AN INVESTIGATION OF PROBABLE FACTORS CONTRIBUTING TO INDUSTRIAL ACCIDENTS AMONG MANUFACTURING FIRMS IN KENYA: AN EMPIRICAL STUDY

BY

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DECLARATION

This project is my original work and has not been submitted for a degree in any other university.

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This project has been submitted for examination with my approval as university supervisor.

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DEDICATION

Dedicated to my parents Kipkenei Yatich and Tarkok Kipkenei whose love, care, support and deep interest in all that I do has remained a source of inspiration in all my endeavours.

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ABSTRACT

The study's principal objective was to identify the possible factors that contribute to industrial accidents and injuries among the manufacturing firms in Kenya. Since most companies have scarce resources compared to their wants, isolation of the prevalent factors was deemed necessary. This helps facilitate the prioritization of company efforts in an attempt to reduce occupational hazards. The other objective was to compare the identified factors with those that have been found to operate in few other countries and which have been reported in the literature. The study was stimulated by the recognition of the fact that industrial accidents are costly to the organization, individuals and the society at large in terms of human life, money, material losses and psychological damages.

To achieve the stated objectives, the study was conducted among the manufacturing firms located in Nairobi, with the factory/workshop managers being the target respondents. The results showed that six factors, each comprising of various components mostly contribute to the problem. Among them are the lack of training on the job being carried out coupled with the nature of the work being done - that is, some jobs are more dangerous than others. But further analysis by use of the mean scores identified two factors which management should strive to overcome if safety problems are to be minimized. This relates to the behaviour of the employees in that some neglect to use the protective devices while

others make safety devices ineffective by tampering with them.

When the comparison was made, Kenya was found to have similar problems with other countries notably Tanzania, Zambia, Japan, United States of America, France and Canada in regard to the poor use or neglect of safety devices by the employees. Alcoholism and drug abuse in the workplace in Kenya was found to be a less prominent factor in its contribution to industrial accidents.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

The subject of safety and accident prevention should be of tremendous concern to managers for several reasons. For one, the figures concerning work related accidents are staggering. The National Safety Council reported that for the year 1985, there were more than 11,000 deaths and almost 2 million injuries resulting from accidents at work (Dessler, 1991). For 1992, over 9 million injuries were reported worldwide (ILO, 1994). And many safety experts feel that such figures seriously underestimate the actual number of injuries. These injuries and deaths have negative implications to the individuals, the organisations, and the society at large. For the worker, it may mean the loss of job and income; for his employer-accidents and loss of productivity; for the family-anguish and despair; and for the society - a great deal of additional expenses.

In 1985, the National Safety Council estimated disabling work-related injuries in the United States to be one million and associated costs of $37.3 billion (Rose and Harshbarger, 1988). For 1992, this figure had risen to approximately 3 million injuries (ILO, 1994). This represents estimated wage and production losses due to lost work days associated with the injury, insurance and medical costs. In some cases, national economic losses have been

put as high as three to five percent of GNP (Blunt and Popoola, 1985).

In view of the havoc that industrial accidents can create, there is need to give more attention to its root causes. Virtually all the work in organisations is carried out in one way or another by human beings. Human energy in the production process is quite critical because plants, offices, computers, automated equipment and all else that a modern firm uses are unproductive without human effort and direction. Among all the tasks of management, managing of the human component is the central and most important because all else depends on how well it is done (Likert, 1967). The work can only be done efficiently and effectively by people who have sound health. In addition, employees whose health, safety and welfare needs are well looked after by the employer will be more loyal and productive and may cause fewer industrial relations problems (Torrington and Hall, 1991). It is also unlikely for people who have been treated well to take a militant attitude against the employer on a pay deal. Further, having a contented employee is desirable in any organisation because they will do a good job and help generate income for the company (Torrington and Hall, 1991).

These expressions indicate the urgency and the seriousness of why no effort should be spared in trying to identify the main contributory factors to industrial accidents. Occupational injuries refers to those occuring at or in the course of work and they range from simple incidences such as skidding on a slippery floor to

research has been carried out in industrialised countries, though the majority of occupational health and safety problems such as exposure to chemicals and physical stressors, poor ergonomic design and strenous work conditions occur in developing countries. Further, the bulk of the 5% of health research that take place in the developing world occurs in Asia which contributes almost 3% of this research (Jeyaratnam, 1985).

This study will focus mainly on industrial accidents occuring in the manufacturing sector. Industry in Kenya is expanding rapidly and it is anticipated that at the end of the century, the Kenyan population will be around 35 million people, 78% more than the population in 1984 and which will include a workforce of 14 million people (Economic survey of Kenya, 1990). Thus, to accomodate the workforce without a rise in the rate of unemployment, it will be necessary to at least double the number of jobs in the country. The expansion of industry to accomodate more employees requires establishment of more factories with new machines, and new working methods and principles. Mayaka (1993) pointed out that this expansion may mean an increase in the number of industrial accidents. As Levitt (1960), put it "if you do not know where you are going any road could take you there", industrial accidents will continue to increase unless the major causes are investigated by way of research so that the right path can be followed in reducing or if possible eliminating this menace.

1.2 STRUCTURE AND ROLE OF KENYA'S MANUFACTURING SECTOR

Kenya's manufacturing sector is made up of diverse industries ranging from those producing items such as food, beverages and tobacco; textiles, wood and wood products; paper, chemical and petroleum products to those dealing with metal and non - metallic minerals. However, the sector is characterised by a preponderance of food processing and the manufacture of simple consumer goods. In addition, the sector is highly vulnerable to fluctuations in agricultural activities. For example, due to a favourable agricultural output during 1988-1989, real value added in manufacturing grew at an annual rate of about 6% (Economic survey, 1993). But this rate declined to 3.8% in 1991 partly due to the poor farm harvest resulting from unfavourable weather conditions. The poor weather conditions occasioned power rationing which adversely affected the manufacturing sector. This led to a further fall in the rate of growth of the real value added in the sector to 1.2% in 1992.

Manufacturing sector's contribution to the Gross Domestic Product (GDP) cannot be ignored . Over the years, the sector has remained the backbone of Kenya's industrial growth. It continues to provide goods which would otherwise be imported using the scarce foreign exchange besides offering employment to thousands of Kenyans. The sector has however, been characterised by mixed performance in the last five years (Economic Survey, 1994). The continued global recession, poor weather conditions, foreign exchange crunch, inflationary pressures and the political

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uncertainity during the transition to multi-party democracy contributed to its recent sluggish performance. Even with this mixed performance, it still remains a major employer, second to agricultural sector. The people employed in this sector were 197,648 in 1994 compared to 193,537 persons in 1993, an increase of about 2.1% (Economic Survey, 1995). Given its contributions, there is need to address the health and safety needs of the employees if increased productivity is to be achieved.

1.3 STATEMENT OF THE PROBLEM

It is estimated that the worker spends about one third of his time at the job site (Sakari, 1980). During this time, he is exposed to various hazards including accidents, harsh chemicals, noise, dust, vibrations and heat among others. Though the Government of Kenya has recognised this problem and set up legislations and Boards aimed at protecting the worker, the accident and injury rates have continued to be on the increase. Among the legislations already in place are the Factories Act (Cap. 514) and the Industrial Training Act (Cap. 237). The Boards include the Drugs Inspectorate, Radiation Protection Board and the Pests Control Board. The Directorate of Occupational Health and Safety Services (DOHSS) was also created and has the principal objective of promoting and enforcing the uniform observance of the Factories Act and its subsidiary legislations by the factory occupiers and all persons employed by them.

Table 1 shows the trend of occupational injuries by industry

from 1985 to 1989 in Kenya. The worst hit industry is the manufacturing sector which has consistently recorded the highest incidences over time compared to the other sectors. The question is: "What has made the manufacturing sector accident prone?".

The literature in various parts of the world has identified possible causes but little has been done empirically, especially in Kenya to find out whether they are really applicable. This study attempts to give some insight on this issue.

It is important to note that regardless of the magnitude of an accident, losses to both the employee and the organisation is inevitable in terms of time, costs, product losses and psychological damage to the victims and others affected.

TABLE 1: OCCUPATIONAL INJURIES BY INDUSTRY (1985-1989) IN KENYA

YEAR	1985	1986	1987	1988	1989
TOTAL	5277	-	5467	6047	5988
AGRICULTURE, HUNTING, FORESTRY AND FISHING	427	-	393	408	554
MINING AND QUARRYING	27	-	43	29	16
MANUFACTURING	1838	**1310***	2223	2313	2286
ELECTRICITY, WATER AND GAS	134	-	76	95	77
CONSTRUCTION	741	-	923	1172	1117
TRADE, RESTAURANT AND HOTELS	-	-	-	-	-
FINANCING INSURANCE, REAL ESTATE AND BUSINESS SERVICES	321	-	324	308	313
COMMUNITY, SOCIAL AND PERSONAL SERVICES	727	-	687	651	620
TRANSPORT, STORAGE AND COMMUNICATION	776	-	765	785	750
ACTIVITIES NOT ADEQUATELY DEFINED	286	-	213	286	255

Source: * **Annual Report (1989)** of Factory Inspection/ Directorate of Occupational Health and Safety Services, Nairobi, 1990.

Source: International Labour Office, Geneva: **Year Book of Labour Statistics** (1994) p. 915: 924

1.4 OBJECTIVES OF THE STUDY

The objectives of the study are:

(i) To identify the probable factors that contribute to

industrial accidents in the manufacturing sector and isolate the predominant ones.

(ii) To compare these factors with those identified in a few selected countries.

1.5 IMPORTANCE OF THE STUDY

The study will:

(i) Help the manufacturing firms both in Nairobi and elsewhere, because identification of the major cause(s) will enable them to pay more attention to the problem areas.

