

UNIVERSITY OF KWAZULU-NATAL

**PROJECT ZERO**

By

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A dissertation submitted in partial fulfillment of the requirements for the degree of

**MASTER OF BUSINESS ADMINISTRATION**

In the Graduate School of Business

Supervisor: Mr. Maxwell Phiri

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**CONFIDENTIALITY CLAUSE**

Date: 22 February 2007

**TO WHOM IT MAY CONCERN**

The Research Study carried out in the Report, forms part of a strategic transformation of Sappi Kraft (Pty) Ltd for the recognition of Health and Safety of the employees. The Dissertation covers part of operational strategy that the company intends to follow.

It is thus appreciated that the contents remain confidential and not be circulated for a period of five years.

Sincerely

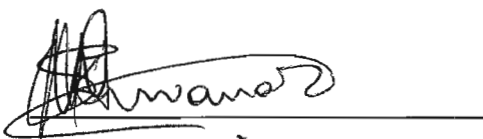
S.W Mkhwanazi

A handwritten signature in black ink, appearing to be 'S.W Mkhwanazi', written over a horizontal line.

**DECLARATION**

I hereby declare that the information gathered and work carried for the research, is solely my effort in fulfilling the aims, goals and objectives from the identified problem. The guidance was provided under supervision from my Colleagues and University of KwaZulu-Natal Supervisor, for the successful completion of the Masters qualification.

Name: Sabelo W. Mkhwanazi and 202 526 931

Signed: 

116073

Date: 22 February 2007

## ACKNOWLEDGEMENTS

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- My Family (My Parents, My Wife, Brothers, Sisters and My Children)
- Tricia Ramsunkar from Sappi Kraft (Pty) Ltd, SHEQ Department administrator.
- My Editor, Pr. Eng. Jeanette Sullivan
- Friends and Colleagues for encouragement
- My employer and respondents for making the research possible.

## ABSTRACT

This research on Sappi Kraft (Pty) Ltd, focuses on the Health and Safety Programme that is in implementation. The programme is expected to entrench the Health and Safety Culture by encouraging acceptable Behaviour Based Safety, continuous staff Training, encouraging interactive communication and housekeeping to be adopted by all employees.

The documented study is based on the participation of the staff and management influence to ensure organisation behavioural changes to Safety are challenged. To verify the impact of the analysis, a questionnaire was distributed to the shop floor staff. Interview sessions were conducted on Sappi Management members. Analytical tools such as SPSS and Excel spreadsheet were used to demonstrate the research trends. The analysis findings are detailed in Chapter 5.

The study considers the Health and Safety of employees as crucial. In this instance, the secondary recorded statistical data serve as a trigger to further research to the cause of increasing Lost Time Injuries and a proportional increase in serious injuries sustained. This record became a trigger for Sappi Management to implement initiatives to reduce the number of serious injuries being sustained. Such initiatives are implemented to avoid high loss control, continual losses of life and Safety Disasters. The disasters that occurred at Foskor, formerly known as Indian Ocean Fertilizers and Chrome Chemicals in Merebank, are still fresh in industrial news.

Sappi Kraft management's commitment to the programme emphasizes the cultural change and acknowledgement of the conditions under which it operates, for the manufacturing of different paper grades. Management takes Safety objectives seriously with the understanding that attributes such as improved health; safety and production performance would be sustained. It must be noted that previous strategies and measures have been implemented to improve safety.

The major challenges for Sappi Kraft to the recent strategy are to improve safety through staff participation in continuous risk assessment training, behaviour based safety and interactive communication. The research study period is limited to report on the full objectives to be fulfilled, but the progress towards success is documented.

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## TERMS, DEFINITIONS, AND ABBREVIATIONS

<i>TERMS</i>	<i>DEFINITION</i>
<i>Brand</i>	is a name, term, sign, symbol and design intended to identify the goods and services of a seller, differentiating from those of competitors (Keller :2003).
<i>Health</i>	Means free from illness or injury attributed to occupational causes
<i>Health and Safety Standard</i>	means any article or part thereof manufactured, provided or installed in the interest of health and safety.
<i>Incident</i>	means an incident as contemplated in section 24(1);(1) of the OHS Act 1993. Simply defined as an even that give rise to a potential accident.
<i>Leadership Role</i>	is a crucial role that demonstrates the management function, as the leader in the planned activities, Germain <i>et al</i> 1998.
<i>Machinery</i>	means any article or combination of articles assembled arranged or connected and which is used or intended for converting any form of energy to performing work (OSH Act:1993).
<i>Management Responsibility</i>	is the term used to define cooperate activities that the management of a company has and performance in those activities (OHSAS 18001:1993)
<i>Marketing</i>	is a process of creating, promoting and delivering goods and services to consumers and businesses
<i>Occupational Health</i>	Includes occupational hygiene, medicine and biological monitoring.
<i>Organisational Development</i>	is a long term effort, led and supported by top management, to improve an organisation's vision, empowerment, learning and problem solving (Mullins:2005 ).
<i>Organizational Behaviour</i>	Misselhorn (2005) defined the term as the processes that individuals or group within an organization engage itself to influence productivity.
<i>Reputation</i>	is an impression created by a customer or seller of goods and services in a special market it render.

<i>Safety</i>	means free from danger of any cause or harm (ISO/IEC Guide 2)
<i>Strategy</i>	is the management game plan for growing business, staking out a market position, attracting and pleasing customers, competing successfully, conducting operations, and achieving targeted objectives (Thompson Jr <i>et al.</i> , 2005)
<i>Total Quality Management</i>	an approach of improving the quality of all the processes that lead to a final product or service (Oakland : 1995)
<i>Values</i>	are guiding principles to the expected behaviour
<i>Worker's Compensation</i>	is a legally required benefit that provides medical care, income continuation, and rehabilitation expenses for people who sustain job-related injuries or sickness (McElroy:1953).

<i>ABBREVIATIONS</i>	<i>MEANING</i>
<i>BBS</i>	Behaviour Based Safety
<i>KISS</i>	Kraft Incentive Safety Scheme
<i>MDT</i>	Management Development Team
<i>OHSAS</i>	Occupational Health and Safety Assessment Series
<i>TPM</i>	Total Productive Manufacturing

# CHAPTER ONE

## Introduction to Sappi Kraft Safety Case Study

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### 1.1 Introduction

Sappi Kraft has experienced a variety of challenges such as changes in the business environment and has had to keep abreast of technological advantages, in order to sustain competitive advantage over their counterparts. Whilst exploring these challenges, safety challenges were experienced and became the foremost challenge to be met.

Safety of the employees became a high priority to the organization. With an increasing frequency of injuries leading to serious injuries, loss and fatalities, this challenge became crucial, and the management of Sappi had to discuss practical measures to resolve the problem. Pre-emptive resolution led to the implementation of strategic and proactive measures to reduce the safety risks, which were resulting in workplace injuries.

For the purpose of the research, a concise problem statement will be made and possible measures have to be evaluated to resolve or demonstrate the extent to which the problem has been resolved.

### 1.2 Background

The topic of study forms part of the macro environment factors, which organizations are part of, as operational agreements with the Government of the day. The implementation is subject to social responsibility and care for the employees, and community it serves. Sappi being an International organization, it is then exposed to both domestic and global regulatory standards, which must be complied with.

Global injury rate studies show that statistics on loss of human life from workplace injuries in Asian countries is minimal. The workplace injuries in United States, United Kingdom and African countries have been nominally high. This difference demonstrates the quality of work standards that certain countries have accepted and maintained (internet 1).

The paper manufacturing industry is chosen as the basis of the study. The industry has intertwined manufacturing activities; where high volume machinery is used with a high level of manpower, so management responsibility is crucial. The age of the Mill demonstrates that the company has undergone different challenges influencing changes during operations. This threatens the next lifespan of the mill and changes to be implemented to sustain its operations.

From 2002 to 2005, the mill experienced its highest lost time because of injuries that employees experience within the workplace. These were serious injuries and fatalities. The working hours of employees observed have often been abnormal, and out of accepted working hours. Increasing working hours were demonstrated by the following:

- Observed overtime trends being paid, as salaries monthly or wages.
- Accumulated leave days per employee.
- Increasing rate of disciplinary cases such as alcohol consumption, suspensions and warnings.

### **1.3 Motivation for the Study**

The study is beneficial to both the employer and employees of Sappi. This would help to ensure that the proactive safety measures implemented within the organization are monitored to reduce workplace injuries, illnesses, and fatalities being experienced. These unsafe incidences created a negative impact on the employees' morale and lack of trust that the employer will fulfil its social responsibilities. The unsafe incidences also incurred direct and indirect costs to the company in terms of medical treatment, workmen's compensation and indirect cost because of Lost Time Injuries.



The expected outcome of this study is to eliminate unsafe acts and risk areas by mere introduction of Behaviour Based Safety, improved communication, skills training and safety awareness programmes. Participative management style should assure proper leadership and effective implementation of programme. The effectiveness of these measures is crucial in improving the employee performance, productivity and management control within an organization. The improvement of organisational performance, brand, safety and leadership remains a continual challenge to management.

The study would be beneficial to the researcher, in capacity at Sappi Kraft, in understanding an approach towards safety aspects involved from the engineering speciality to the organisational management point of view. Exposure to the risk assessments in different areas and overall organizational based performance contributed to a wide spectrum.

#### **1.4 Focus of the Study**

The study will focus on Safety measures implemented within Sappi, to ensure that incidents resulting in injuries are reduced. The technological change, safe engineering and proper maintenance form dimensions of the discipline. The evaluation of the programme will be in the form of a questionnaire analysis of the four critical factors associated with safety awareness. These factors are;

- Human and organisational (BBS) Behaviour,
- Training,
- Communication and safety awareness.

The status of the strategic programme will also be measured by the management interview questionnaire data analysis, which will evaluate commitment in the strategy.

