

AN EVALUATION OF THE EFFECTIVENESS OF SAFETY TRAINING PROGRAMS IN MANUFACTURING FIRMS IN KENYA: A CASE STUDY OF NAKURU MUNICIPALITY.

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ABSTRACT

There are many factors that affect an employee's productivity at the place of work. In business and industry, responsible managers realize the importance of safety in the workplace yet complying with the increasing number of laws, rules, and regulations becomes forevermore challenging. An unsafe working environment leads to deaths, accidents, ill health, high costs incurred to compensate the injured persons and employee redundancy. The general objective of the research is to evaluate the effectiveness of training on the safety of employees. The specific objectives are; to determine whether manufacturing firms offer safety training to their employees; to assess the impact of safety training on frequency of accidents at work and finally to identify safety programs. Job applicants inquire just as frequently about corporate culture as they do about other benefits. The implication is clear: The more enriching your work environment, the more likely you are to retain a group of satisfied, productive employees. The target population is employees at the manufacturing firms in Nakuru. Twenty manufacturing firms in Nakuru were conveniently sampled. A sample size of 100 respondents were drawn from a population of 300 employees. A random sampling system was adopted and applied in every firm. This sample is manageable and realizable. This study was designed to cover both literature review and report writing; collecting, collating and reviewing available literature on employee training and employee safety and further baseline information about the manufacturing firms working conditions. Field work used was a survey. A survey was done through the administration of open-ended questions, structured questionnaires and discussions with key informants, focus

groups and individuals. Field observations were also a major tool in this study. The research hypotheses have been tested using Chi-square (χ^2) distribution. Based on the research hypotheses, the researcher established a significant relationship between training and safety.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Human Resource is the backbone of any organization. Properly trained and highly skilled human resource is perceived as the greatest asset of an organization. Skilled personnel contribute to efficiency, growth, increased productivity and market reputation of an organization. This needs to be known by industrial, commercial, research establishments and even governments.

If the organization's people are properly trained and developed, increased productivity, and improved quality of output will inevitably be achieved, since Human Resource, is the principal agent for change and plays a catalyst role in the growth of the economy (Ministry of Finance, Kenya: Medium Term Expenditure Framework, 2001).

A separate Human Resources development department has to exist in all these organizations to attend to the matters relating to recruitment, training and deployment. Technical advancements in various fields all over the world are very rapid. Every other day we see new products or machines or equipments with more and more advanced features, with which users have to be acquainted lest they risk their safety on the job. In order to cope with the industry demand and technological advancements, we need to develop a safety training strategy for our human capital to attain the required skill levels (Rao, 2000).

According to the US Department of Energy (2007), a project safety plan addresses potential threats and impacts to personnel, equipment and the environment. As an integral part of any project, a safety plan should reflect that sound and thoughtful consideration is given to the identification and analysis of safety vulnerabilities, prevention of hazards, mitigation of risks and effective communications. Safety plans should be “living documents” that recognize the type of work being conducted, the factors of human error, the nature of equipment life and the inevitable changes that occur over the project life.

Safety should be a priority for every business, but particularly for cleaning operations whose mistakes can be serious and costly. Without adequate safety training, problems are inevitable. (Mollenkamp, 2007). These problems may be ill health and accidents at work.

Employee safety programs and its impact on the overall health and vitality of an organization is something most employers must take into consideration. Having a seasoned and well trained workforce can deliver a competitive advantage that is difficult to replicate. Training also plays a major role in employee safety.

An employee of Webuye based Pan African Paper Mills was killed in September 2007. This employee was crushed in the mill as he removed paper from a roller. His colleagues claimed that such deaths were frequent at the factory (Daily Nation 7th September 2007).

The ‘Bhopal disaster’ was an industrial disaster that occurred in Bhopal, India, resulting in the deaths of more than 3,000 people, according to the Indian Supreme Court. A more probable figure is that 8,000 died within two weeks, and it is estimated that the same number have since died from gas related diseases. However, testimonies from doctors who provided medical assistance during the tragedy claim over 15,000 were dead in the first month alone. The incident took place in the early hours of the morning of December 3, 1984, in the heart of the city of Bhopal in Indian state of Madhya Pradesh. A union carbide subsidiary pesticide plant released

40 tones of methyl isocyanate (MIC) gas, killing approximately 3,800 people Bhopal disaster is frequently cited as one of the world's worst industrial disasters. Today more than 100,000 people have permanent injuries, light or severe. The ground water around the plant area is contaminated, and the question of cleaning up the areas is still unsolved. (Dominique, 2001).

In 1994 about 272 people died in Mombasa. The Kenyan Ferry M.V Mtongwe sank at Mtongwe, Mombasa. Had there been enough floaters many would have survived.

Training according to Edward et al. (1989) is the process through which employees receive instruction on existing employee skills, knowledge and attitude needed to perform the job.

1.4 Statement of the Problem

Safety training occupies a critical place in the reduction of industrial accidents. Today, the major cause of industrial accidents is lack of effective safety training programs. An employee who lacks safety training at his work is more prone to accidents, ill health, high medical bills, employee redundancy and sometimes death. Unsafe working environments have in the past led to deaths, poor and in-efficient work habits which make productivity and quality improvements hard to achieve. Besides deaths, an injured employee will often lay legal claims (workers compensation) against his or her organization/company. Some valuable employees may be declared redundant as a result of serious injuries. These serious injuries can lead to permanent disabilities. This is very costly to both the employee and the employer.

Sammy, (2003) noted that the burden on a country's economy from lost productivity and wages, medical expenses and disability compensation is staggering, while it is impossible to quantify the value to human suffering resulting from these occupational hazards.

Few related studies particularly in this region have been done in the past.

1.5 Objectives of the study

The general objective of the research was to evaluate the effectiveness of training on safety of employees.

The specific objectives were:

- i. To identify safety programs provided by industries in Nakuru.
- ii. To determine whether business enterprises offer safety training to employees.
- iii. To assess the impact of safety training on the frequency of accidents.

1.6 Hypotheses of the study

- i. Industries in Nakuru do not provide safety programs.
- ii. Business enterprises do not offer safety training to their employees.
- iii. Safety training has no impact on the frequency of accidents

1.7 Justification of the study

The purpose of this study was to carry out an evaluation of the effectiveness of training on the safety of employees. Workers need more training and especially more on-going training to be able to handle their jobs correctly, efficiently and safely. Work equipments are becoming more complex and the hazards of both substances used on the job and of operations are better known.

