manufacturing, Projects, Planning, Research &

Development, Quality Assurance, Maintenance, Marketing, and other related areas. In each of the above strata, target respondents were identified as the executives working in different fields within the organization.

8.0 KIRKPATRICK'S FOUR LEVEL EVALUATION MODEL

Year	Researcher	Findings
1976	Kirkpatrick	He suggested that reaction, learning, behavior and results are four measures that are relevant for the evaluation of training outcomes.
2000	Isyaku	The process of training and development is a continuous one. It is an avenue to acquire more and new knowledge and develop further the skills and techniques to function effectively.
2010	Bates & Davis	Usefulness of training programme is possible only when the trainee is able to practice the theoretical aspects learned in training programme in actual work environment.
2011	Fizzah	Training and development is important for the employees in organization, it helps the employees to improve their skills and to give a good performance in workplace. There is a big relation between training and development with the organization performance.

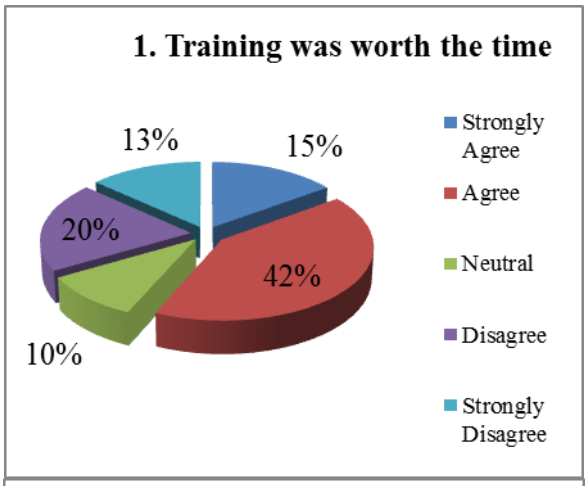
On the basis of these four levels of evaluation, we based our hypothesis for the research. They are as following:

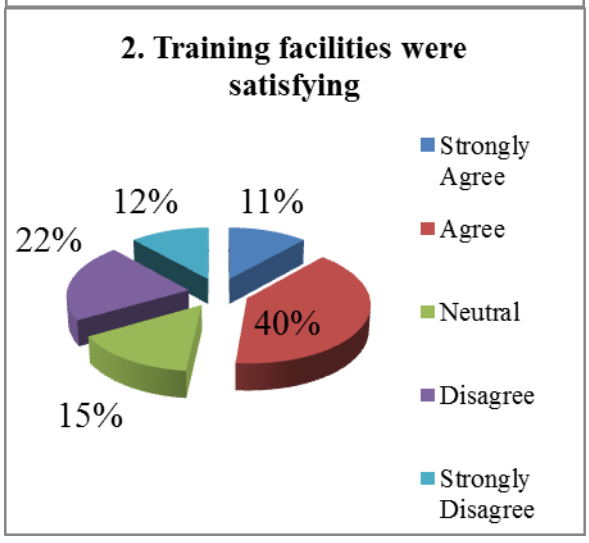
- **Hypothesis 1:**
  - **H0:** Change in *reaction* has no significant influence on training effectiveness.
  - **H1**: Change in *reaction* has significant influence on training effectiveness.
- **Hypothesis 2:**
  - **H0:** Change in *learning* has no significant influence on training effectiveness.
  - **H1:** Change in *learning* has significant influence on training effectiveness.
- **Hypothesis 3:**
  - **H0:** Change in *behaviour* has no significant influence on training effectiveness.