#### **1.5 Statement of the Problem**

The safety of employees has been drawn to the attention of the organization's management, the community and potential customers. The severity has posed extreme

increasing risk of frequent injuries. This has increased the indirect costs, resulting in an increasing lost time and overtime. This effect is also demonstrated by a drop in morale, which has an influence on the performance of employees and subsequently on organizational performance. The effect on performance was also highlighted when production targets were not achieved and are not improving. This means the organization is operating at a loss, not meeting customer deliveries on time and losing competitiveness.

The purpose of study is to determine whether injuries increase or decrease after implementation of proactive measures, and monitor production targets as a performance measure. The effectiveness of methods or measures implemented will be evaluated using secondary collected data, and primary data from questionnaires and scheduled interviews.

The study will assess the awareness and knowledge of the following key factors; communication, organizational behaviour; training and safety. Analysis on the shortfalls will form part of the recommendations for the implemented measures.

It is thus crucial that the injury incidents must decrease to increase employee morale and improve organizational performance.

## **1.6 Objectives**

To reduce the number of factory-related injuries, by implementing proactive measures to improve leadership, behaviour and assess Occupational Health and Safety awareness within Sappi as documented in prescribed OHS ACT 18001 policy manuals (1993).

To demonstrate managements' commitment and leadership to achieve zero lost time injuries, as a long-term objective.

Further Research to answer critical questions;

- i) What impact do factors such as Behaviour, Training, Safety and Communications have on the success of the study?
- ii) How is Safety related to Performance?

## 1.7 Hypotheses

The awareness strategy towards employee Behaviour, training, Communication and Safety can reduce the number of Lost Time incidents occurring within the mill.

Null Hypothesis,  $H_0; \mu \leq 0$

Alternative Hypothesis,  $H_1; \mu \geq 0$

The above statistical information,  $H_0$  equation, refers to the probability that the number of Lost Time Incidents can be less or equal to zero.  $H_1$  equation refers to the probability that the number of Lost Time Incidents can be greater or equal to Zero. The two scenarios provide a clear understanding of and the expected objectives to be achieved by the research.

The conclusion in Chapter 6 will provide the answer to the above scenarios.

## 1.8 Research Design

The empirical research will take the psychological approach to influence participants, who are respondents, to display their knowledge of the Health and Safety issues. These issues have been documented as a policy as per OSHAS 18001 of 1993. This approach will be in the form of a rated questionnaire, which respondents will answer according to their knowledge. The respondent to the questionnaire will not be targeted, as this issue concerns everyone within the organization premises. Though not target specific, it is important that most of employees in different grades or categories of the organization participate in the questionnaire response. This will ensure a stratified random sampling, as representative of all employment grades. The management level employees have been isolated from the questionnaire, but allocated limited personal interview rated questionnaire. Appointments will be scheduled to accommodate most managers to participate in the research.

Middle management and shop floor questionnaire will be distributed using electronic mail and hard copy distribution. This will ensure full scope of data responses.

### **1.8.1 Questionnaire Data Phases**

The questionnaire response will be returned to the sender's electronic mail. Hard copies will be collected or submitted to my work office. Hard copies data will be entered electronically and copy kept safely. Electronic copies data will also be entered and a copy will be saved in the storage folder.

If most of the data has been collected, data will be formatted and used on excel for analysis. Further analysis will be carried out using a statistical SPSS tool, for significance, and verification of findings.

Full analysis of data will be presented by means of tables and graphs. The interpretation of the results will be based on the findings presented by tables and graphs.

### **1.8.2 Interview Data Phases**

Top management interviews will be conducted. This schedule has been widespread within a month to which interviews have to take place. The appointment notification via an electronic mail will be sent out to Top Management participants. The appointment notifications provide a proposed date and the participant can change date and time to accommodate participation of the member.

Appointments will be accompanied by a covering letter informing participants of the subject matter and objectives of their participation in the study. Flexibility to the schedules will be noted because of short from pre-planned calendar commitments.

Importantly, the session will be carried out at a convenient place by the researcher.

## **1.9 Limitations of the Study**

Contributions, findings and conclusions of the case study will be strictly based on safety, behaviour, training and communication awareness. Analysis mentioned will be based on practical activity carried out by the researcher to verify the above processes.

The finances incurred for implementation of the project will not be disclosed. The organization has highlighted the "no budget limit" towards the achievement of the safety objectives.

The organization has a 65% of the employed staff with electronic access and the 35% without. Most shop floor employees have low literacy level and hard copies were made to reach them. This caused delay in response, data capturing and sample size insufficient for the population. Limited time was scheduled for management interviews due to their commitments within the organization.

The improved safety performance of the organization will not be measured using financial statements but only production output. This is due to the confidentiality of the organization's financial records.

## **1.10 Preview of the Dissertation Chapter Summary**

### **Chapter 2 – Literature Survey**

This survey reveals the history of previous strategies implemented as initiatives before the present study. The objective of each strategy is highlighted and the theoretical framework discussed.

The theoretical approach will provide the VISION and MISSION of the study, with the underlying coordination of the practically planned activities. The appropriate research methodology will be determined and refined to clarify the problem statement. The theoretical approaches from previous studies information have proven the capability of such research to be crucial and careful implementation of these theories provides a guide to your specific scenario. The information on theoretical research will assist with the knowledge, implementation, and the possible expected outcomes of the case.

Relevant textbooks, journals, newspapers, academic articles and network searches will be used for further studies or theories for integration towards conclusive ideas of the study. Such references will provide argumentative scenarios with the aim of a constructive conclusion to the study.

The concept matrix will be developed as a guide to the analysis of theories and feasible theory for the case study. Integration analysis of theories will develop a suitable approach to resolve the problem stated above.

### **Chapter 3 – Research Methodology**

This chapter will discuss the research methods chosen for the study. Specific methods will be used that will support the research study. This will include a quantitative analysis approach using a questionnaire regarding Occupational Health and Safety. A survey will be conducted from a stratified sample group of participants. Observational analysis of the current behaviour of the health and safety culture will be made throughout the research period. Scheduled interviews will be conducted at the management level.

The responses to the questionnaire, interviews and observations will be recorded as numerical data values and interpreted at a later stage in the research.

The stratified sampling method has been selected to be representative for the study.

### **Chapter 4 –Safety at Sappi Kraft**

The organizational business history, orientation, and established reputation in Business acquisition, has developed with the intention to remain the major producer of Pulp and Paper.

Products and services that the organization offers form core business strategies for a variety of products, such as fine, flex and technical papers. The developments towards the current safety risk will be highlighted and potential areas of susceptible cause can be evaluated.

The highlights of the organizational performance also impact on the safety. Management strategic initiatives to turn risk to a challenge are explored, with evaluation of safety behaviour with respect to work performance. The main aim is to

reduce safety risk emanating from strategic changes within the organization. Other related factors are challenged in relation to eliminate risks.

## **Chapter 5 – Data Collection and Analysis Results**

The primary and secondary data collection is crucial in evaluating the practical and structural analysis of the study. The sampling size is critical to ensure good representation of grades, within the given time constraints, as well as proper analysis of data to be collected.

Proper analysis of data is becomes very important, considering the number of respondents that submitted the questionnaire correctly completed, as per requirements. Concise information and comments are important in order to draw conclusions about what the respondent understood of certain questions.

Safety is considered in the context of the Zero injury expectations, hence the questionnaire is strictly 0 or 5. This is unlike the 1- to 5- rated questionnaire prepared for interviews of management.

Secondary data will be compared with primary data for improved progress and verification.

The analyzed data will be graphically presented using descriptive statistical techniques and evaluation deducted from findings thereof. Charts and Graphs will be displayed as analysis based on the hypothesis of the study. The techniques will have to determine resolution of the confidence levels, and probabilities of the reduction of injuries from the implemented awareness programs.

## **Chapter 6 – Conclusion and Recommendations**

This chapter should provide part answers to the critical questions regarding the problem statement and objectives of the data. Data analysis methods should demonstrate concrete presentation to verify the conclusion and recommendations thereof.

Possible problems and time frame allocated may not prove beyond doubt the objective, but should verify the progress achieved towards its objectives.

### **1.11 Conclusion**

Information in this chapter provided a groundwork and foundation for the intentions and future plan for the study. Guidelines mentioned are crucial and alternative steps can be implemented to reduce the limitations, which may cause the study to fail. A well-planned, proper introduction of the study and communication with organizational stakeholders about the research to be carried out will encourage a high response to the research requirements.

Progress of the research will be determined by the chapters allocated to refine strategic study towards an outcome or conclusion.



# CHAPTER TWO

## Theoretical Review

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### 2.1 Introduction

The study is concerned with escalating injuries at Sappi Kraft and what proactive measures were implemented by the organization to reduce the workplace injury rates. The Health and Safety issues target the employer-employee relationship with the intent to achieve a sustainable response towards improvement.

The review of archived data on previous injuries and observations of strategic measures that were implemented resulted in the research study. The study evaluated the effectiveness of the current strategies of leadership and their effect towards reducing injuries. Theories from different scientists or authors will be introduced, evaluated and discussed to obtain an amicable and practical solution to the problem statement. The psychological approach towards organizational processes will be followed, which employer-employees are engaging in (Misselhorn: 2005). Environmental and working conditions under which work activities are carried out play an important role in the employees' responsive characteristics.

The approach will introduce challenges within an organization from individuals and group behaviour, communication channels, employee-employer relationship, climate and cultural diversity, and management leadership styles. The Leadership in Health and Safety issues is a crucial requirement, as management must explore ways to engage optimistic responses from employees.

Sappi Kraft Mill is also facing exceptional macro environmental challenges namely:

- Brand Reputation
- Customer Service Performance
- Economic Situation
- Technology and
- Government Legislation (Safety)

The Mill is on the verge of a turnaround strategy (Arpi et al., 1999) with the current challenges and the expected performance of the mill. So, Health and Safety strategy has been prioritised to ensure the behavioural culture is entrenched under the current business climate.