In addition many companies now expect workers to be able to perform a wider variety of tasks. Lack of training, especially safety training is also very costly to both the employee and the employer. Workers and their employers pay dearly to treat injuries, treat illnesses and even death costs as well as property damages. Lost workdays, sick pay, insurance payments and workers compensation costs add up quickly for companies of all sizes. Under such circumstances, the money is wasted rather than it being used for more beneficial investments like for instance; higher salaries, purchase of new equipments, research and development. The

purpose of this research was to establish that well trained workers will often feel in control of their jobs.

The effectiveness of appropriate safety training of employees in their places of work is currently unclear in many work places. A worker who lacks safety training will fall behind in today's very competitive market place. Many studies have been done on training and safety programs; however no empirical studies have been done on the effectiveness of safety training in manufacturing firms here in Kenya.

1.8 The Scope and Limitations of the study

This study was limited to employees and facilities of twenty manufacturing firms in Nakuru Municipality Kenya. Time was a major limitation to this research. A research of this magnitude would perhaps require more time so as to conclusively analyze the outcomes in order to give fair recommendations. Research generally requires more time in order to collect data from a fairly large population. The researcher would have wished to interview a larger population for instance all manufacturing firms in Rift valley. However, due to the shortage of time a smaller sample was considered.

This study was limited to 'an evaluation of the effectiveness of training on the safety of an employee.' The scope was limited to the manufacturing firms in Nakuru Municipality - Kenya.

The location of the study was Nakuru Municipality. It was chosen because this is an ideal institution. Further, almost all employees here are subjected to similar experiences and so it's expected that the findings will be quite accurate. The researcher therefore carried out this study to fill in the knowledge.

CHAPTER TWO

LITERATURE REVIEW

2.1. Safety training programs and their benefits

The Law requires that managers should know and enforce health and safety standards throughout the organization. A work environment must be created that protects employees from physical hazards, unhealthy conditions, and unsafe acts of other personnel (CAP 514). Organizations should therefore, aim at preserving or even enhancing both physical and emotional well being of their employees. It has been observed that ‘industrialization without safety Investment is a time bomb’ (ILO, 2000). However, most organizations are not concerned about fulfilling these requirements.

Edward and Freeman (1989), attributes the success of Japanese companies to their management practices, particularly that aspect where training is encouraged and where employees participate in quality circles. The American company (Kentucky Fried Chicken) in Japan also succeeded by adopting the Japanese approach of hiring for life, and making extensive investment in employee training. Mc Beath (1993) says that best organizations are those that manage their human resources well by understanding people and trying to get the best out of every employee by providing training.

Training besides providing the required motivation, fills the gap between the required knowledge, skill and attitude possessed by the employee (Weihrich and Koontz, 1993, Appleby, et al 1993). The other reason as to why we need to provide safety training is the fact that after professional training, the know-how declines with passage of time. This decline in know-how is referred to as continuing ignorance. To prevent this (continuing ignorance), we need to have continuing education thus continued safety training. This education builds on the basic training,

and improves the workers competencies and enables him to adapt to changing work needs and practices (AMREF, 1983).

Safety according to Becky Mollenkamp should be a priority for every business, but particularly for cleaning operations whose mistakes can be serious and costly. If you want a better worker morale, lower absenteeism and improved productivity, start with safety in the work places.

Without adequate training, problems are inevitable - this is something that Steve Spencer, facility specialist for State Farm Insurance in Bloomington, III emphasizes. He further states that education not only improves safety, but also allows workers to deliver higher – quality work. Another added bonus of training, according to Spencer, is lower employee turnover. ‘If they are well trained, they feel in control of their job,’ he says. ‘If they are guessing, they will get yelled at for doing something wrong, then feel frustrated when problems arise and they’ll quit.’ (Spencer, 2007).

Safe practices in the production, storage, distribution, and use of commodities in any business enterprise are essential. A catastrophic failure in any project could damage the public’s perception of the business enterprise. The project safety plan is meant to help identify and avoid potential accidents.

In general, a good safety plan identifies immediate (primary) failure modes as well as secondary failure modes that may come about as a result of other failures. Potential hazards in any work, process or system should always be identified, analyzed and eliminated or mitigated as part of sound safety planning. Other safety aspects that may be adversely affected by a failure should be considered (OSHA, 2007). The programmes that organizations enhancing safety include the following:

- Safety training
- Aerial lift operators
- Asbestos awareness

- Back safety
- Blood borne pathogens
- building marshal training
- Confined space
- First Aid
- Defensive driver
- Emergency preparedness
- Fire extinguisher
- Food safety
- Ladder safety
- Personal protective equipment.

The organizations also enhance safety by observing the following:

Personnel: Any hazards that pose a risk of injury or loss of life to personnel and the public at-large must be identified and eliminated or mitigated. A complete safety assessment considers not only those personnel who are directly involved in the work, but also others who are at risk due to these hazards.

Equipment: Damage to or loss of equipment or facilities must be prevented. Damage to equipment can be both the cause of incidents and the result of incidents. An equipment failure can result in collateral damage to nearby equipment and property, which can trigger additional equipment failures or even present additional risks. Effective safety planning considers and minimizes serious risk of equipment and property damage.

Business Interruption: The prevention of business interruption is important for commercial entities. Hazardous events may lead to interruption in providing service or product. A complete safety plan in these instances would also include a contingency plan for providing needed services or manufacturing.

Environment: Damage to the environment must be prevented. Any aspect of a natural or built environment that can be harmed due to a failure should be identified and analyzed. A qualification of the failure modes resulting in environmental damage must be considered.

A safety training program according to Barnett, 2000 should cover topics such as:-

- i. Accident prevention and safety promotion
- ii. Safety compliance
- iii. Accident and emergency response
- iv. Personal protective equipment
- v. Safety practices
- vi. Equipment and machinery
- vii. Chemical and Hazardous Materials safety
- viii. Work place hazards
- ix. Employee involvement and training

It's important for every employer to document training. Creating a training matrix will help keep track of who has been trained, when they were trained, the training topic, and when it is time for refresher training. Employees must also sign an official sign-in sheet provided by the employer that can serve as proof that employees received proper safety training. The sign in sheet must have a broad description of what is being covered in the training. (Barnett, 2000).

It should be noted however, that today many casual laborers can not speak English. The non English speaking population is consistently growing in many industries and it is important that employers provide bilingual training for those workers as OSHA requires that all employees be properly trained. This category comprises of especially the casual laborers.