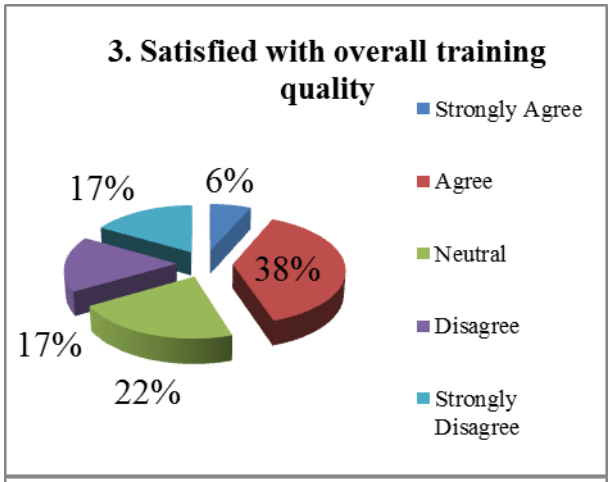
- **H1** : Change in *behaviour* has significant influence on training effectiveness

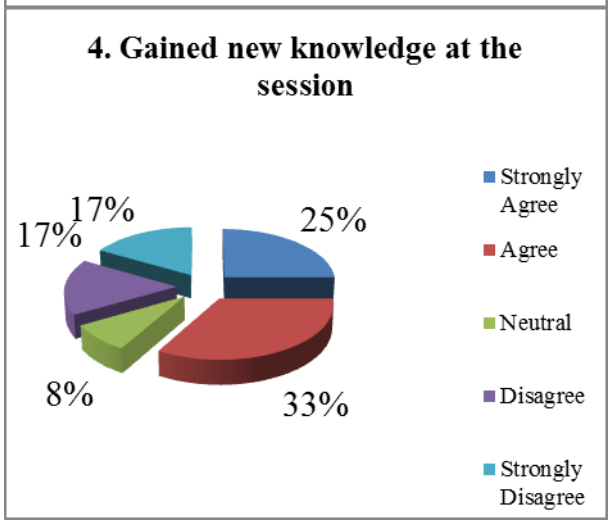
- **Hypothesis 4:**
  - **H0:** Change in *result* has no significant influence on training effectiveness.
  - **H1**: Change in *result* has significant influence on training effectiveness.