## **2.2 Background**

The organization has observed that the reoccurring safety incidents, based on the statistical records of injuries from 2002 to 2005; are significant. Evaluation of records demonstrated an increasing rate of incidents leading to Lost Time Injuries (LTI). Records from workmen's compensation, of downgrading incidents, also verified the frequency of reporting and compensated for. The frequency of these incidents has also demonstrated potential and irresistible cause of acceptance by the current management. The reporting and recording systems were analysed, used and graphically represented at the management seminars for objective planning.

The presentations during conferences spread the awareness, injuries investigated and experiences from different operating sites. The nature and the extent of the LTI and LTIFR, led to the consultation of the corporate directors and site managers on Joint Problem identification to solving. Conclusive resolution highlighted the shortfall in the Quality of LEADERSHIP in handling Safety issues. Leadership provided the Safety recovery plan, and proposed the Safety Programmes to be coordinated by an independent Department. The SHEQ department was formed to handle risk-associated activities including Safety.

Further Research identified other considerable key factors such as;

- Organisational behaviour, and Cultural transformation
- Training and
- Performance of the mill

Organization has fully aligned itself with the conditions and policies of Occupational Health and Safety Assessment Series 18001. This is an International Specification and it has been developed in response to customer demands for an Occupational

Health and Safety Management System Standard, against which companies' management systems can be assessed and certified.

### **2.3 Research Questions**

The literature survey is intended to answer the following questions;

- How is the Technological change and transformation of machinery compared to the latest standards?
- How do company processes impact on the strategy?
- What proactive measures are implemented and practiced to reduce workplace injuries?
- What outcome will OHS Act determine and evaluate the injuries the workplace is experiencing?
- What impact do factors such as behaviour, training, safety and communication have on the success of the research of study?
- How is Safety related to Performance

### **2.4 Theoretical Framework**

The answers to the questions regarding the study cannot be found simply, but the process is evaluated to determine possible answers. Human resource activities have proved that change and challenges within an environment can result in accidents and incidents taking place. The acknowledgement clearly determines the change of current processes or strategies implemented, for specific purposes.

Germain et al., (1998) define accident as an unintended event resulting in harm. In this study, the cause and effect is between MAN and Machinery. MAN designs machinery with safety features that are beyond human capabilities and limitations that are beyond mental and physical nature. This determines the fall-out gap, which the employee (who is the operator), and the employer (the designer), has to maintain.

The "On a Roll" newsletter (2006) tend to find the causes by analysing current organisational culture and behaviour, and the transforming mindset towards safety. OSHAS Act 18001 introduces the Loss Causal Model, where principles of multiple

causes highlight possible basic and immediate causes. The Act examines all risks within any business and the following processes are feasible paths followed:

- Identification of risk
- Evaluation/Assessing the risk
- Establishing a programme to mitigate the high risks i.e. putting into place management controls, etc.
- Re-evaluation of risk

The above processes are crucial during investigation of root cause analysis, known as SCATT Analysis. SCATT determine the root cause in a schematic map form and suggests future solutions to the cause.

### 2.4.1 Root Cause Model

A model below is in compliance with Occupational Health Safety Act of 1993 and significantly stresses the importance of prevention and proactive measures to eliminate risks at the workplace. The model has full potential for providing warning signs of the perceived accident or incident to take place.

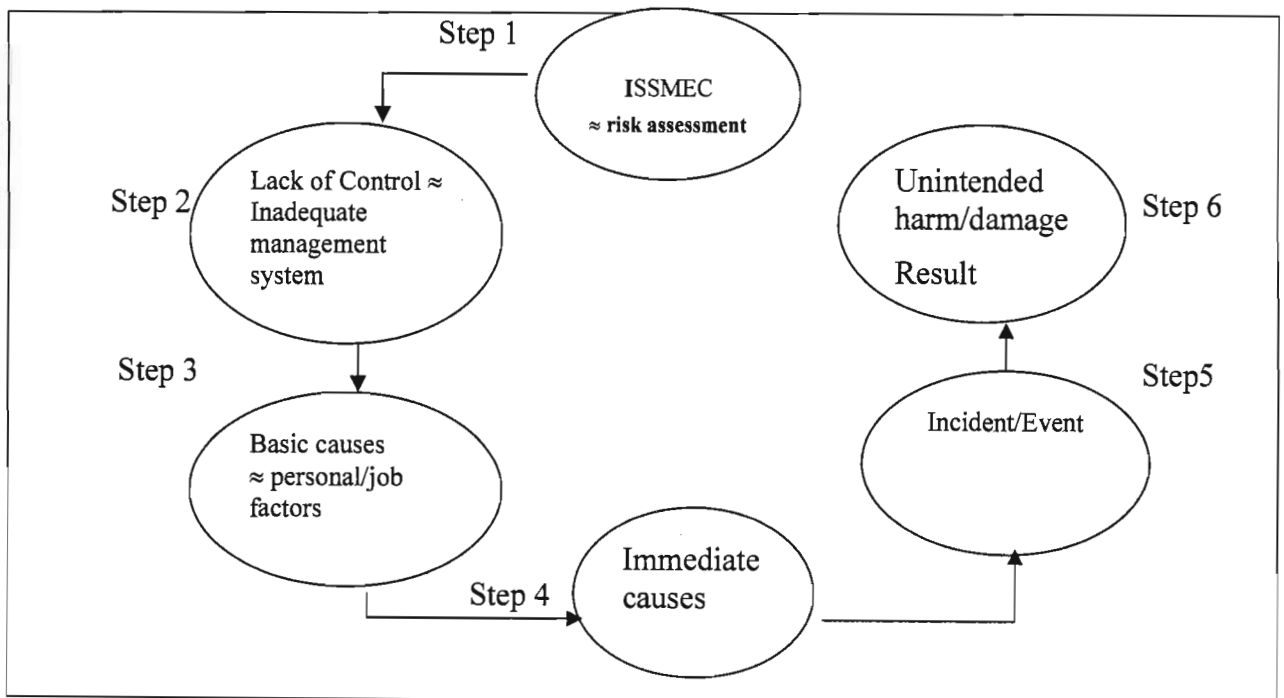


Figure 2.1: Root Cause Model (PP&M Handbook: 2005)

The above figure identify process step that actually takes place before a serious incident happen. These steps are a foundation from any activity or operation where work is done. Illustration is a typical incident analysis and if any of the steps takes place, an employer or employee is warned of the next step. The intention is to prevent

any of the steps from happening by doing risk assessment. The above practical steps are the key to potential risks assessments of accidents or incidents within the workplace where operations, machinery and interactive processes take place.

Loss Control studies by Frank Bird Jr. (1969), demonstrated that:

- 88% of the accidents or incidents are caused by human error or inefficiency.
- 10% caused by the Engineering factors
- 2% caused by inevitable acts (acceptable risk) and developed feasible measures that predict a systematic approach to eliminate errors and risk conditions.

The reduction or elimination of risk approach uses the Root Cause Model shown on figure 2.1 above. The step activities are crucial for employees to cooperate and work together to put measures in place to find out why the incident happened and how to prevent it from reoccurring.

Further evaluation of Bird's theory predicted the Loss Control Pyramid, which demonstrate the statistical reporting's of incidents of near misses, property damage, First-Aid cases of serious injuries.

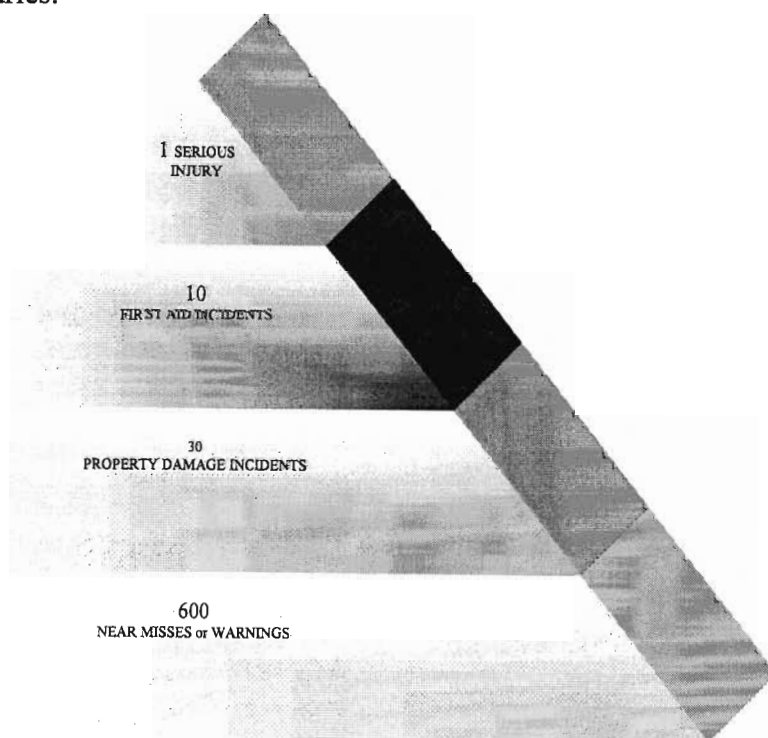


Figure 2.2: Statistical Pattern analysis of Incidents (PP&M Handbook: 2005)

The figure provides the ratio of statistical awareness of the incidents that are likely to occur. This means, that for every serious injury that occurred, 10 first aid cases, 30 property damages cases and 600 near misses have should have been reported or taken place before the injury. This is shocking to Sappi because the reportable statistical pattern does not conform. Does this mean, they are not reported?