It is the trainer's duty to make safety training fun and educational, which will help the trainees to retain the information, enjoy the course and apply the learning to their work and lives. (Hilyer, Barbara; Veasey, Alan; Oldfield, Kenneth; McCormick, Lisa (2000).

An effective training program can reduce the number of injuries, property damage, legal liability illnesses, workers compensation claims, and missed time from work. A safety training program can also help a trainer keep the required OSHA mandated safety training courses organized and up to date.

Safety training classes help establish a safety culture. Here employees themselves help promote proper safety procedures while on the job. It is important that new employees be properly trained to embrace the importance of work place safety as it is easy for seasoned workers to negatively influence the new ones. That negative influence however, can be purged with the establishment of new, hands-on, innovative effective safety training which will ultimately lead to an effective safety culture.

2.2.1 Types of safety training programmes

An organization's top management needs to develop training programs addressing general-safe work practices. These programs are elements of larger programs which service broad organization needs. Specific training programs can be developed as needed for specialized department needs. These programs are listed below:

(a) General safety

During orientation, the employee receives an introduction to the Company's safety program. Topics include fire extinguisher use, emergency preparedness procedures, hazard communication, injury/illness prevention program components, and personal safety at work. All employees in the company are required to attend this training (Kuch, 1997)

(b) Aerial lift operators

This class is designed for employees who operate hydraulic lifts.

(c) Asbestos Awareness:

Asbestos containing materials can be found in nearly all organization facilities. It is important that all employees follow proper work practices to minimize the potential for disturbing asbestos containing materials (ACM). This training is for employees who may be exposed to ACM in the course of their jobs (Brasfield, 1996).

(d) Back safety:

This course is designed for employees who are required to lift as part of their job description; however, all employees need to attend this course. Lifting techniques and basic biomechanics needs to be discussed and demonstrated. If you've ever had trouble with your back, knees shoulders, or neck; this course will give you practical information to minimize risk factors associated with musculoskeletal disorders (MSD's), and potential sprain/strain and injury.

(e) Blood borne pathogens

Blood borne pathogen training covers all employees who have the potential for occupational exposures with blood or potentially infectious materials during the course of their job duties. Blood borne pathogens include Hepatitis A, B, and C and HIV (Kuch, 1997).

(f) Building marshal training

Building marshals provide an important service to every employee during potential disasters and emergencies. This training is provided periodically or as needed to keep marshals informed of the latest emergency procedures and action plans.

(g) Confined space

Confined spaces are areas that have openings large enough and so configured that an employee can bodily enter and perform assigned work; has limited or restricted means for entry or exit; and is not designed for continuous employee occupancy. Training is required for all employees who may work in a confined space. The training includes recognition of potentially harmful atmospheres and physical hazards associated with spaces (Hodgson, 1992).

(h) First aid

Every employer must have these skills.

(i) Defensive Driver

This helps drivers to maintain an accident free good driving record.

(j) Department of safety coordinator training

Every department needs a safety coordinator who takes charge in case of an accident.

(k) Emergency preparedness

This safety training program is designed to help employees understand the information and preparation techniques that will help them cope in the event of an emergency or disaster. Emergencies may include natural disasters, bomb threats, workplace violence, chemical spills and fire. What to do before, during, and after an emergency is discussed.

(l) Fall protection

Safety training is provided for each employee who might be exposed to fall hazards. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize these hazards.

(m) Fire extinguisher

This safety training program is designed to familiarize employees with the types, use and limitations of operating a fire extinguisher.

(n) Food safety

This safety training program provides basic food sanitation theories and some practical knowledge for food handling and protection for food establishment workers. Food protection techniques such as temperature limits, hand washing, cross contamination, cleaning and sanitizing.

(o) Forklift training

A certification for these employees is required every 3 years. They often need refresher courses.

(p) Hazard communication

Employers have a right to access important health and safety information regarding hazardous substances at the place of work.

(q) Hearing conversation

Every work place needs an effective control over the harmful effects of excessive noise on employees. This safety training program includes medical monitoring and training in the use of personal protective equipment designed to limit the excessive noise that may create harmful injury to employees.

(r) Laboratory safety

This course is appropriate to all workers. Chemical handling and disposal is taught.

(s) Ladder safety

Presents information on selecting, storing, inspecting, and using ladders.

(t) Lockout/Tag out

This safety training course provides for procedures for employees who maintain any electrical, mechanical, pneumatic, hydraulic, and other energy systems, which could unexpectedly start up and cause injury. Authorized employees will isolate and lock and tag the equipment to warn others that maintenance is occurring and equipment cannot be operated (Kuch, 1997).

(u) Office Ergonomics

This course is designed for employees who work in an office setting. Participants will learn to recognize risk factors associated with muscular-skeletal disorders (MSD's), and potential sprain/strain injuries as well as be familiar with the body areas affected. Useful exercises and workstation design are included.

(v) Personal protective Equipment (PPE)

This is needed for many work procedures. Examples of PPE are: respirators, ear plugs, earmuffs, leather gloves, nit rile-coated gloves, safety glasses, chemical splash goggles, tyvex suits, and dust masks.

(w) Radiation Safety

The radiation safety training addresses the use, handling and storage for radioactive materials and ionizing radiation –producing machines.

(x) Respirator Protection

This course insures that safe practices and requirements for using the equipment are in compliance with stated regulations. Respirators protect workers from inhaling particulate matter, toxic gases and fumes they may encounter on the job.

(y) Small cart training

Electric or gas driven carts needs a lot of caution. Employers need to be aware of the hazards associated with small cart maintenance and use.

(z) Specific Safe Work Practices

Specialized training dealing with an employee's unique job assignment must be developed by the Safety Trainer and each supervisor.

2.2.2 Management of safety training

(a) Web-based Training

Most safety training programmes are delivered using classroom training. In the recent times there is a move to web-based safety training program can be implemented to provide the same level of safety information. The Clarity Web-based training program allows employees to access these safety training programs from their computers at work. The training is self-paced, allowing the freedom to complete it on a flexible schedule (Brasfield, 1996).

(b) Notification and Scheduling

Managers or supervisors will provide written notice of required training prior to the training date. Training will be held during employee's regularly scheduled work hours. If an employee cannot attend at the scheduled time, efforts will be made to reschedule at a more convenient time (Jason, 1996)

(c) Recordkeeping

All training shall be documented in writing. Topics, participants and dates shall be recorded and kept on file. These records will also be maintained in a Safety training database.