(ii) Assist the Directorate of Occupational Health and Safety Services (DOHSS) because it will be able to Prioritise its factory inspection efforts.

(iii) Provide some information which will be useful in the amendments of both the Kenya Factories Act and other Safety Provisions so as to reflect the current trends in the manufacturing sector.

(iv) Serve as a source of guideline and point of reference for further research in the field of occupational health and safety.

CHAPTER 2

LITERATURE REVIEW

2.1 OBJECTIVES OF OCCUPATIONAL HEALTH AND SAFETY

Occupational health is concerned with all of the health problems of "occupied" or employed persons (Blunt and Popoola, 1985). According to the World Health Organisation (WHO), occupational health programmes should aim at promoting and maintaining the highest degree of physical, mental and social well-being of workers in all occupations and the prevention, among workers of departures from health caused by their working conditions. It should also strive to place and maintain the worker in an occupational environment adapted to his physiological and psychological equipment-that is, the adaptation of work to man and of each man to his job (Blunt and Popoola, 1985).

Saskatchewan Act (1972) has adopted the same definition as that adopted by Blunt and Popoola, except that it has clearly set out the employer's responsibility as that of ensuring the health, safety and welfare at work of all his employees. Individual employees are also required to take reasonable care so as to protect their own health and safety and that of others. The Act gives the worker the right to refuse any particular act or series of acts at work which he has reasonable grounds to believe are unusually dangerous to his health or safety or that of any other person at the place of employment, until the occupational health and safety officer has investigated the matter and advised him

otherwise (Clarke, 1982 p.199). Thus, any safety programme adopted by any organisation will be measured by its ability to meet these objectives.

2.2 NEED FOR EMPLOYEE HEALTH AND SAFETY

Safety programmes should be undertaken for three fundamental reasons: moral, economic, and legal (Dessler, 1991).

2.2.1 MORAL

Managers undertake accident prevention on purely human grounds. They do so to minimise the pains and suffering the injured worker and his family are often exposed to as a result of the accident.

2.2.2 ECONOMIC

There are economic reasons for being safety conscious, since the cost to the company of even a small accident can be quite high. Workers' compensation insurance simply compensates the injured worker but does not cover the other direct and indirect costs associated with the injury. Among these are payments for settlement of injury or death claims, costs of rescue operations, loss of function and of operations income, training costs for replacement and increased insurance costs. In 1992, the people injured in the United States of America were about 3 Million while the number of workdays lost as a result of these injuries were estimated at 72 Million. In Kenya, the total number of persons injured for all

industries and which resulted to loss of workdays was estimated at 5988 people (ILO, 1994). Most Kenyan factories spent much money on compensation than would be needed to improve working conditions (Mayaka, 1993). The compensation paid to an injured worker depends on the accident and the number of dependants the injured worker has. If the number of the injured workers and subsequent loss of working days could be reduced by only a small percentage, the employer would save a considerable amount of money and trouble (Torrington and Hall, 1991).

2.2.3 LEGAL

There are legal reasons for undertaking a safety programme. In the United States of America, there are federal, state and municipal laws covering occupational health and safety, and penalties for non-compliance have become quite severe. Organisations are subject to fines and supervisors can receive jail sentences if found responsible for fatal accidents. For example, in 1989, an employer and five of his officers were charged with an aggravated battery by the state of Illinois, which said the company permitted employees to be exposed to toxic substances (Dessler, 1991).

In Kenya and Zambia, there are the Kenyan Factories Act and the Zambian Factories Act respectively which stipulate the minimum safety standards to be maintained in factories in regard to cleanliness, temperatures, ventilation, lighting, accomodation and first aid facilities. In Kenya at the moment, there is no single

specific legislation guiding the management of all chemicals used in the country. Instead, there are different laws for different categories of chemical substances. For instance, the management of drugs is effected through three main Acts under the Ministry of Health namely: Pharmacy and Poisons Act Cap. 244; Food, Drugs and Chemical Substances Act, Cap. 254 and Dangerous Drugs Act, Cap. 245. However, the Kenyan Government has set up several boards to manage the various categories of chemical substances such as - the Drugs Inspectorate, the Radiation Protection Board, the Pests Control Board and the Factories Inspectorate.

2.3 STUDIES IN OCCUPATIONAL HEALTH AND SAFETY

Various researchers have looked at the causes of accidents at the workplace in different parts of the world and have come up with varying conclusions, some of which will be highlighted in this study.

Waweru and her colleagues (1995) carried out a survey at the Kenya Railways Corporation with the aim of gauging the worker's awareness of the hazards found at their workplace. The results revealed that 50 out of the 100 workers interviewed were aware of more than 60% of the hazards they were exposed to. Further, the researchers toured 13 workshops each of them performing a different specialised function as per the corporate needs. In these workshops, locomotives were repaired and new locomotive parts were being manufactured. They observed that, in the repairing and refitting of train wheels section, no facial protection or gloves

were used by the workers. For riveting section, no eye or ear protectors were worn and for the welding unit, some workers wore overalls while others did not. However, none had protective eye goggles. Further observation revealed that the machinery and the working methods used were ancient. All these factors contribute in one way or another to industrial accidents and injuries.

Sandra Dawson and her associates (1985) conducted a research project at Imperial College in U.K. with the aim of monitoring the effects of the 1974 Health and Safety at Work Act and its associated regulations with particular reference to small establishments and poorly unionised sectors. Accordingly, it concentrated on the construction and retail industries. They found attitudes to be the major contributory factor to the industry's poor safety record. They encountered people who worked as if their own safety and that of others was of little importance. There seemed to be little inclination to help others out by way of spotting, reporting or voluntarily rectifying hazards which do not directly threaten the individuals concerned. They found some managers who frequently expressed such statements as: "accidents just happen,.....they are part of life .....there is nothing you can do to stop them." Thus people with such attitudes make them unable to take the necessary precautions in enforcing the safety rules. They also found out that most people on building sites work with the belief that deaths and injuries usually happen to other people. The research further came up with the conclusion that most deaths (54%) were attributed to falls of persons and 16%

to falling objects in the construction industry. Another problem found regarded the designation of health and safety personnel. Many people on the working sites were found to be unaware about the division of responsibilities for health and safety matters.

Lukindo (1993) reported about a study on safety and health aspects which was carried out by Antero Vahapassi in 1992. Antero conducted a pilot survey of the informal sector within Dar es Salaam region. Its main objectives was to establish the baseline information on occupational health and safety issues and to assess the knowledge, awareness, and practices of workers and entrepreneurs concerning safety and health. He selected 30 worksites which represented wood-processing, metalworks, textile and leatherwork industries, food processing, handicrafts firms, services sector and the construction industry. He found that many people acquired their occupational skills on the job and very few attended schools for vocational training. In addition, awareness of the various occupational safety and health problems in their respective trades was lacking among many entrepreneurs and workers. As a result, most of the worksites surveyed were found to have such occupational safety and health problems as poorly constructed working structures, unguarded dangerous machines, alcoholism and rampant exposure to mechanical and chemical hazards which may lead to various occupational injuries and diseases.

In Japan, a mail survey was conducted by the Department of Hygiene of Okoyama University Medical school (Aoyama, 1982), with a view to evaluating the extent of union participation in

occupational health and safety. The labour unions affliated directly and indirectly with the General Council of Japanese Trade Unions (Sohyo) of a certain prefecture of Japan were invited to reply to some questionnaires. They consisted of 69 public agency unions and 162 private enterprise unions. The Department received 51 replies from 19 public agency unions (response rate of 27.5%) and 32 private enterprise unions (response rate of 19.8%). The low response rate reflects the low level of union interest and activity in occupational health and safety. Such little interest may contribute significantly to the industry's poor safety records. Further analysis of the results indicated that among the companies with 50 - 99 employees (middle size firms in Kenyan standards), only half employed an occupational physician, a safety supervisor and a health supervisor, as required by the Industrial Safety and Health Law of 1972. In the union's view, health and safety problems still required much discussion and there was need to develop programmes in this field. This complacency in following the stipulated laws makes the achievement of safety objectives an uphill task.

Riwa and Tuppurainen (1990) reported of a health survey that was undertaken in 1988 in an East African cotton mill established in Tanzania. The objective of the study was to estimate the prevalence of respiratory symptoms among the workers working at different sections of the mill. The concentration of the cotton dust varied in the three sections so that the dust concentration was highest at the beginning of the production line, and decreased

towards the end of the mill. The survey found out that the prevalence of cough (day and night) and chest tightness apart from colds, increased with increasing dust levels. Thus, the presence of dust in the workplace lead to diseases.

Machumu (1991), reported about an investigation he carried out through the analysis of the accident reports for the years 1980-1984 on the construction industry in the Dar es Salaam region. This study was quite similar to that of Sandra. The aim was to obtain more information about the causes of accidents. He analysed 212 accidents all of them directly or indirectly connected to the construction industry. He found out that the fall of materials ranked the highest in the list (32%) followed by accidents involving the falling of persons (22%) from the structures being constructed. Poor scaffolds, platforms and ladders were found to be the main causes of falls from the temporary structures.

In Ethiopia, a survey was carried out by Mulugeta (1992) among two wood-working industries on the noise levels with the aim of finding out the causes of industrial accidents. He found that the machines were working continuously for 75% of the 8 working hours and they emitted an intermittent noise to which it was difficult to get adopted. Depending on the nature of the raw materials being processed, the machine occasionally produced a certain explosive sound which made the workers prone to accidents.