#### 2.4.2 Human Factor

All organizations use human beings, as individuals or groups to effectively achieve coordinated activities to achieve expected performance. Human beings emerge as an important factor because of the nature of involvement in manufacturing activities. During activities there is always a level of acceptable risk (Lees: 1980). Such risks can be reduced to minimal levels so as not to expose employees to injuries and death. Human participation in these activities must take into account the following aspects; psychological factors in safety, individual differences, people's different levels of understanding and safety influences. The following is a theory describing what possibly satisfy human needs, to retain standards of living.

Marlow's Hierarchy of Needs Theory (Mullins et al., 2005) describes the concept of fulfilling Motivational needs for individual development. These needs are shown as in a Pyramid below:

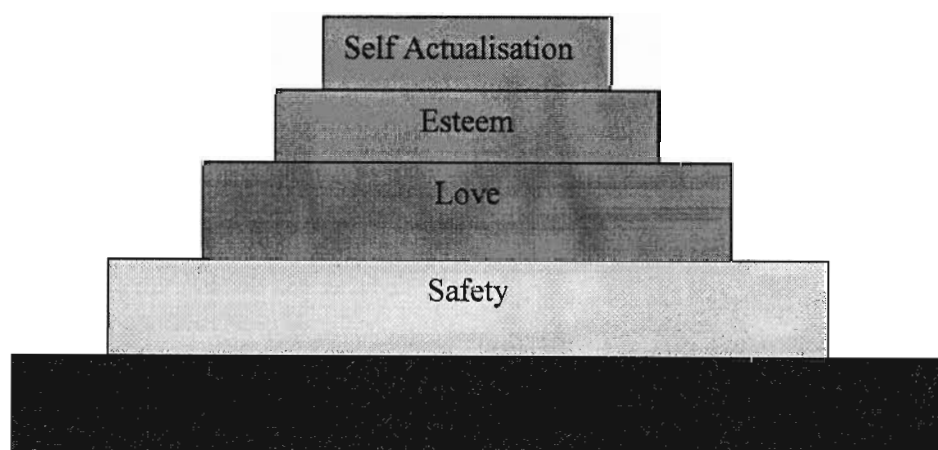


Figure 2.3: Maslow Theory Hierarchy of Needs (Mullins, 2005)

Self-actualisation, safety and physiological needs are considered crucial for the study and conform to the behavioural tendency. According to OHS Act of 1993 (section 7 and 8), the employer must provide for the health, safety and protection of employees. Physiological needs are represented by salaries, wages and favourable working conditions. Safety needs are represented by job security, stability and company benefits. Self –actualisation needs are represented by creativity, achievement and organisational performance. It must be noted that the model does not satisfy all related needs, but views satisfaction as the motivational outcome of behaviour. The theory does not specify the expectations towards safety and self-actualisation needs.

**2.4.2.1 Theory of Human Behaviour**

Misselhorn (2005) explains the concept of human behaviour from individuals to a group perspective with respect to processes that individuals or a group undergoes to effect a behavioural concept. These processes can be driven by any of the Marlow’s needs, irrespective of a group or an individual.

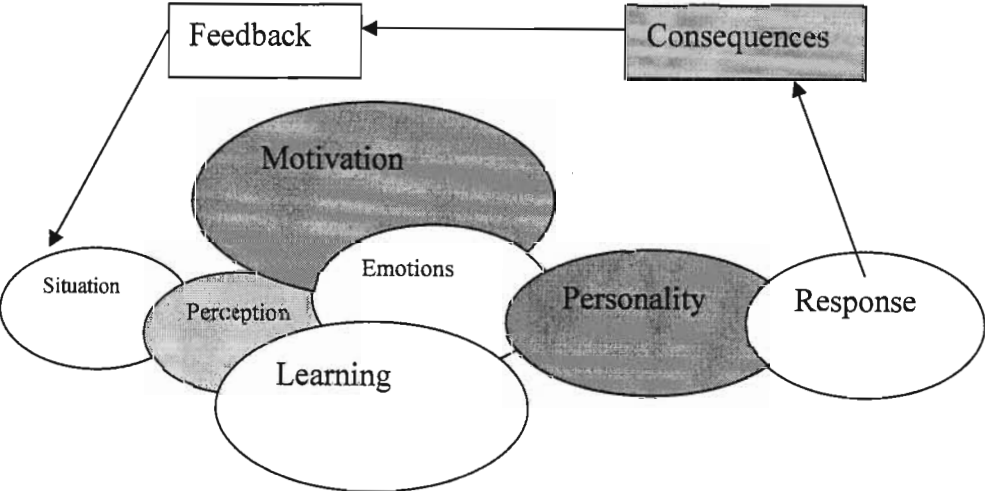


Figure 2.4: Integrated Model of Individual Behaviour (Misselhorn: 2005)

Hugo (2005) introduced the concept ‘Black Box’ for the processes of perception, emotions, motivation, learning and personality because it is difficult to interpret what’s happening in someone’s head. Behavioural Responses become the only interpretation of what might happen. Individual behaviour has an impact on the assessment of group performance. Research by Jones (1995), *Assessing Employee*

*Attitudes towards Behavioural Approaches to Safety Management*, also demonstrated that observable and unsafe behaviours account for 80 to 90% of workplace incidents. Employees job satisfaction, organizational commitment, leadership styles, transactional leadership, job involvement, transformational leadership, leadership behaviour, and employee commitment play a major role in employee attitudes Jones agrees with Bird Jr. (1969) on the human factor. Management strategy towards technology and Safety created transformation of perceptions, and employees require motivation to adopt a learning process attributing to proper personality (behaviour) and feedback response. This model is a transformation trend that Sappi will be evaluated on for their diversified staff.

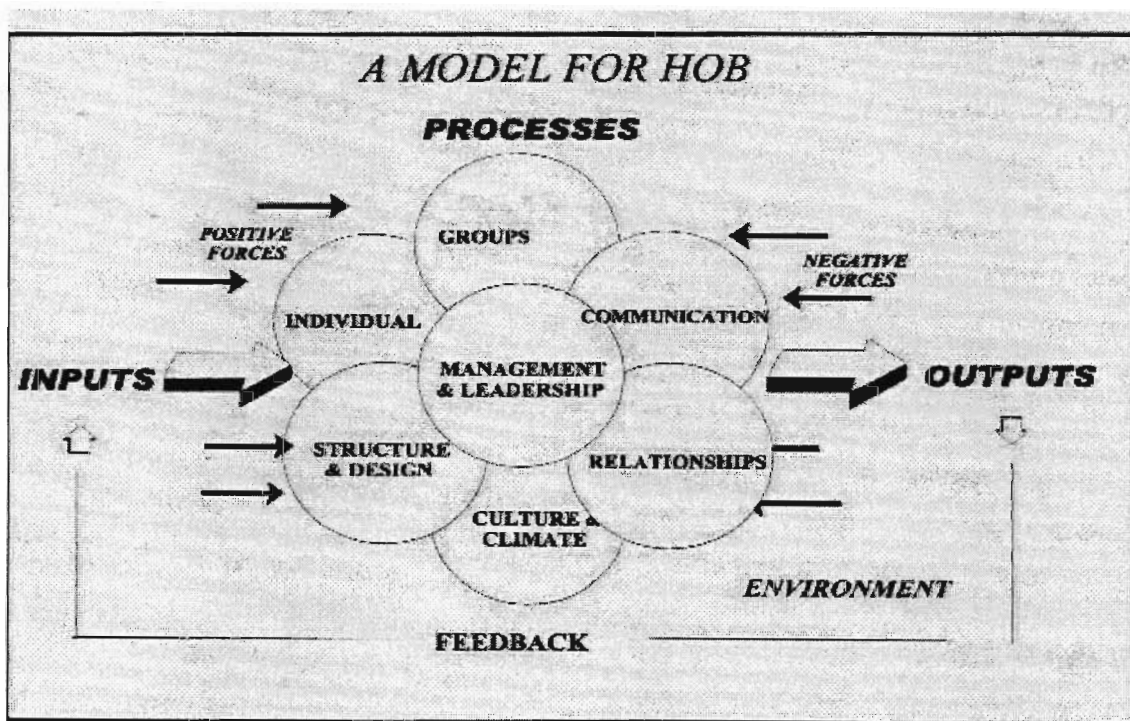


Figure 2.5: Model for Group Behaviors (Misselhorn: 2005)

The above figure represents the interactive processes, which features in the alignment of the behaviour within an organization. These processes are a demonstration for the expected interactive and participative performance output.

The Sappi Management team have become active participants, to provide support and facilitate the communication process. Such an interaction promotes feedback and the ability to sustain the changes implemented. Figure 2.5 above demonstrates core challenges, towards leadership that is confronted with a diversified employee staff of



Sappi. Other challenges are resistance to change; group cohesiveness and conflict; resentment to change; staff turnover; competition for opportunities and employees capability.

For effective participation, Schultz (1986) model introduced the concepts of Inclusion, Control, Interdependence and Affection. This model presents the approach that individuals must follow to be an effective member of the group and for the group to achieve group behaviour characteristics. For an effective group Misselhorn (1991) presented ten dimensions that focus on human relations and motivation. Employee interaction and relations remain a challenge to Human Resources who have to implement strategies that will improve the current group's organizational performance. It is imperative for the management to adopt a participative approach in encouraging and providing leadership to employees engaged in the goal-orientated activities of the organization.

Observations from group processes, management with leadership, communication and relationships are the core aspects of research that will influence culture, and structural design. Effective communication establishes relationships among groups of employees.

## **2.5 Health and Working Conditions**

Injuries resulted from unsafe acts and related to working conditions show those long working hours, overtime; unfavourable working conditions and unstructured working conditions are the causes of the incidents. This is contrary to the basic conditions of employment Act, as stipulated and discussed in the Commercial Law (Fouche': 2004).

Loss Causal Model, figure 1 demonstrates the preventative measures that have to be taken to reduce future risks.