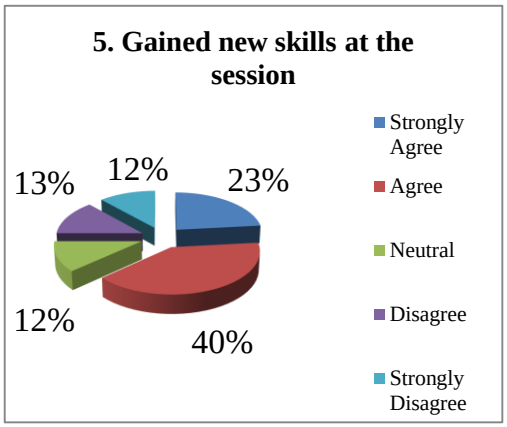
9.0 DATA ANALYSIS & INTERPRETATION

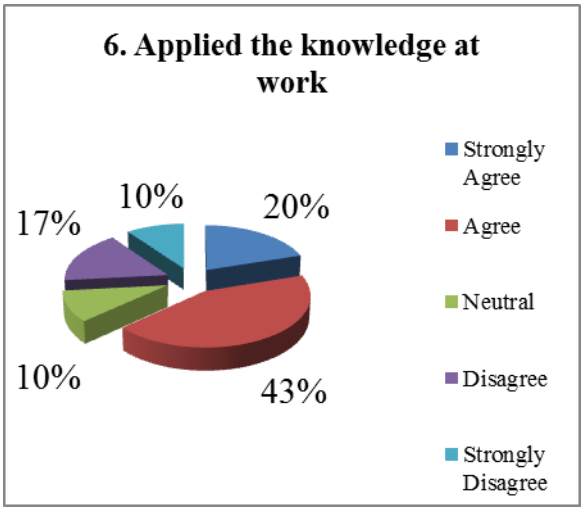


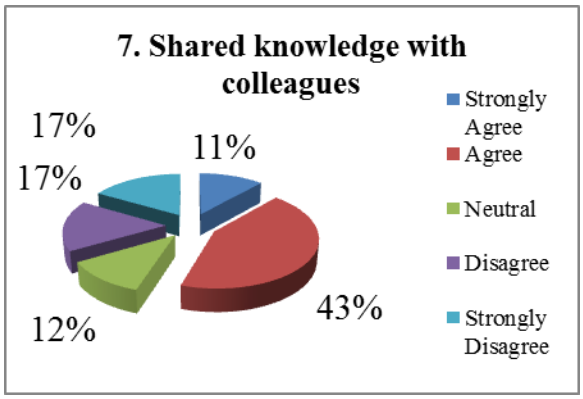


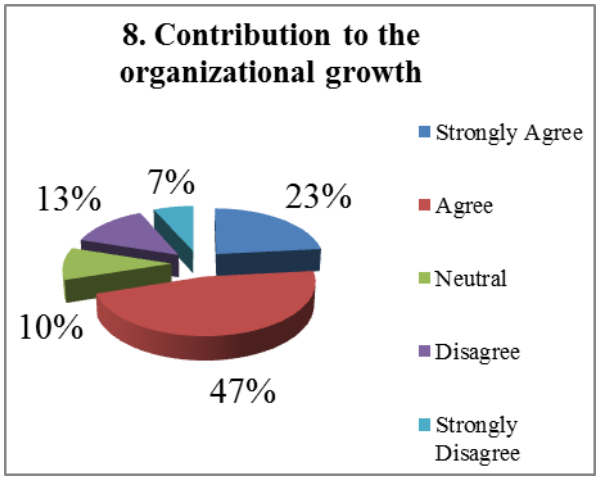












9.1 CHI SQUARE ANALYSIS

		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Chi-Square		19.167	17.000	16.167	10.833	17.833	22.667	21.167	31.333
Df		4	4	4	4	4	4	4	4
Asymp. Sig.		.001	.002	.003	.029	.001	.000	.000	.000
Monte Carlo Sig.		.000	.000	.017	.000	.000	.000	.000	.000
95% Confidence Interval	Lower Bound	.000	.000	.000	.000	.000	.000	.000	.000
	Upper Bound	.049	.049	.049	.049	.049	.049	.049	.049

- As it can be seen in table, the hypotheses has been approved at 95% confidence and α =0.5 level.
- The significant level is 5% i.e. 0.05.

For hypothesis 1,

1. In question 1, result shows significant level 0.001 i.e. less than 0.05 (0.001 < 0.05).
2. In question 2, result shows significant level 0.002 i.e. less than 0.05 (0.002 < 0.05).
3. In question 3, result shows significant level 0.003 i.e. less than 0.05 (0.003 < 0.05).

Since, all the significant levels are below 0.05.

Hence, *reject null hypothesis* and *accept alternative hypothesis*.

Hence, **Change in results has significant influence on training effectiveness**.

For hypothesis 2,

1. In question 4, result shows significant level 0.029 i.e. less than 0.05 (0.029 < 0.05).

2. In question 5, result shows significant level 0.001 i.e. less than 0.05 (0.001 < 0.05).

Since, all the significant levels are below 0.05.

Hence, *reject null hypothesis* and *accept alternative hypothesis.*

Hence, **Change in learning has significant influence on training effectiveness.**

For hypothesis 3,

1. In question 6, result shows significant level 0.000 i.e. less than 0.05 (0.000 < 0.05).

2. In question 7, result shows significant level 0.000 i.e. less than 0.05 (0.000 < 0.05).

Since, all the significant levels are below 0.05.

Hence, *reject null hypothesis* and *accept alternative hypothesis.*

Hence, **Change in behaviour has significant influence on training effectiveness.**

For hypothesis 4,

1. In question 8, result shows significant level 0.000 i.e. less than 0.05 (0.000 < 0.05).

Since, all the significant levels are below 0.05.