Mbuli (1994) reported about a survey that was conducted in the Western Cape region, South Africa in 1992, which aimed at gauging the extent to which the Lead Regulations promulgated in 1991 had

been implemented. A total of 109 companies representing various sectors such as the motor industry, the chemical and petrochemical industries, printing, pottery and ceramics, hospitals, educational and research institutions and light engineering were surveyed. Out of these companies, 57(52%) responded. The information obtained from the respondents indicated that non-compliance with the Lead Regulations was widespread thus defeating the intentions of the regulations, that is, the control of the worker's exposure to Lead fumes and dust.

In Canada, a safety committee which had been established to look into the health and safety issues estimated 70% of the problems brought to them in 1979, to be associated with inadequate protective guards for dangerous machines, unsafe footing, fire and electrical hazards, and unsafe access or egress (Clarke, 1982). 15% of the problems were associated with physical agents such as noise, vibration, temperatures, ventilation and lighting. The work processes and procedures gave rise to only 10% of the problems while the remaining 5% were related to hazardous materials, fumes, gases and chemicals.

Mjema and Spoerri conducted two different studies in Tanzania in 1984/85 and 1987/88 with the first study aiming at pinpointing the problem areas in the field of occupational health and safety. The second study (1987/88) aimed at analysing the safety situation at that time in the local industry. To this end, a survey was carried out in seven companies of different branches in the Dar es Salaam area. Their safety devices, worker's awareness and education

on safety matters and the enforcement of safety rules were assessed and analysed. It was found out that lighting and noise control were of better standard than temperature control and ventilation at the workplace. First aid kits and fire fighting equipment were available. The problem area was found to be the issue of protective gear. They observed that the protective clothing were not always used by the workers or not used at all, either because the workers have not been trained in its use or because it is too cumbersome and uncomfortable to wear. This reluctance is bound to increase the frequency and magnitude of occupational injuries.

Another study was carried out in Japan (Aoyama, 1982) in a repair shop of Japan's National Railway. This study was necessitated by many complaints from the workers that they were suffering from a low back pain. In conjunction with four other Japan's National Railway repair shops, an inspection team was set up which composed of several outside specialists to conduct the exercise. It was found that 41.9% of workers suffered from low back pain, and that 18.8% of the workers had been absent from work during the preceeding year because of it. The causes were found to be as follows:

- Handling heavy objects (47.2% of the cases)
- Work in half - sitting position (34.7%)
- Twisting of the spinal columns (6.55%)
- Falling (3.1%)
- Other (5.8%)

The survey results suggested two major reasons for the increased

equally apply especially to those companies that have night shifts.

2.4 POSSIBLE CAUSES OF INDUSTRIAL ACCIDENTS IN THE WORKPLACE

Many researchers have suggested the reasons as to why accidents and subsequent injuries tend to occur in the workplace in various parts of the world. These causes however, may or may not have been proved by way of research. Furthermore, they are not limited to any specific industry but rather to the general industry. The following are some of the suggested possible causes. They are broadly classified into three categories:

-Technical

-Human

-Environmental

2.4.1 HUMAN CAUSES

The human component in the workplace occupies a central position in the organisation's productivity. Thus, when making any mechanical changes in the working environment, a critical view in this regard should be adopted because no matter how well engineered a mechanical safety device is, its effectiveness is limited by the people using it (Crane, 1982). One of the human causes of industrial accidents relates to the authority problems that are in existence in the organisation. This can lead to accidents in that the person responsible for carrying out a specific duty may not be clearly defined by the organisation's authorities. The

following example serves to illustrate this point: A New York city's subway system had a serious fire. When the fire department telephoned transit management and asked them to turn off the electric power to allow fire fighters to enter the tunnels, the request was ignored. There were apparently two reasons: First, it was not clear who was authorised to make that decision, and secondly, the transit people felt that they needed power in the tunnels to facilitate evacuation of passengers. Regardless of who was right, this conflict over who should yield to whom nearly resulted in tragedy (Sayles and Strauss, 1980). This therefore, necessitates clear job description in organisations if accidents are to be reduced. Another example is given of a mill attendant in Zambia (1981) who entered a rod mill in an attempt to clear some materials remaining in the feeder hopper when a co-worker not knowing that he was inside started the mill. The mill ran for a few minutes before another man, who knew the attendant was inside, ordered the mill stopped. Unfortunately, a nearby mine official, not knowing the attendant was inside shouted for the mill to be restarted. The man who had originally started the mill the first time restarted it again even though he knew the attendant was inside. His explanation was that he was afraid to disobey his superior. It appears the mine official was vested with too much power over the employees to the extent that too much fear over their job's security for non-compliance had been instilled into them. This ``boss-subordinate'' approach does not augur well with attempts to achieve safety objectives. Instead, participative

leadership style is preferable whereby the employees in particular danger zones are involved as much as possible in designing new safety measures since this will make them committed to its implementation because they will be seeing it as a product of their decision rather than see it as an imposed idea. Other human causes include vision problems. Vision is related to accident frequency for many jobs. For example, passenger car drivers and machine operators who have high visual skills have fewer injuries than those who do not (Dessler, 1991).

Other factors that contribute to the organisation's poor safety record relates to the employees themselves. Sayles and Strauss (1980) reported about a management motive which was misconstrued by the company employees. An American mineral company operating in Africa sought to reduce the incidences of illness caused by drinking polluted water from a nearby stream. Warning notices were posted and employees were instructed to drink only from company-installed pipes. The situation coincided with a good deal of employer-employee bitterness associated with maternity-leave policies. Soon there was a widely accepted rumour that the company was placing birth control chemicals in the water so that there would be less time lost during maternity leaves. This example is just an indicator of how the employees can make a well designed safety engineering programme fail to take off - to the detriment of their own health and safety.

2.4.2 TECHNICAL CAUSES

These are associated with defective plant, equipment, tools, materials and buildings. They arise when there are inadequate safety guards. This mainly occurs due to failure of the management to ensure that the regulations already established are followed. For example, in Britain, the Health and Safety at work Act (1974) states that an employer should ensure that the provision and maintainance of plant and systems of work is safe and without risk to health. The Kenyan Factories Act (revised, 1972) requires machinery to be fenced and especially its dangerous parts. Thus, failure to abide by these regulations will contribute to accidents in the workplace because the employees may work with faulty machines.

2.4.3 ENVIRONMENTAL FACTORS

This arises from climatic and social problems in the workplace. Although this is a problem of diminishing magnitude in Africa, social and climatic conditions can pose serious problems of adjustment for expatriate personnel from overseas and migrant labour from within the continent. The isolation, the loss of familiar human, social, or intellectual contacts, indifference or even hostility from the local population may give rise to serious physical, psychological and even psychosomatic disturbances (Blunt and Popoola, 1985). This stressful situation may make the employee pay less attention to the work at hand hence accidents and subsequent injuries. Other work-related factors that contribute to

industrial accidents include the job itself, the work schedule and the psychological climate of the work place.

THE JOB ITSELF

Some jobs are inherently more dangerous than others. Sayles and Strauss (1980) stated that depending on the size of a firm, an employee's chance of injury are five to ten times greater in construction than in insurance. Mining, on the average is five times more dangerous than financial services.

The noise levels in the working environment can be dangerous. (Blunt and Popoola (1985) gave an example of two men who were walking along a haulage at the end of their shift when a locomotive approached from the rear and struck them both - fatally injuring one. This was in Zambia mines (1982). Although the driver said that he sounded his warning bell, the survivor denied having heard it. The noise level at the site of the accident was so high due to an operating fan in the vicinity, that it completely masked the sound of the warning bell of the approaching locomotive.

WORK SCHEDULE

Dessler (1991) argued that accidents tend to increase later in the day compared to the first five or six hours of the workday. The person may be overworked due to the nature and amount of work that the person does. For example, type A personalities, that is, people who are extremely hardworking and who feel driven to always be on time and meet deadlines normally place themselves under

employees who work under stress or feel that their jobs are threatened or insecure seem to have more accidents than those who do not.

2.4.4 OTHER CONTRIBUTORY FACTORS

(a) ALCOHOLISM AND DRUG ABUSE

The abuse of alcohol or drugs is bound to have adverse effects for all concerned, that is, the worker himself and his co-workers. The Federal Republic of Germany's largest union, Ig Metall, believes alcohol to be a contributory factor in about one third of industrial accidents (Sandra etal, 1985).

(b) MOTIVATION

Employees can be motivated by the management in various ways, for example, by providing adequate training, incentives, and by use of job enrichment and job rotation techniques. Thus, the employees will be psychologically stable and hence alertness in the place of work. Eva and Oswald (1981) argued that poor conditions of work, boring job and how the job negatively affects family and social life will contribute to causing stress to the employee. This leads to low morale which in turn produces carelessness in the place of work and hence accidents. The failure to recognise safety efforts of the employee may become an hinderance to the achievement of safety objectives in the company.

(ii) - Poor timing of the training programme

Safety training should be a continuous and long term process if it is to be effective. But some companies do not have an elaborate scheme of training hence the training ceases to be continuous but rather sporadic. Since firms operate in a dynamic business environment, changes are quite rampant, for example, in the use of machines in the production processes. Unless the training programme is made quite clear, then the employees' skills will be obsolete over time and this will contribute to industrial accidents.

Although setting a time interval for training activities is quite desirable, a poorly designed time interval may encounter negative reactions from the trainees making it less effective. For example, a head nurse told of the experience in her hospital: ``We are supposed to attend safety meetings once a month. You can always predict what will happen; one month they show you how to use a fire extinguisher, another month they tell you not to leave mops where people can strip over and to make sure that the floors are not waxed too heavily. Every six months, they show a movie-the same one; I know it by heart. I have better things to do ; I have patients to take care of''(Sayles and Strauss, 1980).

(iii) - Inappropriate training techniques

The training techniques that can be used include lectures, discussions, films, role-playing, slides and posters. Each of these techniques is best suited to certain category of workers.