Occupational Health and Safety Act of 1993, states that; "the employer shall provide and maintain a healthy and safety working environment for the workers" (section 7, 8, and 9).

Previous secondary data demonstrated a high rate of overtime, accumulated leave, absence on sick leave, and high number of disciplinary cases. Developments in the new safety strategy led to a change of management strategy and the intention to fully comply with the OSH Act.

Sappi Human Resources management strategies formed a SHEQ department to implement regular audits on housekeeping, maintenance and environmental conditions that could affect the health and safety of its employees. Any deviation or default is recorded and discussed in departmental meetings to in order to resolve it. This strategic restructuring resulted in recruitment of new staff to reduce effects from long working hours, sick leave, accumulated leave not taken and losses from safety. Through training of key personnel, heads of department and supervisors, the assurance of a proper working environment can hopefully be made.

Other diverse aspects of safety, health and behaviour are HIV/Aids, reducing violence in the workplace, reducing assaults and threats, and reducing smoking in offices and restricted areas (Gomez-Mejia et al., 2004). Safety and social responsibility programs such as Employee Assistance, Wellness and BBS have demonstrated an optimistic transition from employee to employer relationship and development. The following: benefits have been observed and will encourage safe behaviours; improvement of physical and mental capabilities, improvement in communication between all organizational levels and employee development.

Currently, the Mill is experiencing an extremely high rate of staff turnover as employees are leaving to join competitors companies. This has raised concern about the current working conditions at Sappi compared to competitors.

As one of the latest developments in acknowledging the seriousness of injuries, Sappi endorsed a safety performance reward system. Any task has to be risk-assessed before employees engage in such an activity. The on-going improvement of working permits, equipment isolations schedules and procedures has proved that a lower injury rate can be achieved. An achievement of one million man-hours without lost time

injury has become an important milestone towards achieving safe working conditions for employees.

There is stillroom for improvement and employees are encouraged to contribute to the conditions and make suggestions regarding safety, health, behaviour and service delivery.

## **2.6 Leadership Function**

This is one of the crucial tasks in an organization, delegated to the operational managers' tasks for implementation with a diversified employee staff on different activities. In this case, the leader becomes the driver of the organization. The driver must ensure resources are available to achieve goals set. For the case study, the leadership is expected to drive awareness about safe working standards and related programs, within the organization. McSween (June 2000) reported that safety leadership gives rise to new challenges and solutions, which are based on experience. The employer–employee relationship is important for peer observations in order to point out areas of development in education and training. Behaviour based safety is one of the programs that influences employees and management to interact and achieve organizational performance standards.

Leaders can also be transformed by cultural, training, and behavioural changes to realign their strategies for conformity. Misselhorn (2005) demonstrated that management and leadership is integrated in situational management, and needs to match the thinking and employee interaction for the needs and tasks to be carried out.

## **2.7 Resistance to Change - and - Strategic Change**

The safety challenge coincided with the unfavourable economic performance confronting the organization, and the turnaround strategy could improve work standards for employees, help the company remain competitive in the paper industry and achieve sustainable performance. Arpi and Wejke: 1999 highlighted various symptoms for turnaround management. The following symptoms triggered the strategic change;

- Financial (cash) performance
- Increased rates of LTI from serious injuries
- Low morale and standards of working
- Leadership differences

The technological transformation of machinery becomes crucial to operational safety risks. Improved methods and procedures need to be evaluated for risks assessments: to eliminate any possible cause. Proper administration of change in equipment description, manufacturer's data, operational and safety procedures had to be on continual review. Thus continual training is crucial to conform to changes implemented and improve working standards. The modification of change is part of development and update in reengineering. Lees (1980) stated that management systems, such as audits, documentation, and checklists must influence and encourage competency of employees to handle operations and ensure safe practical approaches. An article by Jones, Cox and Rycraft (2004) proved that employee attitudes have a bearing on behavioural approaches.

Full commitment of top level management towards strategic change reduces risk exposure by employees and improve organizational performance (Pickford: 2003)

Precise and continuous internal or external safety training to counter change, safety risks and improved performance is important.

United Kingdom Government (Internet 2) stress the importance of safety training with regards to risk assessments, experiences on injuries, near misses and people's current skills for effective training, to be competent employees. The review of the website also evaluates Bird's Jr theory, as the feasible method applicable to industries in the analysis of incidents and root cause model.

Kurt Lewin's theory (Misselhorn: 2005), describe change in terms of two processes: Unfreezing and Refreezing. This was based on the examined analysis of the driving and restraining forces towards objectives to change.

A Sigmoid Curve demonstrate a psychologically prediction of the timing to change.

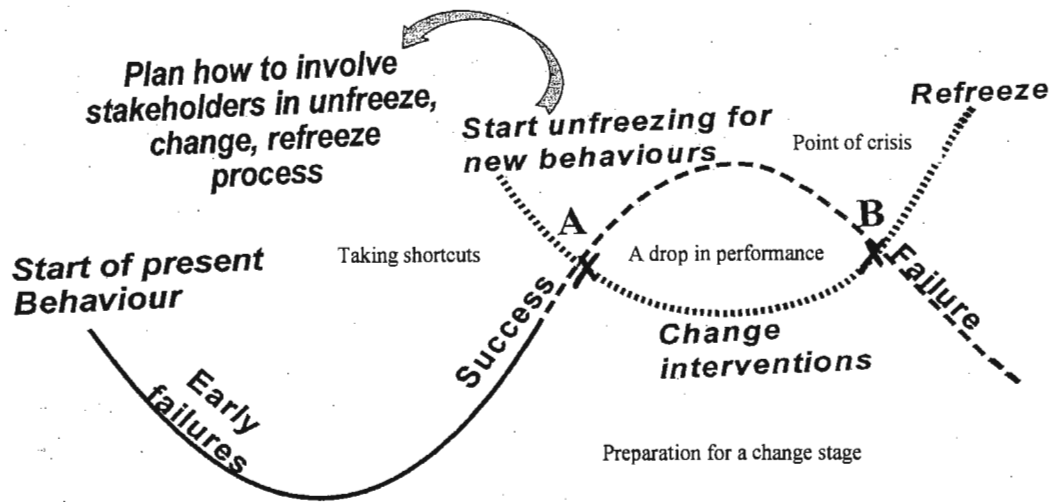


Figure 2.6: Sigmoid Curve (Misselhorn: 2005)

This causes greater resistance of the employees concerned, as changes are executed late towards a successful future change. The best strategy is to implement preventative measures before the decline period of the trend.

The following issues become evident during strategic change:

- Lack of Communication – within the hierarchy structure
- Participation – inferiority complex of some employees
- Fear of interaction with higher-level management employees.
- Non-diversified workforce
- Manipulation (attribute conflict)
- Job dissatisfaction (insecurity)
- Brain Drain

Leadership processes would facilitate and strengthen transformation of culture under unfavourable climatic changed of macro environment, to ensure conflict issues are minimised.

## 2.8 Incident Prevention

The question is unavoidable, but there is no simple and direct answer to providing a safe working environment. Alternative measures are implemented because of

different experiences from each organization, with the aim of proactively preventing losses. This is an awkward task, and most organizations cannot be certain of the success. The probable answer is systematic and requires the psychological approach. Schein 1980 (Hugo: 2005) describes the relationship as the understanding and the ability to diagnose the organizational problems by examining the workplace processes.

Sappi Kraft has to strengthen the development of its safety awareness strategy through the implementation of TPM and SHEQ management strategies. SHEQ principles have dominated the manufacturing industry with respect to Safety, Health, Environment and Quality of the product or services rendered to customers. Effective SHEQ programs should anticipate incidents and accident scenarios and plan to minimise outcomes through risk assessments and mitigation, emergency planning and response medical treatment facilities, etc.

The management of these issues is crucial and requires continual improvement of communication from the top corporate level down to shop floor. This is not an easy task, as the understanding and the ability to diagnose these problems is crucial. .

### **2.8.1 Consequences of Accident Type Incidents**

- Injury (minor/serious)
- Loss of Human Life
- Loss of property, and
- Loss of Time and Profits by the organization.

Frequency rates are good statistical indications of recorded incidents that demonstrate a certain pattern. The following equations are used in calculations:

$$\text{LTI or Illness rate} = \frac{(\text{Lost Time accidents}) \times \text{Number of employees}}{\text{Employees' hours worked}}$$

$$\text{Incident Frequency Rate} = \frac{(\text{total days lost}) \times \text{Number of employees}}{\text{Employees' hours worked}}$$

$$\text{Property Damage F. R} = \frac{\text{No. of property Damage Incidents} \times \text{No. of employees}}{\text{Employees' hours worked}}$$

Frequency Rates (Germaine, Arnold, Rowan & Roane: 1998)

Consequences have an important relationship that determines the performance of the organization. The higher the injury or loss frequency rates, the lower the organizational profits. This is because of indirect costs accumulated by incidents and overtime paid to cover hours of absent employees.

Secondary data recorded demonstrated a high LTI and AIFR from 2003 to 2005. A high rate of overtime was paid and long working hours. These consequences had an impact on the normal working conditions of employees. Other resulting effects encountered were a high level of fatigue, stress among employees because of long working hours and a high staff turnover.

### **2.8.2 Benefit of Low incidents**

The core benefit is to keep good mental capability, excellent health and Safety of the individual employee and those of the other employees. This is a bearable effect and has a bearing to the performance of any industry in terms of safety, development and a greater level of service delivery from staff.

Dyer (2005) explored the unbearable increase in indirect cost and time spent for investigation by safety officers and Government Inspectors in justifying Workmens' compensation. Buelens et al (2002) highlighted the interactive structure where proper communication, uniform organizational culture, and behaviour would be ideal for an outstanding company performance.