2.3. Theoretical framework:

This study is based on the theories explained here below.

2.3.1 Domains of learning:

In the 19th Century, learners who failed in training were ostracized. They were also punished. In the 20th Century, both the trainer and the learner are important in the learning process. The role of the instructor has been recognized as important to the success of the learning process. As decades past, learning became more scientific. This saw the introduction of Psychology. It later emerged that learning had actually multiple dimension not just one. That people were skilled in many aspects of life. The dimensions are usually called domains, a term that refers to broad categories defining distinct types of learning. Conventionally, three domains have been identified by researchers – cognitive, affective and psychomotor skills (Kuch, 1997).

Training in the cognitive: stresses improvements in the quality of thinking activities by moving learners toward achievement of goals. The trainer's role is one of adjusting the learning situation to enhance that pace of learning and to arrange the sequence of learning points to suit the material being presented.

Learning and memory: As an aspect of cognitive learning, it must be recognized that the way human brains process information has three modes: short term memory (also called working memory), long-term memory, and sensory memory. Short term is basically the memorization of information to be retained for relatively short periods of time.

Psychomotor skills: Some skills require a different sort of memorization e.g. the skill of riding a bicycle. This skill goes beyond cognitive in that it requires some use of muscles in a very particular way.

2.3.3 Motivation

A safe working environment leads to motivated employees. Many contemporary authors have also defined the concept of motivation. Motivation has been defined as: the psychological process that gives behavior purpose and direction (Kreitner, 1995); a predisposition to behave in a purposive manner to achieve specific, unmet needs (Buford, Bedeian, & Lindner, 1995); an internal drive to satisfy an unsatisfied need (Higgins, 1994); and the will to achieve (Bedeian, 1993). For this paper, motivation is operationally defined as the inner force that drives individuals to accomplish personal and organizational goals.

At one time, employees were considered just another input into the production of goods and services. What perhaps changed this way of thinking was research, referred to as the Hawthorne Studies, conducted by Elton Mayo from 1924 to 1932. This study found employees are not motivated solely by money and employee behavior is linked to their attitudes. The Hawthorne Studies began the human relations approach to management, whereby the needs and motivation of employees become the primary focus of managers (Lindner, 1998). Understanding what motivated employees and how they were motivated was the focus of many researchers following the publication of the Hawthorne study results (Terpstra, 1979). Five major approaches that have led to our understanding of motivation are Maslow's need-hierarchy theory, Herzberg's two –

factor theory, Vroom's expectancy theory, Adams' equity theory, and Skinner's reinforcement theory.

According to Maslow, employees have five levels of needs (Maslow, 1943): physiological, safety, social, ego, and self-actualizing. Maslow argued that lower level needs had to be satisfied before the next higher level need would motivate employees. Frederick Herzberg and his associates (1959) developed a two factor theory of motivation and concentrated on satisfaction at work. This followed an initial research on two hundred engineers and accountants who were asked to recall when they experienced satisfactory and unsatisfactory feelings about their jobs. Following the interviews, Herzberg's team came to the conclusion that certain factors tended to lead to job satisfaction and dissatisfaction. (Chilgong, 2004). Herzberg's work categorized motivation into two factors: Motivators and hygiene's (Herzberg, Mausner, and Synyderman, 1959).

Vroom's theory is based on the belief that employee effort will lead to performance and performance will lead to rewards (Vroom, 1964). Rewards may be either positive or negative. The more positive the reward the more likely the employee will be highly motivated. Conversely, the more negative the reward the less likely the employee will be motivated.

Adam's theory states that employees strive for equity between themselves and other workers. Equity is achieved when the ration of employee outcomes over inputs is equal to other employee outcomes over inputs (Adams, 1965).

Skinner's theory simply states those employees' behaviors that lead to positive outcomes will be repeated and behaviors that lead to negative outcomes will not be repeated (Skinner, 1953). Managers should positively reinforce employee behaviors that lead to positive outcomes. Managers should negatively reinforce employee behavior that leads to negative outcomes.

The reason we need motivated employees in an organization is survival (Smith, 1994). Motivated employees are needed in our rapidly changing workplaces. Motivated employees help organizations survive. Motivated employees are more productive. To be effective, managers need to understand what motivates employees within the context of the roles they perform. (Young, 2004)

2.4. Empirical work

In August 2003, Sammy Njema did a study on the effects of occupational health and safety (OHS) practices on the performance of public organizations, with a special reference to Egerton University (EU). This study is similar to Sammy's in that both studies address accidents and illnesses that negatively affect employee morale and also lower the organization's corporate image among its publics, like the community and the business world. The difference between these two studies is that Sammy's addresses the effects of occupational health and safety for public organizations while this research addresses the effectiveness of safety training on employees in manufacturing firms. Over the past two decades, developing countries have experienced comparatively very rapid growth in their exports of fresh fruit and vegetables. This trade has spread from an initial base of traditional tropical fruits – for example bananas, and pineapples – to include a broader array of fruits and vegetables. Consumers in industrialized countries are becoming increasingly concerned about food safety and about the environmental and or social dimensions of their food supply chain. Following this concern, Stephen Jaffey carried out a research on food safety. This research was sponsored by the World Bank in 2003. The difference between this research and Jeffrey's research is that while Jeffrey's concern was to improve the quality of foods in the eyes of the European market this research seeks to improve employee's safety even as they handle the various products in their business enterprises.

2.5 Conceptual framework

The relationship between the dependent and independent variables have been identified in this study. The dependent variable is Safety where as the independent variable is training.

Independent Variables

Safety programs

- Safety training
- Aerial lift operators
- Asbestos awareness
- Back safety
- Blood borne pathogens
- building marshal training
- Confined space
- First Aid
- Defensive driver
- Emergency preparedness
- Fire extinguisher
- Food safety
- Ladder safety
- Personal protective equipment.

Depend Variable

Safe working environment



- Competency of employee.
- Employee motivation
- Leadership style of supervisor
- Personality of individual

Intervening Variable

Source: of Authors (2008)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

This study has adopted a research survey design. This means that the researcher has investigated possible cause-and-effect relationships by observing the existing conditions or state of affairs and searching back in time for the plausible causal factors (Kerlinger, 1970). The dependent variable in this study is safety while the independent variable is training.

3.2 Location of study

The location of the study was Nakuru municipality. This place was easily accessible and further had the information needed in this study. This location was chosen since Nakuru is a cosmopolitan town, it has good infrastructure in terms of roads thus easy access by the researcher to the information relevant to this study.