For example, external training may be best used in training managers, supervisors and safety representatives. If the training technique is not best suited to the categories in question, the trainees may fail to grasp the ideas and this beats the purpose of the training. This may in turn enhance the occurence of industrial accidents. This problem can be reinforced further by poor selection of employees - that is, using some unprofessional criteria e.g based on ethnic and blood relations. This makes the organisation have people who may be quite difficult to train because they may not even be meeting the very basic criteria for deployment to some work.

(iv) - Lack of top management support

It would be almost impossible for any safety programme to work effectively if the top management does not offer valuable support in terms of provision of funds for research purposes and setting up of an official administrative unit responsible for various regulatory inspections. The first duties of such a unit should be to draw up general regulations prescribing the measures necessary for the safety of the workers and to make sure that these general regulations are observed. It should further be given sufficient means by the top management to carry out these tasks in the form of both personnel (technical inspectors) and legal powers. But unfortunately, most companies view the health and safety aspects of the employees as an expense hence, give it little or no support. Many employers place many priorities higher than health and safety (Sandra etal, 1985). It is important to note that the direct costs

involved in dealing with an accident is out of all proportion to what it would have been spent in preventing them.

(d) ROLE OF AUTOMATION

Safety can be greatly improved by automating the operations in which human error is frequently the cause of accidents, for example, the automation of remote controlled conveyor belts and hopper traps in coal mines. Furthermore, the failure to monitor the introduction of new machines and processes in the industries could be a problem. Before adopting any technology, there is need to assess its appropriateness to the work at hand.

(e) AWARENESS/EDUCATION

Knowing a problem is a step forward towards solving it. Some companies fail to supply information to the workers about the hazards that are prevalent in the workplace. If safety issues are to be adequately addressed, continued supply of relevant information must be provided at the moment of hiring the employee and also supplemented during training sessions. Participative management style has been adopted by some organisations as a way of trying to reduce industrial accidents (Alachi and Todradze, 1981). They have trained their workers to enable them participate in the preparation and implementation of a safety policy and programme which concerns them more than anyone else. This programme will have a better chance of producing good results.

(f) LACK OF STATISTICAL RESEARCH

Statistics on the type of accidents that occur, and in what kind of organisation, the people most affected and the frequency of these accidents are derived from this type of research (Blunt and Popoola, 1985). This enables the management to concentrate their prevention efforts on the areas and people mostly affected. Thus, the absence of special attention on these problem areas enhances the occurence of industrial accidents.

(g) ACCIDENT PRONESS

This is a condition in which a human being is mentally inclined, strongly disposed, attitudinally adducted or personally distained to become continually involved in an on-going and never ending series of accidents or injuries. The personality, emotional make-up, family background and physical conditions of an individual in the context of specific circumstances make him an accident repeater. Sayles and Strauss (1980) pointed out that many accidents occur due to less attention given to the job by the employee. Accidents will occur when something unexpected interrupts the worker's usual rhythm. Instead of smoothly adapting to the interruption, accident-prone people are momentarily terrified. Their defense mechanism does not react in an ordely fashion.

(h) DIRECTORATE OF OCCUPATIONAL HEALTH AND SAFETY SERVICES (DOHSS)

Organized occupational health and safety services commenced in Kenya in 1951 following the enactment of the Factories Act in 1950

and which came into force in September 1951. This saw the birth of the Factories Inspectorate thereafter referred to as its present name, "Directorate of Occupational Health and Safety Services", under the Ministry of Labour. It became a fully pledged department in 1978 and at the same time established specialized services under: Occupational Health Unit, Occupational Hygienic Unit, Engineering (Technical Unit) and Training Unit. The role of overseeing the safety and health issues in the Kenyan factories has been left to the Directorate of Occupational Health and Safety Services which is located at Commercial Street, Nairobi.

The primary objective of the appointment of factory inspectors is to promote and enforce the uniform observance of the Factories Act and its subsidiary legislations by the factory occupiers and all persons employed by them. Other roles include the provision of advice regarding the best method of compliance with the statutory requirements and also the means of securing the best possible working conditions. Although the inspectorate's actions has led to immense improvements in the safety aspects of the Kenyan factories, much more effort is still required given the increasing national statistics of occupational injuries. The main obstacles to the achievement of its objectives are the financial constraints coupled with the negligence by both employers and employees in reporting accidents to the Directorate for prompt action. The Inspectorate further have a small number of occupational health and safety officers to carry out the immense task of inspection. All these difficulties combined has made it very difficult to have a

clear picture of industrial accidents in the country. This hampers prioritization of the scarce resources in attempts to reduce hazards in the workplace.

(i) LEGISLATION

Legislation is frequently outdated, too general or in other ways inadequate. Redrafting of old existing or new national laws and regulations governing industries has been slow due to lack of technical know-how on the part of the personnel in occupational safety and health. In most cases, amendments have been introduced to the existing Factories Act, albeit after a long time. The original Factories Act was drawn in 1950 and it was revised in 1962 and 1972, but since then, no other major revision has been made except for amendments, notably in 1990. This long duration between one revision and another should be addressed. This is especially the case because factories come up rapidly coupled with frequent changes in their sizes and technology.

For personnel managers, a clear understanding of these causes is necessary if appropriate remedial measures have to be undertaken.

CHAPTER 3

RESEARCH DESIGN

3.1 THE POPULATION

The population of the study consisted of all the middle and large private manufacturing firms located in Nairobi. Size is defined differently by different authors. Sales turnover, number of employees and capital employed are, however the main criteria (Aosa, 1992). But for this study, the number of employees was used as the sole criteria. The size class codes was as follows:

Size Class Code	Number of employees
A	5 - 19
B	20 - 49
C	50 - 99
D	100 - 199
E	200 - 499
F	Over 500

Size A and B are classified as small firms in Kenyan standards (Directory of Industries, 1986) and so were excluded from the study. Nairobi was chosen because it has a large number of manufacturing firms which are of diverse nature. In addition, time and financial Constraints were considered. Large firms were chosen because they tend to use complicated machines and processes in

carrying out their operations.

A list of such firms was obtained from the Directory of Industries published by the Kenya Industrial Research and Development Institute (KIRDI), I993 edition.

3.2 THE SAMPLE

A Sample of 40 firms was taken. For the five categories of manufacturing firms - that is, food, textile, wood and wood products; chemical and metal manufacturers, a proportional sample of 30% was selected and distributed as follows:

Food, Beverage and Tobacco	7
Metal	10
Wood Products	5
Textiles	8
Chemical	10

3.3 DATA COLLECTION

The study used primary data which was obtained by use of a structured questionnaire (See Appendix). The questionnaires were distributed to the selected firms and collected later. The target respondents were the factory managers, workshop managers or the supervisors depending on the designation in each particular firm.

A 5 - point Likert type scale ranging from strongly agree to strongly disagree was used to measure the importance of each factor in its contribution to industrial accidents.

3.4 DATA ANALYSIS

The data collected in part A of the questionnaire were analyzed by way of summary statistics like tables, means and percentages.

For part B, factor analysis was used to isolate the factor(s) which contribute most to industrial accidents. The general objective of factor analysis is to summarize a set of the variables by creating a smaller number of variates or factors that are defined in terms of the original variables. This small number of variates is derived such that the maximum amount of information available in the original variables is retained in the smaller number of factors. To perform factor analysis, statgraphics statistical package was used. Both parts (A & B) of the questionnaire were meant to be answered by the same respondent.

injuries but less than 50. For those industries that did not record any injury, only the chemical industry managed to fall in this category as two firms indicated so. Majority of the industries (19) admitted the occurence of accidents though the number is not quite high since most of them had injuries ranging from one to ten people over this period. No firm fell in the over 50 category of injuries.

Having acknowledged the fact that industrial accidents occur, the researcher felt the need to examine how each firm carries out such important firm activities as training programmes, protective device provision, literacy levels of employees and safety guideline materials. In addition, an attempt was made to identify the problem area(s) of each type of industry and also the times when injuries occur most.

4.1 AN ANALYSIS OF FIRM'S SAFETY ISSUES

4.1.1 TRAINING

All the companies surveyed indicated that they carry out training activities. However, majority of them 13(52%) relied on outside experts (consultants) to carry out the training sessions. The supervisors and factory/workshop managers ranked second -that is, 10 firms (40%) of the firms surveyed. This heavy reliance on external consultants may not be quite effective because these are people who come to the company after a long while and this may make the use of the acquired skills less effective because any taught skill requires constant follow-up. There is need to combine both

the external experts and those from the organisation if successs is to be achieved.

Concerning the training intervals, the study found out that 17(68%) of the companies do not have a specific time that has been set for carrying out training activities. Instead, many managers expressed such views as ``when the need arise'' and `` we carry out training on continuous basis''. The question one can ask is : "How can one know when the training is needed". "Could it be when an accident has occured"?. This question remains unresolved. Due to the absence of specified training programmes, some of the employee's skills may become obsolete over time. This is especially so given the costs of training hence many companies may not see it as a priority.

Most companies 21 (84%) select the workers to perform duties in the factory/workshops based on their experience. This is quite necessary because the workers will be performing a job that they are conversant with and this helps reduce occupational injuries. However, few companies 3 (12%) allocate different jobs on different days. This meant that the employees perform a new type of work each day. This does not augur well with the strive to achieve safety objectives among the manufacturing firms.

All the common methods used for training such as lecture methods, discussions, films, posters, and role playing/demonstration are being used by the firms in Kenya. However, role playing/demonstration is mainly used as 18 (72%) of the firms indicated. This method is quite effective especially when

the low level employees are being trained. It is also approriate particularly to those who operate the machines and this helps reduce industrial incidences. Similar advances have been made in the area of the category of employees to train. 9 (36%) of the companies concentrate their training efforts on the supervisors compared to only 4% who concentrate on top level managers. Most top levels manager's jobs are safer compared to those of the supervisors hence, the need to concentrate much of the training efforts on them. 8 (32%) concentrated on those who operate machines. This prioritization of training programmes help reduce occupational accidents and injuries.