The nature of activities provides a tolerance in low level of acceptable risk and there is always a lesson learnt from it. So, cost will always be incurred and cannot be fully prevented.

## **2.9 Conclusion**

The theories studied based their analysis of the topic on a psychological approach that was applicable to similar situations. The information from the theories provided a guideline for specific aspects of behaviour, training, safety and communication. These aspects will be closely investigated when data from the respondents is analysed, in order to verify the extent that the theories correspond with the objectives of the study. Management and Leadership roles were also highlighted to show the important role of top management to fully support safety initiatives in the Mill.



# CHAPTER 3

## Research Methodology

### 3.1 Introduction

The Research Strategy focused on the case study, which is an organization operating and competing in the Pulp and Paper industry. This chapter presents methods by which research was conducted.

Strategic identification and selection of data sources was done for conducting fieldwork by using two well-structured and developed questionnaires to ensure sufficient quantitative data collection. Questionnaire distribution from middle management to shop floor will be done via electronic mail transmission and hardcopies, to reach all employee levels including those without email access.

A representative sampling of respondents will be conducted. Communication at different levels of the organization was established to ensure an accurate and representative sample of employees for good quality of responses.

Other data collection methods such as structured interviews and observation statistics were used. These methods gave a broad picture on the study topic and the strategic vision on the approach to achieving stated objectives. Telephonic mode of interviewing was not one of the options, and was avoided to eliminate bias of the data.

Throughout the survey, the core issues for investigation are as follows:

- Relevance of Employee Behaviour
- Levels of Safety Awareness
- Frequency of Training, and
- Accessible Communication Channels by Management

To ensure a complete overview of the project, personal interviews with management personnel were conducted. A rated questionnaire was used to conform to a

Quantitative Analysis scope. The quality of the management response will contribute to a triangulation study analysis.

The quantitative study analysis results were crucial for determining the current status of the management systems and progress towards zero lost time injuries.

### **3.2 Objectives of the Study**

To contribute to the understanding of the human and organizational factors that affect employees within the workplace. To improve the safety of employees by introducing and assessing proactive measures, such as Behaviour based safety, communication, training and safety within the organization.

To assess the participation and commitment of the employer and leadership in achieving zero injuries.

### **3.3 Sampling Technique**

A random sampling method has been implemented in the location of study, within a diverse workforce. Out of 400 questionnaires distributed, made via communication modes, only 83 responses were returned for analysis. The verbal comments during distribution of the questionnaire were pessimistic with regards to the manner in which organizational management handle the safety project. Some respondents refused to participate, holding knowledge and opinions to themselves.

To determine sample size, the following equation (Lind, Marchal and Wathen: 2005) was used as a guide to obtain a representative sample:

$$e = \frac{z \sigma}{\sqrt{n}}$$

e = margin of error

n = sample size

$\sigma$  = standard deviation

z = confidence level (98% or 95%)

Sample size may be large (n >30) or small (n<30), depending on the accuracy of information to be collected from surveys, questionnaires and interviews. Since

appreciable amount of company time can be spent developing and responding to questionnaires, sample size is crucial for accurate results. There is a considerable time and money that impact on the sample chosen. It is thus crucial to manage the sample size greater than 30 respondents, for accurate analysis of information required.

The accurate sample size can be determined by table 3.1 below:

The table demonstrate that the number of a population of approximately 900, a representative sample of 269 respondents is required. This means at least 30 % of the respondents are needed. Respondents are often known to delay research, therefore it is important that communication is clear with them and advantages of the study discussed with them.

The sensitivity of the study may also cause respondents not to respond to questionnaires. The questionnaire that was compiled is sensitive to the relationship between the employer and employee, but requires full participation of respondents to prove the severity resulting to safety injuries.

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	100000	384

From R. V. Krejcie and D. W. Morgan, Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 608. Copyright © 1970 by Sage Publications.

Table 3.1 Determination of Sample Size from Population Number (Krejcie & Morgan, 1970)

### **3.3.1 Sampling Methods**

Questionnaires were randomly distributed to all employees in the mill. No criterion was used to select participants. This presented an equal opportunity for any employee from the population to participate in the research. All participants were informed, in a covering letter, the introduction and objectives of the questionnaire and details of the sender. The Human Resource department was asked to present hierarchy levels within the organization and the employee record of conference attendance. This would verify the employee numbers of those who attended communication sessions and how well the communication has transformed safety in the mill.

There are practically three sampling techniques available for random sampling: simple; systematic and stratified. Any of these could have been used. For accurate distribution of data, stratified sampling was selected.

Stratified sampling was convenient for the study, because the participants could be classified into different hierarchy levels within the organization. The sampling method was adequate to continue with the research. There is a potential to decrease the chances of bias employees from the representative sample, by allowing everyone in the Mill to participate.

It must be noted that; an element of persuasion and misguidance from other members of the organization was noticed. The researcher played the role of an outsider and a participant of the research.

### **3.4 The Research Instrument**

The research was conducted as follows:

- The analysis of problem for possible solutions.
- Survey, which is an observation of a pattern followed by employees within the Mill.
- Structured Interviews conducted at the top management level of employees.
- Designed and rated Questionnaires were distributed from middle management to shop floor.

## PRACTICAL RESEARCH METHODS

Strategic purposes for Project Zero success are the important break points for discussion:

### **3.4.1 Increase awareness**

This is a critical path, to determine if Sappi has demonstrated and implemented any form of effective communication in order to ensure proper and responsive interaction between organizational levels. Hugo (2005) highlights 10C's as guidelines to improve communication from individuals to teams in participation. Four of these Cs' are important for the study; Cooperation, Communication, Conflict and Commitment. Effective communication will ensure conflicts are resolved and cooperation will demonstrate the level of commitment from employees.

The following communication methods are in use; Notice Boards, Conferences, Departmental meetings and Electronic IT Networks. The IT network is the latest network implemented. Current electronic access permits authorised personnel provided with an access password. High levels of illiteracy have prompted the translation of other documents, presentations and important notices to the Nguni language.

Each notice board on site is checked and updated on continuous basis. The core items on permanent display are; Company Policy on Health and Safety, Isolations Procedures and plant improvement programs. The displays contribute to visual information that is a requirement to promote awareness.

Safety Conferences are held continuously as a scheduled platform for two-way communication between the employee and management delegation, regarding problems arising and discussions of the incidents occurred. Communication process influences participation and change mindset towards a positive thinking.

Departmental meetings are area-specific and employees discuss issues that affect them directly. Issues such as Personal Protective Equipments, isolations and work

plans are on the main agenda. The intention of these meetings is to engage discussion within sections and internal problem solving. Suggestions and strategic changes within the section are challenged to improve section performance.

Information Technology provides an electronic network system for quick access of information from network computers. This mode is expensive but allows transfer and sharing of information to most employees without the use of paperwork. The information is transmitted by authorised personnel only and is uniform to all users. The network system access is restricted to registered employees and the information is password protected per employee. This is done for privacy and security reasons.

Approximately 75% of the 900 permanent staff has email access from 450 computers. This shows the shortfall in network access and the level of literacy within Sappi. The shortfall is made up by the effective use of notice boards and continuous employee-employer communication.

In addition, the company has provided special and casual T-shirts that employees are asked to wear on Fridays. Hence Friday is a day dedicated to safety awareness, which tends to entrench the safety culture.

The number of people counted who wear their safety shirts, as a gauge of the safety culture, or level of awareness achieved, demonstrated an increasing trend.

To intensify the strategy, Sappi has committed itself to an Audit system where records are audited for conformance to the required standard. Suggestions for improvement and discussions are encouraged.

### **3.4.2 Assess Working Procedures**

#### **3.4.2.1 Behaviour Based Safety**

The Behaviour Based Safety program has been implemented by the Mill as the key program for assessing employee behaviour, quality and effectiveness of risk assessments. These assessments are evaluated and documented as part of the

procedures to conform to current ISO standards of work. The program highlights and assesses risks and potential risk areas for discussion with process owners.

The floor implementation of this proactive program requires the participation of the operators, supervisors, and managers of the observed risk areas. The skills of these individuals are crucial to determine the level of safety pertaining to the specific area concerned. Quality Observation of the potential risk demonstrates hazard recognition, equipment design or condition, disagreement on safe practice and cultural differences. The frequency of observations is unlimited across the mill. This shows continual improvement and to eliminate safety barriers.

If the consensus on the observations is reach, and procedures are amended according to approved observations, for the safe working and effective procedures.

The working document procedures undergo scheduled internal and external audits. All non-conformances are highlighted, to ensure reassessment and amendments. Suggestion schemes, PIP and projects assist in the development of proper working procedures.

Internal audit reviews have highlighted the lack of commitment from the heads of department communication to the shop floor in addressing change of procedures. Recommendations outlined the lack of facilitation in updating old schedules and procedures, which do not conform to current machine status.

### **3.4.2.2 Hazard and Operational Study**

This is one of the techniques used in the identification of risk and operability problems to the working tasks scheduled. Study evaluates risks and measures to reduce or eliminate the risk associated, except acceptable level of risk and can be managed. This study is a crucial step, which assesses the approval for new implantation on new machinery or processes. If this study is not properly conducted, management personnel are transferring the safety risk to employees. This automatically leads to increasing injuries and bad organizational management.

It must be noted that, this study form part of a complete operational manual and procedures.

### **3.4.2.3 Corrective Action (Root Cause Analysis)**

This activity is important in evaluating the current procedures and safety aspects of machinery. Any changes, abnormal failures and operational deviations must be reported, recorded and communicated to ensure problems are solved. Such reporting can result in modification of machinery or changes in step-by-step procedures.

Analysis of these problems contributes to continual changes, maintenance schedules, and repairs to be done. They are also skills in problem identification, responses to reduce severity and training to ensure required performance or efficiency is achieved.