3.3 Population of study

The target population from which the sample has been drawn consists of the employees at the manufacturing firms in Nakuru municipality. The employees are three hundred in number.

3.4 Sampling procedure

To achieve the desired representative sample, convenient and random samplings were applied. Nakuru municipality had thirty manufacturing firms. Out of these thirty manufacturing firms, twenty firms were conveniently selected. The twenty manufacturing firms that the researcher visited had a total population of 300 employees. The researcher considered a sample size of 100 employees from a population of 300 employees. The interviewees were the employees at the manufacturing firms in Nakuru municipality. People (sampling units) from every firm were selected using a table of random numbers to satisfy the respective sampling fraction. Relevant

employee records were obtained from the Human resource department of each manufacturing firm.

$$\text{Sample size} = \frac{\text{Convenient sample}}{\text{Total population}} \times \text{Population}$$

Using the above formula, the sample sizes were worked out as is shown below.

Table 1: Manufacturing firms in Nakuru Municipality

Manufacturing firms	Number of employees per firm	Sample size
Eveready Kenya L.t.d	15	4.9 = 5
Tosti	25	8.3 = 8
Valley bakery	23	7.6 = 8
Unga limited	17	5.6 = 6
Unga feeds limited	13	4.3 = 4
Nakuru tanners	16	5.3 = 5
Nakuru filters	11	3.6 = 4
Nakuru blankets	22	7.3 = 7
Nakuwell	5	1.6 = 2
Timsales	15	4.9 = 5
Nakuru millers	17	5.6 = 6
Milling cooperation	15	4.9 = 5
Lonhra	20	6.6 = 7
National cereals board and produce	22	7.3 = 7
Mea limited	8	2.4 = 2
Menengai soap	12	3.9 = 4
Spin knit	15	4.9 = 5
Crator automobile	8	2.6 = 3

KAPI	9	2.9 = 3
K.C.C	12	3.9 = 4
TOTAL	300	100

Source: Field Data (2008).

The sample size has been considered a fair representation of the total population. This size is usually recommended in a survey research. (Kathuri and Pals, 1993 and Gall et al, 1996).

3.5 Instrumentation

Data was collected through administration of a questionnaire. This instrument aimed at collecting specific information from the targeted respondents. Every employee who was carefully selected using the sampling procedure above was asked to fill a questionnaire.

The questionnaire was divided into two parts thus; personal background information and Information on work and working environment. Open ended questions were used to solicit in depth information from the respondents. (See Appendix two). Some statements in the questionnaire followed a scale of five responses employing the Likert summated rating method. The responses were as follows: Very high (5), High (4), Neutral (3), Low (2) and Very low (1). To ensure validity and reliability, the instrument was piloted on a group that did not form a part of the main study.

The instrument was piloted with a smaller sample of 20 respondents at Eveready Kenya Limited. The object of pre-testing was to allow for modification of various questions, which the researcher was able to do. This practice creates reliability. This reliability is sufficient for it reflects the internal reliability of the instruments used.

3.6 Data Collection

The researcher visited the twenty manufacturing firms beforehand (reconnaissance study) to familiarize with each firm's administration. During this preliminary period, the researcher

clarified the purpose of the visit and the intended study. After familiarization, data was then collected from the respondents (employees in the manufacturing firms). The researcher personally presented the questionnaire to the Directors/managers of the twenty manufacturing firms. All the manager's (Top level, Middle and first level) questionnaires were personally administered. The line worker's questionnaire were handed over through the Human Resource office and later collected after two weeks by the researcher. The questionnaires for the line workers were administered through drop and pick.

3.7 Data Analysis

Data collected was processed and analyzed to facilitate the achievement of the research objectives. This was done using descriptive statistics. The descriptive analysis (percentages, tables, frequencies and means) were used to summarize and organize data and to describe the characteristics of the sample population. This was done with the aid of a computer program – Microsoft Excel.

The research hypothesis has been tested using a Chi-square distribution.

$$P1=p2=0.5$$

Expected frequency is given by

$$E1=E2 = \text{sample size} \times \text{probability}$$

$$X^2 = \sum (O-E)^2/E$$

CHAPTER: FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSION

4.1 Population Demographic Characteristics

This chapter covers the general findings of the research, hypothesis tests results, interpretations and discussions on the effectiveness of safety training programs in manufacturing firms in Kenya. A part from information relating to the objectives of this study, the researcher established some population characteristics of the respondents, which were of value in the understanding of the respondents' personal information.

Generally, there were more men than women both as employees in the municipality. There were 72.9% of men compared to 27.1% of women employed in the manufacturing firms (See table 1 below).

Table 2: Gender of the respondents

Response	Frequency	Percent
Male	61.97	72.9
Female	23.03	27.1
Total	85.0	100.0

Source: Field Data (2008)

The findings show a serious gender imbalance in manufacturing firms' employment scenario.

Table 3: Ages of people in manufacturing firms.

Response	Frequency	Percent
Below 20 years	Nil	0
20 – 29 years	3.995	4.7
30 – 39 years	8.5	10
40 – 49 years	57.97	68.2
50 – 59 years	14.535	17.1
60 years and over	Nil	0
Total	85	100

Source: Field Data (2008)

The majority of the respondents 68.2% were within 40-49 years followed by 17.1% who had 50-59 years, 10% had 30 – 39 years and finally 4.7% whose age bracket was between 20-29 years. There were no employees below 20 years and above 60 years of age. These findings indicated that the manufacturing firms have low rate of employment of young and energetic people. The majority age brackets were experienced. This is a value that most firms would naturally go for.

The majority of the workers 38.8 % were secretaries followed by general workers 37.6%. This is a normal distribution in factories where general workers were more compared to specialized work force.

The majority of workers 70.6% had O – Level qualifications followed by 24.4% who had diploma qualifications. The study found out that 4.7% and 2.4% had degree qualification and A-level qualifications respectively. These finding indicates that manufacturing firms employ more people with O-level qualifications to perform the general work and few qualified people who work at the management level and other specialized areas.

4.2 Safety Training to Employees

Table 4: Training on Safety Skills

Response	Frequency	Percent
yes	33.0	38.8
no	52.0	61.2
Total	85.0	100.0

Source: Field Data (2008)

The majority of the respondents 61.2% had not received training on safety skills. Only 38.8% received training on safety skills. This finding showed that the manufacturing firms in Kenya have not taken a serious initiative to provide training on safety skills. The implication of this finding is that the manufacturing firms seriously predispose their employees to factory accidents and other related dangers (See table 4 above).