4.1.2 PROTECTIVE DEVICES

All the companies surveyed indicated that they provide protective devices such as goggles, gumboots, gloves, and masks to their employees. The major deficiency in this area regards the adequacy of these devices. Among the factories visited, only 2 companies, through the observation of the researcher, had adequate and decent protective gears which are tailor-made for each section of the factory. For example, those working in noisy areas had ear plugs and those in areas where there are falling materials, helmets were provided. Apart from these two, the rest had incomplete protective attires. This may serve to escalate the number of people who fall victims of industrial hazards.

4.1.3 ALCOHOLISM

Although alcoholism is believed to be a major contributory factor to industrial accidents, this seems not to be the case in Kenya as indicated by 8 (32%) companies who have observed alcoholics to be receiving more injuries than others. But 15 (60%) reported negative relationship between alcoholism and industrial injuries. 2 (8%) have not assessed the trend and so they were not in a position to comment. This negative relationship is attributed to the strict rules the companies have on alcohol taking. One of the managers pointed out that the rules in their company are so strict that any person found drunk at the place of work will be given a summary dismissal (dismissal without prior notice). This has helped improve the safety situation in the firms.

4.1.4 EDUCATION LEVELS

An attempt was made to find out the education levels of the people who have received injuries in the companies. The results are given in Table 4.2

Table 4.2: Education Levels Vs. Injuries.

EDUCATION LEVEL	RESPONSES	PERCENTAGE (%)
Illiterate people	2	8
Literate people	1	4
Both (literate and illiterate)	19	76
Specific individuals regardless of education level (accident proness)	3	12

From the figures in the table those who have suffered injuries over time are both the literate and illiterate workers. There seem to be no strong bias towards either of the categories. One limitation of this conclusion is that it was not possible to establish the number of people in each of the categories so that a comprehensive comparison, based on their proportions, could be made. However, this serves to give a general overview of what is happening in the industry.

4.1.5 SAFETY GUIDELINES

Although the Factories Act was originally drawn in 1950, its contents are still quite valid to the modern day manufacturing firms. 18 (72%) of the firms surveyed affirmed its adequacy. Only 7 (28%) indicated its inadequacy in offering the necessary guidelines to be followed in the factories. The major complaint by these firms was that the Act is too general and hence, there is need to be modified so as to give adequate details to each type of industry. Some companies, especially the multi-nationals have supplemented the Act with their own safety guidelines that have been tailor-made to suit their own needs. But one major observation which the researcher noticed among all the factory managers is that there is a general lack of knowledge of the contents of the Factories Act. Thus, they could not be able to pinpoint the section(s) which the Act may be inadequate. This lack of knowledge makes them unable to adequately address the safety aspects in their organisations and this may lead to industrial

accidents.

4.1.6 TIME OF OCCUPATIONAL INJURIES IN INDUSTRY

An assessment was made of the times when injuries are most frequent in the companies. Table 4.3 indicates the responses.

Table 4.3: OCCUPATIONAL INJURIES AND TIME OF OCCURENCE

TIME OF OCCURENCE	NO. OF RESPONSES	PERCENTAGE
Morning	1	4
Afternoon	4	16
Night Shifts	1	4
No Specific Time	19	76

Contrary to the assertion by various authors (e.g Dessler, 1991) that accidents occur most at night, the study results showed that there is no specific time which is associated with accidents in Kenya. This was indicated by 19 (76%) of the respondents; This included those which have night shifts. Only 4% associated night shifts with accidents and subsequent injuries.

In regard to the identification of employee's incapabilities before deploying them to some work, 15 (60%) of the respondents indicated that they do the analysis before deployment. 8 (32%) do not bother with this procedure while 2 (8%) were undecided on the issue. Those who do not assess the worker's incapabilities may allocate a job which is unsuitable to the worker's abilities. One

of the managers told of a case where an employee had to complain to the management because he was too short for the job he had been allocated. This was because the worker had to strain alot in performing the duty and this could lead to accidents because of fatigue.

Concerning the carrying out of researches so as to identify the problem areas of the companies, 18 (72%) indicated that they identify and keep records of the injuries and diseases of each section over time. However, 7 (28%) indicated that they do not carry out such researches - with one of the managers saying that it was not necessary to do so. The poor attitude of the one manager could contribute to hazards at the workplace.

4.3 IDENTIFICATION OF THE PROBLEM AREAS IN THE COMPANIES

Some parts of the job are more dangerous than others and this may differ from one type of industry to another. Some of the identified problem areas are given in Table 4.4

Table 4.4: Problem areas in the workplace

Problem area	Number of Responses					Total Responses
	Wood Work	Chem-ical	Food Proce ssing	Metal Works	Text-iles	
Where there is cutting equipment e.g saws & other moving parts of machines	2	1	2	-	3	8
Packaging	-	2	2	-	-	4
Forklifts	-	1	-	-	-	1
Milling process	-	-	1	-	-	1
Near electric devices	-	-	-	1	-	1
No identified area	1	3	1	4	1	10

From the results, most companies (40%) have not identified a problem area in their companies. For woodwork, food processing and textile industries, the problem area is where there is cutting equipment and other moving parts of machines. But for chemical industries, packaging activities is an accident-prone work while for metal work, electric gadgets poses a problem to the employees. Thus, the management should keep a close eye on the problem areas if they have to improve their safety records.

All the companies surveyed pointed out that they test every equipment before it is being used in the production process. The inspection of lifts, fire extinguishers and other equipment is done as specified in the Factories Act. Each equipment has its own time for inspection and this work has been given to contractors. For example, fire extinguishers are inspected after three months. The only problem that can arise is that some contractors may fail to regularly inspect as required. This however, is a rare occurence because most business-oriented firms fear losing their existing and potential customers due to their failure to abide by the contract. So the aspect of equipment inspection is of a good standard in Kenyan manufacturing firms.

4.3 FACTOR ANALYSIS

Section B of the questionnaire used this technique. Factor analysis seeks to resolve a large set of measured variables in terms of relatively few categories known as factors. Its major use is to reduce a large volume of data to a smaller number of factors without losing too much information (Alt, 1990).

The following are the statements in the questionnaire which required the respondent to rate in accordance to their contributions to the accidents and subsequent injuries that have occured in their firms over time.

Table 4.5: Statements in the questionnaire

1. Refusal/neglect by some workers to use protective devices
2. Some employees who make safety devices ineffective by removing, adjusting or disconnecting them
3. Too much work in the course of the day making the worker tired and less attentive to safety rules and procedures
4. Management and employee attitudes and beliefs to the effect that accidents just happen, they are part of life, nothing can be done to stop them etc.
5. Lack of clearly designated person(s) who make decisions on safety matters
6. Lack of adequate sources of materials/guidelines e.g. unavailability of such documents as the Factories Act and other safety guidelines
7. Failure by the management to enforce existing rules and regulations on safety
8. Faulty and obsolete machines
9. Alcoholism and use of other drugs by some employees
10. Lack of rewards for accident-free work and this discourages those who have been safety conscious
11. Lack of training on the job being carried out
12. Refusal/reluctance by some workers to be trained
13. Inappropriate training methods which are most suited to the western/industrialized countries
14. Accident proness, i.e. people who are always involved in accidents more than others
15. The nature of the work being carried out-that is, some parts of the job are more dangerous than others
16. Lack of top management support in terms of funds, provision of experts and listening to worker complaints
17. Failure to use machines where human error is most common
18. Poor selection/unfair employment practices making the factory have less or non-skilled people

19. Illiteracy of some workers making them unable to follow written safety rules

20. Lack of research on the problem areas in the company

21. Failure to fence or protect dangerous parts of the machines

22. Failure to regularly inspect fire extinguishers, lifts, and chains

23. Lack of/or inadequate protective clothing, goggles, footwear and masks

24. Poor design of the safety rules and procedures followed in the factory/premise because the factory managers and supervisors were not involved in drawing them

Since the computer package used (statgraphics) could carry only 18 variables, that is, 18 by 18 matrix, six factors had to be excluded based on their standard deviation. The ones with a high standard deviation is an indicator of inconsistent responses on the factor by the respondents and hence were left out.

Table 4.6: Summary statistics of the factors listed in the questionnaire

FACTOR/CAUSE	SAMPLE AVERAGE	STANDARD DEVIATION	VARIABLE NUMBER
1	1.80	0.656	1
2	2.48	1.194	2
3	3.40	1.155	3
4	4.12	1.054	4
5	3.36	1.254	5
6	3.68	1.145	6
7	3.64	1.381	
8	3.48	1.262	7
9	3.32	1.314	
10	3.84	1.028	8
11	3.48	1.229	9
12	3.80	1.155	10
13	3.72	0.936	11
14	3.64	0.907	12
15	2.52	1.262	13
16	4.04	0.978	14
17	3.68	0.988	15
18	3.44	1.387	
19	2.96	1.207	16
20	3.56	1.158	17
21	3.44	1.387	
22	3.64	1.288	
23	3.60	1.472	
24	3.84	1.028	18

Thus, factors 7, 9, 18, 21, 22 and 23 were omitted because of their high standard deviation. Most respondents agreed or strongly agreed with (based on the sample average) statements 1, 2, 15 and 19 as having contributed to industrial accidents in their companies. The statements were : Refusal/neglect by some workers to use protective devices; employees who make some safety devices ineffective by removing, adjusting or disconnecting them; the nature of the work being done-that is, some parts of the job being more dangerous than others and illiteracy of some workers which

makes them unable to follow written safety rules and procedures.