## **3.5 Improve Working Procedures**

The age of the Mill is considered a threat because of lacking in technological machinery, which has to be transformed. The requirement is driven by the latest OHS Act of 1993 and competition in the marketplace.

To ensure the quality of working procedures, Sappi Tugela introduced the Behaviour Based Safety programme. The objective of the program is to integrate relevant risk management, skills usage, and observations of operational machinery or activities. This program has become international because of its methodology to improve health and safety in heavy industrial organizations. It integrates behavioural science, quality and organizational development principles with safety management, to reduce the injuries.

BBS is a revitalisation programme from BAPP, which received little or no response from employees.



Issues encountered with BAPP:

- Management misuse the programme as a spy, leading to employees having disciplinary action steps being taken against them in resolving Health and Safety problems.
- No response regarding quality of risk assessments
- Functional level was not full informed of the objectives
- Ignorance of individual responsibilities

BBS program approach introduces the planning phases to the type of work, leadership role, technical requirements, and teamwork representation, for efficient and effectiveness of safety efforts. It is compulsory that all employees, including managers are to attend the seminar, as a training platform. A special skill is required to completely fill the required quality details of the risk assessment, as per observation of a specific task or activity.

The outcome of the analysis is to highlight the observed unsafe acts and conditions. Notifications for preventative maintenance are compiled for any perceived non-conformances highlighted.

### **3.6 Research Data Collection**

The quantitative analysis of data was collected from questionnaires distributed and data from nine (9) management interviews. Methodology investigated key issues of organizational behaviour, training, safety and communication process within the mill. Potential and deficient areas will be demonstrated by the data representing grades overall group observational statistics. Areas that need attention or shortfall will be explored, and possible recommendations will be forwarded. The case under study was approved by the organization. Access to secondary and primary data collected regarding the problem has been used to verify and prove the effectiveness of proactive measures implemented.

Archive material served as part of data source in depicting the previous characteristics.

### **3.6.1 Research Instrument**

The rated questionnaires were designed such that participants would read and provide answers simply on their exposure to the mill activities. Questionnaires were drafted from the Occupational Health and Safety document and prepared as a checklist. In addition, interviews and precise observations were conducted for verification on the above critical factors. OHS checklist was drafted with the legal, social and public policies in mind. Questionnaire was crucial for participants to specify where possible regarding questions. A separate row of comments was provided for participants' suggestions or recommendations.

An electronic copy was formulated for electronic mail and hard copy organized for distributions on personal contact, to accommodate employee staff without electronic mail access. Top management interviews, were conducted on personal contact and each question timely answered. Interview was open to comments and suggestions to a progress or future strategy.

On both electronic and hard copy, an introductory informative letter, demographic page and structured questionnaire were attached. The confidentiality response of the middle management and shop floor names of the respondents will be kept anonymous. The participant's level or grade, gender and years of experience are enclosed, to ensure stratified sampling format.

### **3.6.2 Reliability**

Questionnaire distributions were not specific to be certain participants who can provide a perfect analysis. It must be noted that, random sampling was carried out. This method eliminated elements of bias within participants. There could still be some biased elements because some participants' fear of change implications and what if research is demonstrate high risk to the outside society.

More than three hundred and fifty questionnaires were distributed to participants and only twenty percent of them were received as responses. A second round of distribution was conducted from different sections, on which members were known to

have the capability to answer the questionnaire and which grades were lacking from demographic. Not many respondents wrote their age gap.

The effect of Bias, buy in and company favour responses have been identified. The scores above 80 % to the average questionnaire remain suspect to bias. This poses a threat to the few who would like changes within the organization to alleviate safety risks. The management analysis could mean that strategies are effective, whilst not.

The data is expected to demonstrate potential risks and evaluate progress on implemented measures. Accuracy will ensure the any shortfall can be corrected on time for effective implementation.

The SPSS will also be used to check reliability of data collected from management interview for verification of their scores and possible conflict of objectives.

### **3.6.3 Administration**

The questionnaires were received, kept and marked “recorded” if the data has been entered into the electronic storage data file. For respondents who provided full demographics, their names are used as filenames. Other responses of data are named as per sequence numbering and demographics provided, such as ‘11gr6’. Some were located as ‘11papergr6’. This became evident as to the number of respondents received. For full demographics provided, the respondent name folder was created and the questionnaire attached. The spreadsheet was designed to input the statistics of rating per factor and total accumulated.

Interviews were scheduled and the data was captured on the interviewee response during the interview session. After all interviews were completed, a spreadsheet was designed to capture the full data as per question response and rating allocated. The spreadsheet was then captured to an SPSS format for full analysis.

### **3.7 Statistical Analysis of the Questionnaire**

The questionnaire has been simplified and questions constructed from the key factors to be analyzed and evaluated. Eleven questions have been finalized for interview and each question has a unique or specific answer. Each interviewee is expected to answer all questions and any comments or suggestions will be accepted and drafted, as part of the interview. The last question presents the overview analysis of the interviewee to rate the progress of Project understudy.

The spreadsheet has been designed to allocate the data in a systematic and acceptable format. The management interview questionnaire is rated from 1 to 5, as per question. This will be convenient to analyse data using the SPSS as a specific tool, to quantitatively analyze the full data for cross-examination and interpretation of the respondents to the questions. The full analysis will verify management commitment to reducing injuries and shop floor data analysis can verify the awareness and performance to safety.

Concurrent shop floor questionnaire has been distributed to evaluate potential shortfall on the key factors towards the research study. The questionnaires were drafted to present the overview progress from the employees' perspective. Due to late responses, the questionnaires was only done using excel, not SPSS.

### **3.8 Statistical Analysis of Data**

The rated questionnaires and interviews were structured to accumulate points regarding the core issues within the analysis of study.

The application of statistical tools, such as excel and SPSS on primary data, will provide evidence towards the verification of the impact on the organizational issues contributing to the effect of the study objective. The secondary data, form part of statistics, which will be collected from the organization archive and be structured in an analysis format. The data will be structured to highlight Lost Time Injuries (LTI), Total Days Lost (TDL), and First Aid Incidents (FAI), property damage, Lost Time Injury Frequency Rates (LTIFR) and all injuries recorded.

The state and alterations to the data will not be manipulated. The data is also subject to analysis and interpretation of the behavioural trends. Data collected is the key alternative verification measure to the overall analysis of the hypothesis. Tools such as descriptive statistics on t-test, SPSS software tool and excel spreadsheet will be used to effectively present analysis.

The SPSS, statistical tool has been devised to suite the responses to the questionnaire.

### **3.9 Management's Commitment**

Top management has extended full commitment by accepting responsibility through leadership. Throughout the implementation stage, permanent employees; contractors, temporal workers and trainees have attended compulsory safety conferences. During attendance, contributions were highlighted to potential risk sections within the Mill. Suggestions and reporting's were be discussed in detail. This was envisaging by the detailed change of Health and Safety policy to conform to the commitment from top management.

To ensure that Communication process is, an achieved tool such as notice boards, Intranet (IT), T-shirts, special safety day and advertising through newsletters and magazines are distributed monthly. Other special programmes such as Behaviour Based Safety were revitalised, for continual reporting of task observation and risk assessment.

Top Management belief is that, all employees within the workplace can identify and perform risk assessment to avoid any accident or incident from occurring. This statement shows the honesty and the trust towards employees executing the task for the benefit of all stakeholders

This assures job satisfaction, cultural learning, empowerment of workers and nurturing skills that employees have to safely execute organizational activities.

### **3.10 Conclusion**

Structured framework of implemented methods and techniques for the study are deemed effective, if the progress of implemented strategies can be measures. The questionnaires are the key tools to assess each respondent on the safety aspect, with relevance to behaviour, training and communication within the organization. The questionnaires were edited for language clarity to eliminate confusion and misinterpretation of specific questions. Respondents will thus be able to provide accurate answers with the understanding of the questions. Quick responses are expected in this regard.

The next chapter present background knowledge and vision of the organizational activities and processes that employees' and employers are engaged in.

# CHAPTER 4

## Safety at Sappi Kraft (Pty) Ltd

### 4.1 Introduction

The company has an extreme growth profile from local to international, in the Pulp and Paper making industry. It is a South African born industry, which registered as Sappi Pulp and Paper Industries Limited in 1936. The Mill under study started producing its first paper reel in 1954. Since then, mill had further expansions to manufacture its raw material pulp from plantations.

The company growth strategy spreadened internationally through acquisition of North American, London and Europe. Southern African productions were intensified by the construction of Saiccor and Ngodwana. Sappi international strength led to the registration with the New York stock exchange and prepared to compete internationally, on the Pulp and Paper product services.

A sequential and historical growth in acquisitions and shares in appendix 1, demonstrate an aggressive and strategic approach to dominate the domestic and international market. Strategic growth is to reduce competition by acquiring small companies and reposition itself as a paper manufacturing giant.

### 4.2 Background

The current operations in Southern Africa are hampered by the financial exchange strength of the economy, which does not favour exportation of its core products in the export market. This economic situation favour Mondi as the major local producer and a competitor in the pulp and paper.

From year 2000, the Mill has experienced the following problem areas;

- High turnover of staff or personnel
- Exposed to incidents and accidents, which has affects the safety within the mill.

- The productivity has been unstable and continual drop in financial performance.
- Changes in the macro environmental rules or policies for operation

The above problem areas have triggered the managements' responsibility to try and reduce incidents and accidents taking place. Consensus discussion seminars by management and stakeholders were schedule, with the objectives to feasible measures to be implemented to reduce risks associated with safety.

Sappi Kraft (Pty) Ltd is a paper manufacturing organization located on the North Coast of the KwaZulu-Natal, in a Village of Tugela. Tugela, named after the River, is historical from the Zulus as Zululand. Sundumbili is part of the Town located in Mandeni area. The town of Mandeni is diverse, being the residence of the Indian community; the whites and dominated by the Zulus in the evergreen village.