Table 5: Qualification for the job

Response	Frequency	Percent
yes	21.0	24.7
no	64.0	75.3
Total	85.0	100.0

Source: Field Data (2008)

Table 5 above was used to analyze whether the employees felt confident that they had the right qualification for the job they were doing. The majority of the respondents 75.3% did not feel confident that they had the right qualification for the job they were doing. Only 24.7% felt confident that they had the right qualification for the job they were doing. This finding showed that the manufacturing companies in Kenya need to carry out more training which can equip the employees with the right skills and confidence to carry out such skills.

Table 6: Training appropriate to the employees job

Response	Frequency	Percent
yes	35.0	41.2
no	50.0	58.8
Total	85.0	100.0

Source: Field Data (2008)

Table 6 above was used to establish whether the employees had undergone training appropriate to the work they were doing. The study found out that the majority of the respondents 58.8% had not received training appropriate to the work they were doing. Only 41.2% had received the appropriate training. The manufacturing firms in Kenya should put more efforts on skill based training to empower employees to be more productive on the work they do.

Table 7: Sponsor of the training

Sponsor	Frequency	Percent
Company	35.0	41.2
other	1.0	1.2
Not gone for training	49.0	57.6
Total	85.0	100.0

Source: Field Data (2008)

Table 7 above was used to analyze the source of sponsorship for the safety trainings in the companies for the 41.2% of the employees who had received training appropriate to the job they were doing. The majority 41.2% were sponsored by the company they worked for and only 1.2% were sponsored from other sources. This finding was a good gesture showing that the companies were putting some efforts on the training. In order to reduce accidents related to lack of

application skills, the companies should put more efforts on training the employees on the appropriate skills.

Table 8: Involvement in the safety seminars

Frequency	Frequency	Percent
1-5 times a month	73.0	85.9
5-10 times a month	12.0	14.1
Total	85.0	100.0

Source: Field Data (2008)

Table 8 above was used by the study to analyze the frequency of the employees' involvement in safety seminars. The majority of the respondents 85.9% were involved between 1-5 times in safety seminars per month. Only 14.1% of the employees were involved at higher frequency of 5-10 times in safety seminars per month. The manufacturing companies need to be involved in more safety seminars to reduce occurrence of safety related accidents in the factories.

4.3 The Impact of Safety Trainings on the frequency of accidents.

The study sought to establish whether safe training had impact on safety related accidents. The study considered the following variables related to the impact of safety trainings; the number of people involved in accidents before and after training, analysis of what caused the safety related accidents, the attitude of employees on safety programs and the level at which the employees favored safety trainings.

Table 9: No. of People involved in safety related accidents before and after

No. of people	% Before	% After	Marginal Increase/Decrease
1-5 people	10.6	84.7	74.1

5-10 people	30.6	15.3	-15.3
Over 10	58.8	0	-58.8

Source: Field Data (2008)

Table 9 above was used to analyze whether safety training had impact on the number of employees involved in safety related accidents after training. More people 58.8% of the employees in the cluster above 10 were involved in safety related accidents before training. Further, 30.6% of the employees between 5-10 clusters were involved in safety related accidents before training. Finally, 10% of employees between 1-5 people were involved in safety related accidents before training.

There was 84.7% decrease in safety related accidents for employees in the cluster of 1 – 5 while among employees in the cluster of between 5-10, there was decrease of 15.3% of safety related accidents after training. This finding showed that safety training reduced the rate of accidents in manufacturing firms in Kenya.

Table 10: Contributors to accidents at work place

Contributors	Very High	High	Neutral	Low	Very	Total
					Low	
Lack of protective cloths	85.9	5.9	0.0	5.9	2.4	100
Slippery floors	75.5	10.2	0.0	9.4	4.7	100
Chemicals	52.9	28.2	4.7	12.9	1.2	100
Employees ignorance	30.6	60.0	0.0	9.4	0.0	100
Equipment	5.9	3.5	9.4	76.5	4.7	100

Source: Field Data (2008)

Table 10 above was used to analyze the contributors to work place accidents. The major contributors considered in this study include; lack of protective cloths, slippery floors, chemicals, employees ignorance and equipment. The study established that the majority (91.8%) of the respondents agreed that accidents were caused by lack of protective cloths, 90.6% of the accidents were caused by employees' ignorance, 85.7% agreed that work place accidents were caused by slippery floors, 81% agreed that the accidents were caused by chemicals and only 9.4% agreed that the accidents were caused by equipment. While designing safety training, the manufacturing firms should include training areas as; use of protective clothes, awareness of work place accidents, slippery floor accidents and chemicals/hazardous materials.

Table 11: Training on safety taken seriously

Response	Frequency	Percent
yes	28.0	32.9
no	57.0	67.1
Total	85.0	100.0

Source: Field Data (2008)

The study has established that the majority of the respondents 67.1% observed that safety training was not taken seriously. Only 32.9% agreed that the training were taken seriously. The study therefore established that the manufacturing firms do not take safety training serious (See table 11 above).

Table 12: Employees favoring Training

Response	Frequency	Percent
Strongly favored	49.0	57.6
Favored	29.0	34.1

Against	3.0	3.5
Strongly against	4.0	4.7
Total	85.0	100.0

Source: Field Data (2008)

Table 12 above was used to analyze the level the employees of the manufacturing firms favored training. The study found out that 91.7% of the employees favored training. Only 8.2% were against safety training. This finding showed that although the owners of the firms lack seriousness on safety training, the employees favored the training more because they were the people mostly affected by the safety related accidents.

Table 13: Leaving Organization due to injuries associated with work place safety

Response	Frequency	Percent
yes	26.0	30.6
no	59.0	69.4
Total	85.0	100.0

Source: Field Data (2008)

Table 13 above was used to analyze the effects of safety training on employees leaving work place due to safety related injuries. The study found out that the majority of the respondents 69.4% disagreed that employees left the organization due to work place related injuries. The main reason behind this is the lack of other alternative employment opportunities where the employees could be absorbed.