Statement 4 and 16 were however seen as non-contributory factors. These were the statements which held that negative employee and management attitudes to safety issues coupled with inadequate support from the top management could lead to poor safety records of firms.

The statements selected are indicated in Table 4.7

Table 4.7: Statements selected

Variable	Statement
1	Refusal/neglect in the use of protective devices
2	Employees who make safety devices ineffective
3	Too much work in the course of the day hence inattention to safety rules due to fatigue
4	Negative attitudes of both the employees and management in regard to safety
5	Absence of clearly designated person(s) to make decisions on safety matters
6	Inadequate sources of safety guidelines for example the Factories Act
7	Faulty and obsolete machines
8	Lack of rewards for safety-conscious employees
9	Lack of training on the job being done
10	Refusal/reluctance by some employees to be trained
11	Inappropriate training methods
12	Accident proness
13	The nature of the work being performed

14	Lack of top management support
15	Failure to use machines where human error is most common
16	Illiteracy of some workers
17	Lack of research to identify problem areas in the company
18	Poor design of safety rules and procedures

Table 4.8: FACTOR ANALYSIS OF VARIABLE (FACTOR) AND COMMUNALITY

VARIABLE	COMMUNALITY
	0.537
1	0.742
2	0.787
3	0.748
4	0.787
5	0.888
6	0.798
7	0.755
8	0.764
9	0.816
10	0.849
11	0.903
12	0.741
13	0.849
14	0.810
15	0.702
16	0.876
17	0.840
18	

The communality of a variable is the amount of variance it shares with all other variables and the maximum value it can reach is 1. Thus 90.3% of the variance of variable 12 is shared with the other 17 variables. Other variables which rank quite highly are variables 6 and 17. The higher the variable's communality, the more it is explained by the common factors rather than any unique

factor. Variable 1 (53.7%) ranks low in terms of its contribution to the factors.

FACTOR	EIGEN VALUE	% VARIABLE	CUMULATIVE %
1	5.784	32.1	32.1
2	2.172	12.1	44.2
3	1.966	10.9	55.1
4	1.650	9.2	64.3
5	1.557	8.6	72.9
6	1.065	5.9	78.9
7	0.909	5.0	83.9
8	0.741	4.1	88.0
9	0.565	3.1	91.2
10	0.518	2.9	94.0
11	0.337	1.9	95.9
12	0.255	1.4	97.3
13	0.202	1.1	98.4
14	0.109	0.6	99.1
15	0.071	0.4	99.5
16	0.045	0.2	99.7
17	0.033	0.2	99.9
18	0.019	0.1	100

Table 4.9: EIGEN VALUES

FACTOR	EIGEN VALUE	% VARIABLE	CUMULATIVE %
1	5.784	32.1	32.1
2	2.172	12.1	44.2
3	1.966	10.9	55.1
4	1.650	9.2	64.3
5	1.557	8.6	72.9
6	1.065	5.9	78.9
7	0.909	5.0	83.9
8	0.741	4.1	88.0
9	0.565	3.1	91.2
10	0.518	2.9	94.0
11	0.337	1.9	95.9
12	0.255	1.4	97.3
13	0.202	1.1	98.4
14	0.109	0.6	99.1
15	0.074	0.4	99.5
16	0.045	0.2	99.7
17	0.033	0.2	99.9
18	0.019	0.1	100

Eigen values refers to the sum of the squares of the loading of each principal component. It is also referred to as the latent root or extracted variance. The percentage variable represents the percent of variation for the 18 variables that is accounted for in the first factor. Thus factor 1 explains 32% variability, factor 2 explains 12.1% of the variability and so on.

Since industrial accidents result from a combination of

factors, a varimax rotation was deemed necessary. Alt (1990) argued that the determination of factors to be picked is a very controversial one. He however, suggested a rule that is very simple to apply and which he stated is popular among many factor analysts. The rule is to extract only those factors which have latent roots (Eigen values) greater than 1. Using this rule, six factors were chosen so as to be used as basic factors for the varimax rotation.

Table 4.10: INITIAL FACTOR MATRIX

VARIABLE	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6
1	0.162	-0.490	-3.080	0.024	-0.495	-0.157
2	0.326	-0.363	-0.411	0.406	-0.369	-0.184
3	0.339	-0.408	-0.526	-0.386	-0.047	0.278
4	0.467	-0.025	-0.508	0.276	0.424	0.128
5	0.771	0.115	-0.320	0.073	-0.268	0.017
6	0.848	0.189	0.015	-0.330	0.154	-0.002
7	0.797	0.099	0.129	-0.204	-0.229	-0.206
8	0.132	-0.144	0.425	0.641	0.332	0.119
9	0.742	0.297	-0.135	0.281	0.165	-0.002
10	0.320	-0.700	0.342	0.138	0.232	-0.186
11	0.546	-0.605	0.183	-0.381	-0.006	-0.078
12	0.124	-0.293	0.148	0.282	-0.267	0.691
13	0.474	-0.354	-0.501	0.200	0.313	0.047
14	0.760	0.461	0.180	-0.065	0.131	-0.072
15	0.388	-0.236	0.300	-0.503	0.465	0.213
16	0.535	-0.096	0.425	0.170	-0.051	-0.413
17	0.869	0.250	0.111	0.202	-0.020	0.059
18	0.625	0.242	0.176	-0.048	-0.497	0.332

Table 4.10 shows the correlation between the factors and the variables. From the table, variable 5, 6, 7, 9, 14 and 17 correlate highly or load heavily on the first factor. Variable 14

correlate moderately with factor 2 while variable 16 correlate with factor 3. Variable 8 heavily loads on factor 4; variable 15 correlates with factor 5 though not heavily while variable 12 heavily loads on the sixth factor. The initial factor matrix is then subjected to the varimax rotation procedure. The rotated matrix gives the revised initial factor matrix. It attempts to simplify the columns of the factor matrix by making all values close to either 0 or 1. This matrix represents the terminal solution of the factors. These loadings are necessary since they show in a more clear way the variables that go together hence make interpretation easier (Gatune, 1993).

Table 4.11: FINAL VARIMAX ROTATED FACTOR MATRIX

VAR	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6
1	-6.86-4	0.19	-0.09	**0.69**	-0.54	0.11
2	0.11	-0.13	0.40	**0.74**	0.03	0.02
3	0.04	0.39	0.47	0.21	-0.59	0.12
4	0.23	-9.74-3	**0.83**	-0.07	0.05	-0.05
5	**0.71**	-0.05	0.36	0.33	-0.19	0.06
6	**0.80**	0.40	0.20	-0.14	-0.14	-0.08
7	**0.80**	0.28	-0.05	0.24	-0.06	-0.08
8	4.55-3	0.03	0.18	-0.08	**0.79**	0.30
9	**0.71**	-0.08	0.46	-0.04	0.19	-0.02
10	-0.05	**0.66**	0.15	0.32	0.50	0.04
11	0.23	**0.82**	0.05	0.33	-0.05	0.05
12	5.92-3	0.11	-0.06	0.10	0.19	**0.92**
13	0.11	0.21	**0.81**	0.19	0.02	-0.05
14	**0.87**	0.10	0.07	-0.22	0.12	-0.09
15	0.19	**0.79**	0.08	-0.37	-0.04	0.09
16	**0.50**	0.28	-0.15	0.29	0.50	-0.12
17	**0.86**	0.05	0.24	0.04	0.20	0.16
18	**0.73**	-0.03	-0.13	0.15	-0.18	0.48

In the final varimax rotated factor matrix (Table 4.11), variable 5(q.5), variable 6(q.6), variable 7(q.8), variable 9(q.11), variable 14(q.16), variable 16(q.19), variable 17(q.20) and variable 18(q.24) load heavily on factor 1.

Variable 10(q.12), variable 11(q.13), and variable 15(q.17)

load heavily on factor 2. Variable 4(q.4) and variable 13(q.15) load heavily on factor 3. Factor 4 is loaded on heavily by variables 1(q.1) and variable 2(q.2) while variable 8(q.10) load heavily on factor 5. For factor 6, only variable 12(q.14) heavily loads it.

Since the loading of a variable on a factor represents the correlation between the variable and the factor concerned, then the variables of interest are those with high loadings. Thus, the ones indicated in bold type in Table 4.11 are the ones which are considered to fall in this category.

The implications of the contents of Table 4.11 is given below. Each factor will be made up of the items indicated. Thus:

4.4 IDENTIFICATION OF FACTORS

FACTOR 1

- Lack of clearly designated person(s) who make decisions on safety
- Lack of adequate sources of materials/guidelines e.g unavailability of such documents as the Factories Act and other safety guidelines
- Faulty and obsolete machines
- Lack of training on the job being carried out
- Lack of top management support in terms of funds, provision of experts and listening to the worker complaints
- Illiteracy of some workers making them unable to follow written safety rules

- Lack of research so as to identify problem areas in the company
- Poor design of the safety rules and procedures followed in the factory/premises because the factory managers and supervisors were not involved in drawing them.

FACTOR 2

- Inappropriate training methods which are most suited to the western/industrialised countries
- Refusal/reluctance by some workers to be trained
- Failure to use machines where human error is most common

FACTOR 3

- Management and employee attitude and beliefs to the effect that accidents just happen, they are part of life, nothing can be done to stop them etc.
- The nature of the work being carried out - that is, some parts of the job are more dangerous than others

FACTOR 4

- Refusal/neglect by some employees to use protective devices
- Some employees who make safety devices ineffective by removing, adjusting or disconnecting them

FACTOR 5

- Lack of rewards for accident-free work and this

discourage those who have been safety-conscious

FACTOR 6

- Accident proness, that is, people who are always involved in accidents more than others

The six factors, each with its components were identified by the factor analysis technique. According to this study, these factors hold regardless of the sector of the manufacturing industry, that is, whether chemical, consumer, metal, wood and paper or textile industries.