Hence, *reject null hypothesis* and *accept alternative hypothesis.*

Hence, **Change in result has significant influence on training effectiveness.**

10.0 FINDINGS

- More than half of the employees (57%) considered training to be worth their time
- Almost half of the employees (51%) were satisfied with the training facilities
- 44% of the employees are satisfied with the overall training quality
- Almost all the employees have positive opinion towards the satisfaction level on present training methods which is followed by the company.
- Most of the employees have attended training and development programs to upgrade their skills and knowledge levels.
- Most of the employees said that they applied the gained skills at work and that their application of knowledge and skill contributed to overall organizational growth

10.1 CONCLUSION

➢ This study inspected exactly four levels of measuring training effectiveness with the assistance of a survey utilizing a sample of the employees who present to the training program.

➢ The outcome of paired sample Chi-Square test analysis interprets that the four factors namely *reaction, learning, behaviour and result* derived in hypothesis test analysis are statically significant in explaining the training effectiveness.

➢ The first level concentrated on worker's responses to the training program. The second level concentrated on learning and aptitudes picked up from the training. The third level concentrated on the progressions in the task behaviour of workers after accomplishing the training program. The fourth level concentrated on the changes in the working of parts or the whole work which have resulted from changes in the task behaviour beginning in training.

10.2 SUGGESTIONS & RECOMMENDATIONS

- The main objective of training is to bridge the gap between the present skills and the desired skills and to bring a positive change in the skills behavior attitude and knowledge . The open cast coal mining should formulate a comprehensive scheme for training of all supervisory staff and workers for achieving the objective of vocational training. Training has to be provided to maintenance personnel in their respective working area and this training should be planned in such a way that an employee is updated with the new techniques and challenges in maintenance. The organization must concentrate more on employees who are not satisfied with the present training methods; they have to be counseled to know their reasons for not being satisfied. So that effectiveness can be achieved. In order to improve performance and productivity the Indian coal mining industry has to take up training programme for each individual worker which finally helps in the organizational development. Coal mining company should

formulate a comprehensive scheme for training of all supervisory staff and workers for achieving targeted production of vocational training programme. Training is mandatory for open cast coal mining. Mine workers are imparted training as per their respective technology in open cast coal mines. Training is imparted with a view to achieve improved knowledge, skill and correct job procedure which improve productivity. Vocational training aims at increasing the worker's efficiency on his particular job. In open cast coal mining industry vocational training should be provided to new workers as well existing workers. Vocational training raises worker's individual efficiency, promotes understanding, enhances quality and quantity of production, reduce accidents and cost of production and thus this is useful for the workers, profitable for the management and gainful for the society at large.

- Today in the dynamic business scenario it is an importance of the state of the art technology should be observed and adopted for enhancing productivity in coal mines. Almost every industrial sector today warrants for the best use of technology in order to remain competitive for sustainability. The Indian coal sector presently is in the transition phase from traditional to the state of art technology and therefore for improved performance and productivity the industry has to take up training programme for each individual worker to help the organizational development. Resources of an opencast mine are insufficient to fulfill the requirements of this section - the competent authority should arrange for two or more opencast mines to hold a combined safety training scheme, or make such other arrangements as are practicable in the interests of accident prevention. All trainees should undergo specific training as per the rules and procedures, and should not be assigned to work duties until they have assimilated thoroughly all such safe work practices. Under the training needs safety training is also important**.** The establishment of safety policy objective within an organization must be accompanied by the clear allocation of responsibility within the management structure. It is generally accepted that the primary operational responsibility for ensuring safe working must rest with line management. On the other hand other area like quality and productivity real progress in safety is impossible without the full co-operation and commitment of all employees. Workers' representatives, members of workers' safety and health committees or joint safety and health committees, or other workers' representatives, should be given reasonable time during paid working hours to undertake appropriate training in occupational safety and health.

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