4.4 Safety Programs Provided by the Manufacturing Industries.

Table 14: Safety Programs

Program	Yes	No	Total
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Hearing Aid	100	0	100
First Aid training	91.8	8.2	100
Laboratory Safety	89.4	10.6	100
Lock out	89.4	10.6	100
Fire Extinguishers	84.7	15.3	100
Building marshal training	82.4	17.6	100
Food Safety	69.4	30.6	100
Ladder Safety	29.4	70.6	100
Personal Protective equipment	25.9	74.1	100
Radiation Safety	24.7	75.3	100
Defensive Driving	23.5	76.5	100
Confined Space	18.8	81.2	100
Emergency preparedness	18.8	81.2	100
Small cart training	18.2	81.8	100
Blood Born pathogen	12.9	87.1	100
Use of fire extinguishers	12.9	87.1	100
Asbestos Awareness	8.8	91.2	100
Fall Protection	7.1	92.9	100

Source: Field Data (2008)

Table 14 above was used to analyze the safety training programs offered by the manufacturing firms in Kenya. The study has established that all the manufacturing firms 100% trained their employees on hearing Aid, 91.8% trained on first aids, 89.4% trained on lock out, 84.7% trained their employees on fire extinguishers and 69.4% trained their employees on food safety. On the other hand, the respondents in the study disagreed on the provision on the following training; 70.6% did not train their employees on ladder safety, 74.1% did not train on personal protective equipment, 75.3% did not train on radiation safety, 76.5% did not train on defensive driving, 81.2% did not train both on confined space and emergency preparedness, 81.8% did not train on

small cart training, 87.1% did not train on blood born pathogens and use of fire extinguishers, 91.2% did not train on asbestos awareness and 92.9% did not train on fall protection. Hearing aid training program was the leading because most manufacturing companies in the study use heavy machineries which produce noise that affect employees hearing, in order to protect the employees from hearing related complications, the companies developed more hearing aids related programs compared to other programs.

4.5 Hypotheses Test

Hypothesis 1: Manufacturing firms do not provide safety programs

Table 15: The probability of the Provision of Safety Programs

Program	Yes	No
Hearing Aid	100	0
First Aid training	91.8	8.2
Laboratory Safety	89.4	10.6
Lock out	89.4	10.6
Fire Extinguishers	84.7	15.3
Building marshal training	82.4	17.6
Food Safety	69.4	30.6
Ladder Safety	29.4	70.6
Personal Protective equipment	25.9	74.1
Radiation Safety	24.7	75.3
Defensive Driving	23.5	76.5
Confined Space	18.8	81.2
Emergency preparedness	18.8	81.2
Small cart training	18.2	81.8
Blood Born pathogen	12.9	87.1
Use of fire extinguishers	12.9	87.1

Asbestos Awareness	8.8	91.2
Fall Protection	7.1	92.9
Average	44.9	55.1

Source: Field Data (2008)

The average response was used to calculate the chi-square value

The probability of number of whether or not manufacturing firms provided safety programs at work place is given by

$$P_1 = P_2 = 0.5$$

Expected frequency is given by

$$E_1 = E_2 = \text{sample size} \times \text{probability}$$

$$E = 85 \times 0.5 = 42.5$$

$$X^2 = \sum (O - E)^2 / E$$

$$\text{The computed } X^2 = 3.8$$

$$\text{The degree of freedom number comparable values } k - 1 = 2 - 1 = 1$$

$$\text{The tabulated } X^2 = 3.8$$

Since the computed chi value 3.8 is equal to the critical chi 3.8, there is evidence to accept hypothesis of the study that the manufacturing firms do not provide Safety programs.

Hypothesis 2: Manufacturing firms do not offer safety training to their employees.**Table 16: Training on Safety at work Place**

Response	Frequency	Percent
yes	33.0	38.8
no	52.0	61.2
Total	85.0	100.0

Source: Field Data (2008)

Table 16 above was used to test hypothesis 2 above.

The probability to train or not to train is given by

$$P1=p2=0.5$$

Expected frequency is given by

$$E1=E2 = \text{sample size} \times \text{probability}$$

$$E=85 \times 0.5 = 42.5$$

$$X^2 = \sum (O-E)^2 / E$$

$$\text{The computed } X^2 = 4.24$$

The degree of freedom number comparable values $k - 1 = 2 - 1 = 1$

$$\text{The tabulated } X^2 = 3.84$$

Since the computed chi value 4.24 is greater than the critical chi 3.84, there is evidence to reject hypothesis of the study that manufacturing firms do not offer safety training to their employees. The firms offer safety related trainings although such trainings were not adequate and directed to all safety related accident areas.

Hypothesis 3: Safety training has no impact on the frequency of accidents.**Table 17: Frequency of accidents before safety training at work place.**

No	Before
1-5 times	9
5-10 times	26
over 10 times	50
Total	85

Source: Field Data (2008)**Table 18: Frequency of accidents after safety training at work place.**

No	After
1-5 times	72
5-10 times	13
over 10 times	0
Total	85

Source: Field Data (2008)

Table 19: Comparing the Frequency of accidents before and after training at work place.

No	Before	After
1-5 times	9	72
5-10 times	26	13
over 10 times	50	0
Total	85	85

The probability of number of accidents before and after training on safety at work place is given by

$$P_1 = P_2 = 0.5$$

Expected frequency is given by

$$E_1 = E_2 = \text{sample size} \times \text{probability}$$

$$E = 85 \times 0.5 = 42.5$$

$$X^2 = \sum (O - E)^2 / E$$

$$\text{The computed } X^2 = 117.6$$

$$\text{The degree of freedom number comparable values } k - 1 = 2 - 1 = 1$$

$$\text{The tabulated } X^2 = 3.8$$

Since the computed chi value 117.6 is far much greater than the critical chi 3.8, there is evidence to reject hypothesis of the study that Safety training in the manufacturing firms has no impact on the frequency of accidents.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

It is the responsibility of the manufacturing firms to offer safety programs in the factories in order to reduce incidences of accidents. The main objective of the study was to establish the effectiveness of safety training program in reducing factory related accidents in Kenya.

The study has come up with a number of very important findings which should be taken up by the manufacturing firms to reduce safety related accidents. First, the study established that the majority of the manufacturing firms have not taken serious initiative to start providing safety training which is a major factor that can reduce work place accidents. This is because the bigger percentage of employees is the general staff who do not have the right training for the job they do.

Secondly, the manufacturing firms do not frequently involve their employees in safety trainings seminars. Such seminars would form the foundation of continuous education on safety at work place and will definitely reduce occurrences of work place accidents which in most cases are fatal or devastating both to the employees and the firms.