In order to achieve the second objective of the study, that is, to make international comparisons, there was need to further identify the factor among the six that is most important. This was done by use of the mean scores.

Table 4.12 : Mean Scores of Factors

	SAMPLE MEANS					
QUESTION NUMBER	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6
1				1.8		
2				2.48		
4			4.12			
5	3.36		2.52			
6	3.68					
8	3.48					
10					3.84	
11	3.48					
12		3.8				
13		3.72				
14						3.64
15						
16	4.04					
17		3.68				
19	2.96					
20	3.56					
24	3.84					
Total Sample Mean	28.4	11.2	6.64	4.28	3.84	3.64
Mean Score	3.55	3.73	3.32	2.14	3.84	3.64

From Table 4.12 factor 4 emerges to be the most important compared to the other five. A mean score of less than 3 implies that the respondents agreed or strongly agreed with the statement indicated in the questionnaire. Thus, it can be concluded that amidst the many factors that contribute to industrial accidents and injuries in Kenya, the leading problems are the neglect/refusal by some workers to use protective devices and this leads to increased frequency and severity of the injuries. The other factor relates to some employees who make safety devices ineffective by removing, adjusting or disconnecting them.

Although some of the other factors will be used for comparison, the major focus will be on these two causes.

4.5 A COMPARISON OF FACTORS CONTRIBUTING TO INDUSTRIAL ACCIDENTS (KENYA VS. OTHER COUNTRIES)

(a) Neglect/Refusal by some workers to use protective devices

Due to few known researches that have been done on occupational health and safety issues in Kenya and elsewhere, the comparison will be limited to a few countries.

4.5.1 TANZANIA

Mjema and Spoerri studies of 1984/85 and 1987/88 in Dar es Salaam found out that the employees were reluctant in using safety devices or even did not use them at all. They attributed this problem to failure of the management to train the workers on their use or because the devices themselves were too cumbersome and

uncomfortable to wear. This compares with the case in Kenya as identified by this study. The researcher also had an experience of the problem when he was visiting the industries in Kenya. In one of the factories, an ear plug was given to him because the area was too noisy. But this device proved to be very cumbersome because it greatly interfered with the hearing system. Occasionally he could unintentionally remove the plug and hence exposure to excess noise.

4.5.2 UNITED STATES OF AMERICA

Strauss and Sayles (1980) gave an example of the employee's refusal to use the protective devices. They reported that in a certain plant, the safety man had great difficulties persuading young women to wear safety nets on their heads."They are too ugly", they complained. But when he provided more stylishly designed caps and gave each woman her choice of colour, the problem disappeared. The same thing happened with safety shoes, once the men were allowed to choose from among different models. When compared to Kenya, Sakari (1980) talking about Kenya's employees pointed out, "Most of our workers believe that hard work means not caring for health and safety and thus would like to show themselves as hard working". Such beliefs leads the person to ignore the protective attires in an attempt to achieve the most important thing - hard work and good results. One of the managers of the factories visited during the data collection stage of this study told of an experience that they had in their company. He pointed out that due

to the nature of the work the employees were doing (handling chemical substances), milk was needed so as to neutralise the possible side effects of the chemicals. Thus, they used to provide a packet of milk to each worker at the place of work which was meant to be consumed there. But to the management's surprise, the employees used to keep this milk and take it home at the end of the working hours. Efforts to discourage this behaviour were not successful and so the provision of milk had to be withdrawn in favour of tea since it had failed to serve the purpose intended.

4.5.3 JAPAN

In Japan, the employee's activites were also found to be a problem. Aoyama (1982) found out that the workers had a belief to the effect that hazards were an inherent part of the work, and that if one wanted to make a living, some risk of diseases and/or accidents were inevitable. Further, they tended to believe that accidents occured as a result of carelessness on the part of the worker. Thus, even without putting on a safety device, all could be well as long as the person was not careless. This compares with the case among some Kenyan workers.

4.5.4 CANADA

Clarke (1982) referring to Canada stated : "Little information is available on the causal relationship between certain substances and work processes and health hazards". This implies that some workers fail to use the protective gears because of the lack of

adequate knowledge on the dangers of the substances that they are handling. This exposes the employee to harsh chemicals and other industrial hazards.

4.5.5 FRANCE

Guy (1983) pointed out that safety is not an individual, easily isolated question. On the contrary, it demands that considerations be given to a whole range of different factors. Among the different factors is the manpower (employee) characteristics. Therefore, if the employees have some reluctance in putting on the protective clothing, then this will be confirming the case of some employees in Kenya.

4.5.6 ZAMBIA

Zambia's case on the neglect to use safety gears by the employees can be observed in the example given, Thus: A timberman approaching a stop edge passed through the stop barricade but neglected to secure himself with a safety rope, contrary to the law. The visibility at the stop edge was considerably impaired by the presence of drilling machine exhaust fumes and the timberman, having misjudged his step, fell (Blunt and Popoola, 1985).

(b) Concerning the second component, that is, employees who make safety devices inoperative by removing, adjusting, or disconnecting them, there are a few cases of such in other countries.

Dessler (1991) argued that people tend to cause accidents by making safety devices inoperative. However, not many researches have been done on this aspect. Kenya therefore, appears to be more affected by this problem.

The design of the safety rules and procedures to be followed in the factories/workshops will determine the extent to which they will be adhered to. The study has shown that the design of some procedures contributes to industrial accidents especially when it comes to their enforcement. This compares with that of other countries for example, USSR and Germany. Semenov (1983) referring to USSR stated : "Despite a steady drop in the accident rates, accidents still happen particularly in mining, metal working, chemicals and transport undertakings with approximately 70 - 80 per cent of the accidents being attributable to infringement of the industrial safety regulations and standards". In Kenya, The Directorate of Occupational Health and Safety Services cannot be able to implement the legislations already in place to the letter because of the constraints already mentioned.

In Germany, Horst (1987) reporting about industrial inspections carried out in Germany from 1976 pointed out that accidents are not frequently caused by technical malfunctions or the unsafe behaviour of individuals but rather by the inadequacy or lack of monitoring of safety measures for a given workplace or process. He recommended that the management should do everything within their power to enforce existing rules and regulations so as to ensure adequate protection of their workers.

CHAPTER 5

SUMMARY AND CONCLUSIONS

5.1 SUMMARY

The two objectives of the study were to find out the factors that contribute to industrial accidents in Kenya and isolate the predominant ones. After that, the isolated factors were compared with those identified in other countries. There was need to isolate a few factors because most companies are operating under tight financial budgets which makes it difficult for them to channel much of their resources to safety and health issues. This necessitates the identification of the most recurrent factor(s) so that more effort can be concentrated on them. Among some of the predominant possible causes relates to the training activities. It was found out that most firms do not have a specific time schedule for training activities. This absence may lead to the skills of some employees being obsolete especially with the introduction of new technologies.

Contrary to the common belief that accidents occur most at night for companies that have night shifts, the research revealed no specific time associated with accidents and subsequent injuries. Also, both literate and illiterate employees were found to fall victim to industrial accidents. The problem area for all types of industries was found to be where there are cutting equipment and other moving parts of machines.

Using factor analysis technique, six factors were identified which should be addressed by Kenyan manufacturing firms if they are to minimise the losses that result from occupational hazards. Further analysis showed that the neglect/reluctance by the workers to use protective devices have led to many and severe injuries in the sector. In addition, some employees who make safety devices ineffective through adjustments, removal and disconnection of some gadgets was found to be rampant in Kenya.

When the findings were compared with those of other countries Kenya was found to be similar to a few others where researches on employee health and safety have been done. Similarities were found to exist in employee attitudes and beliefs in the use of safety devices , enforcement of existing legal rules and regulations and in training aspects of employees. A more comprehensive comparison was hampered by the lack of literature on researches in this field in Kenya and other countries.

5.2 CONCLUSIONS AND RECOMMENDATIONS

The study has given a hint on the problems faced in attempts to make the working environment safe. It is important to note that a safe and health working environment is a major contributory factor to the effectiveness of the employees. Thus, organisations that keep the workplace free from recognized hazards and adhere to health and safety standards experiences lower absenteeism and greater efficiency from their workers. Although the study isolated

the neglect/refusal by the employees to use the protective devices as a point of concern, it is important to note that there is no single contributory factor to industrial accidents. Instead, many factors combine to lead to the problem. This implies that the nature, extent and effectiveness of all safety and health programmes will depend on a number of variables including the management's attitudes, location and size of the organisation, the type of industry, the kind of work, the make-up of the workforce, the work area conditions and the impact of legislations. Further, conflicts usually arise between the needs of the employer to push for increased output and efficiency and the needs of the employee to be protected from the hazards of the workplace. Thus, there is need to harmonize these issues so as to create a safer working environment.

Concerning the prevention of accidents, there is no one sure-fire approach to it. Hence, safety and health demand the support of every level of management in an organization. Any attempts to departmentalize so as to operate autonomously will inevitably lead to confusion and inefficiency. A collective approach is desirable, especially in the current working environment which is characterised by dynamism in terms of technology and other aspects of the overall organizations.

5.3 LIMITATIONS OF THE STUDY

Since the target respondents were the factory managers, supervisors and workshop managers, some tended to support the

management in their responses and hence may not have indicated all the negative aspects of the management which may contribute to industrial accidents. Majority of the respondents however, appeared sincere in their responses as indicated by their willingness to tour the researcher in their factories so as to enable him assess the situation for himself.

Another limitation regards the size of the sample. The contents of the study could have been richer if a larger number of respondents were involved. The sample used in the analysis was dictated by non-cooperation of some industries especially those dealing with woodwork and textiles. The sample used for these two sectors was not quite representative.

5.4 SUGGESTIONS FOR FURTHER RESEARCH

In order to cross check the factors identified in this study, a replica can be done but using the low level employees as the target respondents. Where the workers' representatives can be identified, they can offer useful information for the study.

Similar study could be conducted but instead of concentrating on the manufacturing sector only, the general industry can be surveyed so as to offer wider explanations of the problems encountered by the companies in attempts to make their working environment hazard-free.

APPENDIX

University of Nairobi
Faculty of Commerce
P.O. Box 30197
NAIROBI

Dear Respondent,

I am a postgraduate student pursuing a Master of Business and Administration (MBA) degree at the Faculty of Commerce - University of Nairobi. I am currently conducting a research with a view to finding out the factors that contribute to industrial accidents among the manufacturing firms in Kenya.

Your firm has been selected to form part of this study. I therefore, request for your assistance by filling the attached questionnaire to the best of your knowledge. If you do not deal with the subject directly, you can pass it to the relevant person. The completed questionnaire will be collected from your office. The information provided will be used purely for academic purposes and will be treated in strict confidence.

Any additional information you might feel is necessary for this study is welcome and can be written on the backside of the questionnaire. A copy of the research report will be made available to you upon request.

Your cooperation in this regard will be highly appreciated.

Thank you.

Yours faithfully,

Luke B. Kenei

MBA II Student

Mr.S.N.M. Nzuve

Supervisor,
Snr. Lecturer,
Dept. Of Bus. Admin.

QUESTIONNAIRE: TO BE COMPLETED BY THE FACTORY MANAGER/WORKSHOP MANAGER/SUPERVISOR
(Tick the appropriate response)

SECTION A

1. Name of the firm (optional).....

2. Number of years the firm has been in operation.

   (a) Less than 10 years [ ]

   (b) 11 - 20 years [ ]

   (c) Over 20 years [ ]

3. From the list of manufacturing industries given below, where would you place your company?

   (a) Consumer products [ ]

   (b) Textiles [ ]

   (c) Paper and other wood products [ ]

   (d) Chemical Manufacture [ ]

   (e) Metal Products [ ]

   (f) Other (specify).....

4. Over the last two years, what is the approximate number of people who suffered injuries in the factory/workshop or other premises within the company?.

   (a) None [ ]

   (b) Between 1 and 10 [ ]

   (c) Over 10 but less than 50 [ ]

   (d) Over 50 [ ]

5. Of the injuries sustained by the employees, which time of the day do these injuries occur most?

(a) Morning hours [ ]

(b) Afternoon hours [ ]

(c) Night shifts [ ]

(d) No specific time [ ]

(e) Any other time (specify).....

6. Some units/areas in manufacturing firms experience more injuries/diseases than others. Which area(s) in your own view have been a problem area in your factory/workshop?

(a) Stairs [ ]

(b) Where there is toxic chemicals [ ]

(c) Where there is alot of noise [ ]

(d) Around forklifts [ ]

(e) Packaging area [ ]

(f) Near electric devices [ ]

(g) Where there is cutting equipment e.g saws [ ]

(h) Where there are falling materials [ ]

(i) Where there are inflammable gases [ ]

(j) Where there is alot of dust and fumes [ ]

(k) Milling process [ ]

(l) Other area (specify).....

7. Does the company have copies of such guidelines as the Kenya Factories Act or other safety guideline relevant to your factory/workshop?

(a) Yes [ ]

(b) No [ ]

8. In your own view, do these Acts (e.g. Factories Act) give adequate guidance to the present day manufacturing firms?

Yes/No.

If no, which section(s) provide inadequate guidance?

(Please explain)

.....

.....

9. Do you provide protective devices such as goggles, gumboots, gloves and masks to your employees?

(a) Yes [ ]

(b) No [ ]

10. Some workers take alcohol and other drugs whether in the place of work or elsewhere. Do those who take excessive alcohol or other drugs tend to receive more injuries or cause more accidents than those who do not in your company?

(a) Yes [ ]

(b) No [ ]

11. Looking at the past injuries in your company, which level of education has suffered most?

(a) Illiterate people [ ]

(b) Literate people [ ]

(c) Both of them [ ]

(d) Some specific individuals regardless of their education level [ ]

(d) Other (Specify).....

12. Regarding the equipment used, do you test them first before using them in the production process?

(a) Yes [ ]

(b) No [ ]

13. In your training programmes, which category of people do you concentrate most?

(a) Top level managers [ ]

(b) Supervisors [ ]

(c) Those operating the machines [ ]

(d) Only those who are new in the job [ ]

(e) Other (specify).....

14. How often do you carry out training activities?

(a) On daily basis [ ]

(b) On monthly basis [ ]

(c) On yearly basis [ ]

(d) No specific time [ ]

(e) Other (Specify).....

15. Who carries out the training sessions in the company?

(a) Outside experts (consultants) [ ]

(b) Supervisors [ ]

(c) Factory Manager [ ]

(d) Personnel Manager [ ]

(e) Workshop Manager [ ]

(f) Other (Specify).....

16. What methods/techniques do you use when training the workers?

(a) Lecture method [ ]

(b) Discussion [ ]

(c) Films [ ]

(d) Posters [ ]

(e) Role Playing/demonstration [ ]

(f) Other (Specify).....

17. What criteria do you use to appoint supervisors?

(a) Should have worked in that department [ ]

(b) No specified criteria [ ]

(c) One who has been specifically trained in that area of supervision [ ]

(d) Other criteria (Specify).....

18. How do you select the workers to perform duties in the factory/workshop?

(a) Based on their experience [ ]

(b) Allocate different jobs on different days [ ]

(c) Based on the choice of the employee [ ]

(d) Any other criteria (Specify).....

19. Is there a list of features showing the employee's incapabilities before deploying them to some work?

(a) Yes [ ]

(b) No [ ]

20. Do you carry out researches in the company so as to identify and keep records of the injuries/diseases of each section over time?

(a) Yes [ ]

(b) No [ ]

21. How often do you service/inspect lifts, cranes, fire extinguishers, fencing materials and floors?

(a) Weekly basis [ ]

(b) After three months [ ]

(c) After six months [ ]

(d) After one year [ ]

(e) Other (Specify).....

SECTION B

Below is a list of known causes of industrial accidents in manufacturing firms. How would you rate each cause in view of the accidents and injuries that have occurred in your company over time? (Please tick the response that is most appropriate).

Factor/Cause	Strongly Agree	Agree	Neutral	Dis-agree	Strongly Disagree
Most accidents and injuries occurred because of.....	1	2	3	4	5
1. Refusal/neglect by some workers to use protective devices	[ ]	[ ]	[ ]	[ ]	[ ]
2. Some employees who make safety devices ineffective by removing, adjusting or disconnecting them	[ ]	[ ]	[ ]	[ ]	[ ]
3. Too much work in the course of the day making the worker tired and less attentive to safety rules and procedures	[ ]	[ ]	[ ]	[ ]	[ ]
4. Management and employee attitudes and beliefs to the effect that accidents just happen, they are part of life, nothing can be done to stop them etc.	[ ]	[ ]	[ ]	[ ]	[ ]
5. Lack of clearly designated person(s) who make decisions on safety matters	[ ]	[ ]	[ ]	[ ]	[ ]

6.	Lack of adequate source of materials/guidelines e.g. unavailability of such documents as the Factories Act and other safety guidelines	[ ]	[ ]	[ ]	[ ]	[ ]
7.	Failure by the management to enforce existing rules and regulations on safety	[ ]	[ ]	[ ]	[ ]	[ ]
8.	Faulty and obsolete machines	[ ]	[ ]	[ ]	[ ]	[ ]
9.	Alcoholism and use of other drugs by some employees	[ ]	[ ]	[ ]	[ ]	[ ]
10.	Lack of rewards for accident-free work and this discourages those who have been safety-conscious	[ ]	[ ]	[ ]	[ ]	[ ]
11.	Lack of training on the job being carried out	[ ]	[ ]	[ ]	[ ]	[ ]
12.	Refusal/reluctance by some workers to be trained	[ ]	[ ]	[ ]	[ ]	[ ]
13.	Inappropriate training methods because they are most suited to the western/industrialized countries	[ ]	[ ]	[ ]	[ ]	[ ]
14.	Accident proness, i.e. people who are always involved in accidents more than others	[ ]	[ ]	[ ]	[ ]	[ ]
15.	The nature of the work being carried out-that is, some parts of the job are more dangerous than others	[ ]	[ ]	[ ]	[ ]	[ ]
16.	Lack of top management support in terms of funds, provision of experts and listening to worker complaints	[ ]	[ ]	[ ]	[ ]	[ ]

17.	Failure to use machines where human error is most common	[ ]	[ ]	[ ]	[ ]	[ ]
18.	Poor selection/unfair employment practices making the factory have less or non- skilled people	[ ]	[ ]	[ ]	[ ]	[ ]
19.	Illiteracy of some workers making them unable to follow written safety rules	[ ]	[ ]	[ ]	[ ]	[ ]
20.	Lack of research so as to identify the problem areas in the company	[ ]	[ ]	[ ]	[ ]	[ ]
21.	Failure to fence or protect dangerous parts of the machines	[ ]	[ ]	[ ]	[ ]	[ ]
22.	Failure to regularly inspect fire extinguishers, lifts, and chains	[ ]	[ ]	[ ]	[ ]	[ ]
23.	Lack of/or inadequate protective clothing, goggles, footwear and masks	[ ]	[ ]	[ ]	[ ]	[ ]
24.	Poor design of the safety rules and procedures followed in the factory/workshop because the factory managers and supervisors were not involved in drawing them	[ ]	[ ]	[ ]	[ ]	[ ]

THANK YOU FOR YOUR CO-OPERATION

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