Thirdly, the study has found out that safety training reduced the rate of accidents in manufacturing firms in Kenya. The study showed that the number of people involved in safety related accidents reduced drastically after they had been offered safety training. Fourthly, the study found out the major causes of safety related accidents are; lack of protective cloths, employees' ignorance, slippery floors, chemicals and caused by equipment. Fifthly, the study established that although the owners of the manufacturing firms lack seriousness on safety training, the employees favored the training more because they were the people mostly affected

by the safety related accidents. This condition did not make most employees to leave the organization due to lack of other alternative employment opportunities where the employees could be absorbed.

Finally, the study established that all the manufacturing firms had put in place the following safety programs; hearing Aid, first aids, locks out, fire extinguishers and food safety. It was also discovered that they did not put in place such safety programs as; ladder safety, personal protective equipment, radiation safety, defensive driving, confined space and emergency preparedness, small cart training, blood born pathogens, use of fire extinguishers, asbestos awareness and fall protection.

5.2 Conclusion

The level of safety related training in the manufacturing firms in Kenya is still below the expected standard and not directed to possible accident areas in spite of the introduction of such training realizing some impacts. The safety programs which should be the target of the training objectives in the manufacturing firms are not adequately addressed.

5.3 Recommendations

From the findings and conclusion of this study, the following recommendations are very crucial for the purposes of improved safety training in the manufacturing firms. First the firms should plan to train more employees as a matter of creating safety awareness and also to make sure that such training and seminars be conducted more frequently as a requirement of continuous safety training which will definitely reduce safety related accidents. Secondly, the management of the manufacturing firms should put more efforts and be serious to encourage the employees who are already favoring the safety trainings. This will enable the firms to build safety training teams that would create safety awareness and hence reduce the work place accidents necessitated by safety negligence. Lastly the firms should address the safety training programs which according to the study appeared neglected. Such training programs include; ladder safety, personal protective

equipment, radiation safety, defensive driving, confined space and emergency preparedness, small cart training, blood born pathogens, use of fire extinguishers, asbestos awareness and fall protection.

5.4 Recommendation for further research

The following related areas can be researched on to add up to what this study has established: - A comparative research covering the manufacturing sectors and service sectors on safety training. The findings from such study will help both the sectors learn from their strengths, weakness, unexploited opportunities and threats related to safety training. Secondly, a study should be carried out to establish the effects of safety training on employees' job output. The findings from such a study will be able to shade light on whether such training improve employees job output.

REFERENCE:

About dictionary.com (2007). *Online Etymology dictionary*. Lexico publishing group. U.S.A

Adams, J.S. (1965). *Inequity in social exchange*. In L. Berkowitz (ed.), *Advances in experimental social psychology*. New York: Academic Press.

AMREF Training Department. (1983). *Continuing Education for Health workers*. Nairobi. Kenya.

Barnett, J.D. (2000). *Safety Management Handbook: CCH Safety Professional Series*. Vol. 2. Chicago, IL.

Brasfield, J. (1996). *Environment and industrial programs*: University of Alabama.

Bufford, J.A., Jr., Bedeian, A.G., & Lindner, J.R. (1995). *Management in Extension (3rd ed.)*

Chilgong J. Faith (2004). *Effects of supervision and training on employee morale in the civil service*. Unpublished MBA Thesis, Egerton University, Kenya.

Edlin et al. (1999). *Health and Wellness*, 6th edition. Sudbury, U.S.A

Herzberg, F., Mausner, B., & Snyderman, B.B. (1959). *The motivation to work*. New York: John Wiley & sons.

Higgins, J.M. (1994). *The management challenges (2nd ed.)*. New York: Macmillan.

Hilyer, Barbara, Veasey, Alan, Oldfield, Kenneth, McCormick and Lisa (2000). *Effective Safety and Health Training*, CRC Press ISBN 15566703964.

Hodgson, P. (1992). *Training for Safety trainers*. U.S.A

Hollman, N. (1996). *Training and conference activities*. University of Alabama.

ILO, 2000, *African newsletter on occupational health and safety*, volume 10. No. 2,2000

Kathuri, J.N., and Pals, D.A. (1993). *Introduction to Education Research*; Njoro, Kenya: Egerton University.

Kerlinger, F. N. (1973). *Foundations of Behavioural Research*. (2nd edition). New York: Holt Rinehart and Wilson, Inc.

Kreitner, R. (1995). *Management (6th ed.)*. Boston: Houghton Mifflin Company.

Kuch, E. (1997) *Environmental Health and Instructional safety*. California State University.

Lapierre, Dominique; Moro, Javier (2001). *Five minutes past midnight in Bhopal*. India.

Lindner R. J. (1998). *Understanding Employee Motivation*. Journal of Extension, Volume 36 Number 3.

Mc Beath (1993). *The Handbook of Human Resources Planning. Practical manpower analysis techniques for HR Professionals*. Blackwell publishers U.K.

Ministry of Finance (2001). *Medium Term expenditure Framework: Poverty Reduction Strategy Paper. Report of the sector working group on human resource development*. Nairobi: Republic of Kenya: Government printers.

Mollenkamp, B. (2007). *Safety Police*. Des Moines, Iowa.

Njema, S.M. (2003) *Effects of Occupational Health and Safety practices on the performance of public organizations*. Unpublished MBA Thesis, Egerton University, Kenya.

OSHA. (2003). *Worker safety series. U.S. Department of Labor*. Osha publishers.

Rainmaker group (2005). *Employee Retention Strategy – Keeping employees*. Michigan State University. U.S.A

Rao.M.N.B (2000). Ministry of civil aviation Government of India. *Human Resource Development, Training and Skill Development: Development of training Strategy – TRAINAIR Methodology*. India: Republic of India: Government printers

Smith, K.L. (1990). *The future of leaders in Extension*. Journal of Extension, 28 (1).

Spencer, S. (2007). *The Merits of Safety*. Notre Dame.

Stoner James A.F. and R. Edward Freeman (1989). *Management*: Englewood cliff, New Jersey: Prentice Hall publishers. U.S.A

Terpstra, D.E. (1979). *Theories of motivation: borrowing the best*. Personnel Journal, 58.376.

U.S. Department of Energy (2007). *Safety planning guidance for hydrogen projects*. U.S.A.

Vroom, V.H. (1964). *Work and motivation*. New York: Wiley.

Weihrich Heinz and Harold Koontz (1990). *Essentials of management*. Fifth Edition. New Delhi: Tata Mc Graw Publishers.

Yamane, Taro (1967). *Statistics, An introductory analysis*, 2nd Edition. New York: Harper and Row.

Young, S. (2004). *Corporate Performance management*. Seminar: Kuala Lumpur.