The location of Sappi–Tugela Mill was influenced by the abundance of the Tugela River, the accessibility of railway to the Durban Harbour and availability of land for plantation of trees, suitable for wood to paper production processes. The initiatives to building Sappi started from 1930 for resource construction to 1954 of first commissioning (Sappi Intranet: 2006)

From 1954, the company's growth became part of the community development and improvement of youth skills for future sustainable growth of the community. The Town became known for the industry for the production of pulp and paper. The organization has explored both domestic and export markets. Expansion led to the construction of other Mills in Umkomaas, Port Elizabeth and Enstra Mills in South Africa. Global expansion led to the acquisition of International mill sites located in Central Africa, Asia, North America, Central America, Europe, Australia and South America.

For the basis of the dissertation, Tugela Mill is the focus of study. Briefly, the company has the following basic processes; Wood Debarking, Chipper, Digester, Bleaching plant, Screening, paper machines, Winding, Grinding, Cutting, and Rolling.



These processes involve heavy machinery and operations are at high speed for quality of paper production.

The company has explored the markets, reaping financial rewards and benefits, dominance, positioning and well-branded history. Like any company, the changes in Technology have created challenges and the need for turnaround strategies for the mill.

### 4.3 Hierarchy Structure

#### 4.3.1 Tugela Mill Structure

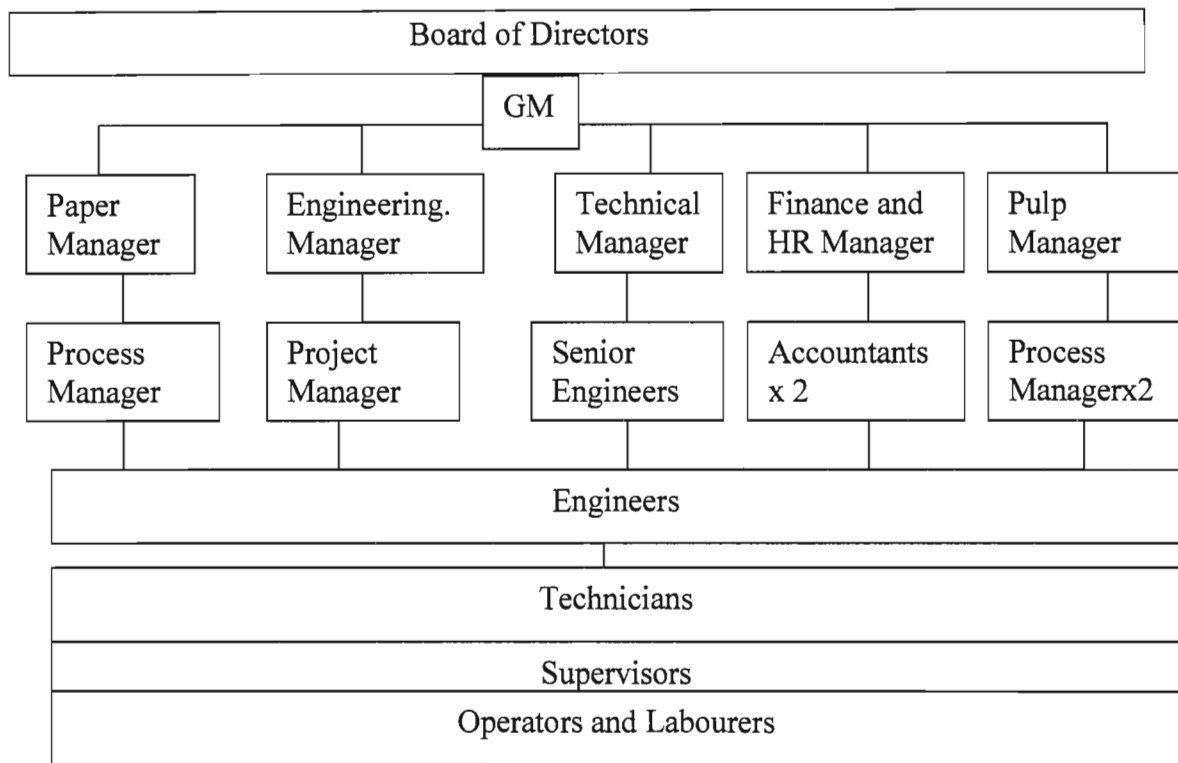


Figure 4.1: Organizational Classical Structure (Sappi Intranet: 2006)

The Mill has an on-site General Manager who handles critical items within the organization and has the support of the area managers for operations.

The company structural levels of authority are broad and have a wide scope of operation, which have to manage and co-ordinate staff of approximately nine hundred (900). Levels of authority become crucial in assuring the expected objectives, goals and response time expected from the management.

Kreitner and Kinicki (1992) recommend a contingency approach to organization design, for effective structural fit to unexpected demands of situational management. The organizational structure of the Tugela Mill has a delegation flow of tasks and specific staffs are assigned, thus representing the organic structure.

Sappi as a Group has a complex structure, which is controlled by head offices of the subsidiaries; Fine Paper, Forest products and Trading. Current Tugela Structure allows a flexible working environment of mutual trust, respect, inclusion and diversity. The provisions made towards safety and a healthy working environment assures responsibility and commitment, not only in drafted procedure document but also with active Sappi Management participation.

#### **4.3.2 Company Departments**

The company departments form an internal supply chain of activities, which contribute to the final product. Departments are: Recovery and Utility; Engineering and Projects; Pulp Plant; Logistics; Stores; Technical; and Papermaking.

Each department consists of maintenance support, technical support and Process Manager, called MDT to ensure compliance to legal, process and employee safety is adhered to. This demonstrates proper structure of management and leadership towards operations that employees engage into. Engineers and Technicians work closely with helpers to close the gap and there is a quick response to irregularities.

#### **4.4 Employment Staff**

Tugela Mill has approximately 900 employees. Main categories include top management, head of departments, senior engineers, engineers, technicians, supervisors, operators, labourers and contractors. Employees have access to training facilities, developmental opportunities and global technology to fulfil the performance requirements of the company. The diversity of the staff includes Asians, Europeans, and Non-white Africans. The organization applies gender equity policy to ensure representation of Males and Females in various positions.

Employees are the main participants in the value chain and change management processes and have the options to participate in unions rendering services within the organization. Company Values of Respect, Openness, Discipline and Honesty demonstrate the living standards accepted by staff. The strategic changes within the mill operations resulted in the transformation of Company values to “We Lead, We Deliver, We Care and We are Responsible”. Mill Operations are classified as dayshift and nightshift. Operations on paper production are running on a 24-hour basis. The four-shift system is recommended for flexible time to employees.

The following recreational or extramural activities are at the exposure to the employees:

- Golf Club
- Rugby Field
- Soccer Field
- Squash
- Bowling
- Swimming

The company has its Canteen that caters for special and normal food service schedule. The canteen offers food service on a 22 hours service. It must be said that, the company has a high number of employees who has serve their loyal service up to 35 years. The trend of such experienced employees is dropping because of attrition, which cause a high staff turnover.

The economic situation of Rand Dollar exchange has a dramatic effect in the perception and mindset of the employees that, the company does not make profit from its operations.

#### **4.5 Products and Services**

Company specializes in Pulp and Paper production from its operations. The production is an effective coordination of the quality supply chain of specialized departments involved. Sappi Broad product variety is as follows:

- Business Paper

- Flexi pack and technical paper
- Label paper
- Packaging paper
- Printing and publishing paper
- Pulp – unbleached Kraft and chemical cellulose pulp

Specialised products from high-speed machinery are as follows:

- Hi-yield fluting
- Kraft linerboard and premium containerboard
- Machine glazed paper and
- Extensive Sack Kraft Paper

Mill is leading manufacture of a high performance containerboard-packaging product. Unbleached Kraft and semi-chemical pulp is produced for internal consumption for papermaking.

#### **4.6 Growth**

The company has been growing domestic and global tremendously from 1954 and exhausted its market up to 2002. Mergers, acquisitions and share purchases from other companies dominated the business growth trend. Sappi is still regarded as ‘The International Company’ even though some of its operation sold attracted competition. Most of the competition concentrated on the bleached pulp and white paper making. The industry has grown to accommodate small companies to participate in the domestic market.

#### **4.7 Positioning**

Domestic Competitors: Mondi versus Sappi

The current positioning of Sappi has dropped because of no domestic demand and exports are economically unfavourable.

#### **International Competitors**

The latest survey from PricewaterhouseCoopers showed and short-listed the top 20 Pulp and Paper product Industries, as listed below:

Rank	Company	Country	NetSales (bn \$)	Net Income
1	International Paper	US	\$24,976	(880)
2	Georgia-Pacific	US	23,271	(735)
3	Weyerhaeuser	US	16,771	16
4	Kimberly-Clark	US	13,566	1.675
5	Stora Enso	Finland	12,090	(211)
6	Procter&Gamble	US	11,877	954
7	UPM-Kymmene	Finland	9,907	520
8	Nippon Unipac	Japan	9,696	(5)
9	Oji Paper	Japan	9,635	(142)
10	SCA	Sweden	9,091	588
11	Metsalitto	Finland	8,387	118
12	Smurfit-Stone	US	7,483	65
13	Boise	US	7,412	11
14	MeadWestvaco	US	7,242	(389)
15	Anglo American plc (Mondi)	UK & RSA	4,805	345
16	Jefferson Smurfit	Ireland	4,455	93
17	Worms & Cie	France	4,186	180
18	Amcor	Australia	4,071	463
19	Asia Pulp & Paper	Singapore	4,000	(1,450)
20	Sappi	South Africa	3,729	220

Table 4.1: Leading Pulp and Paper Industries ([http://wikipedia.org/Pulp\\_and\\_paper\\_industry](http://wikipedia.org/Pulp_and_paper_industry))

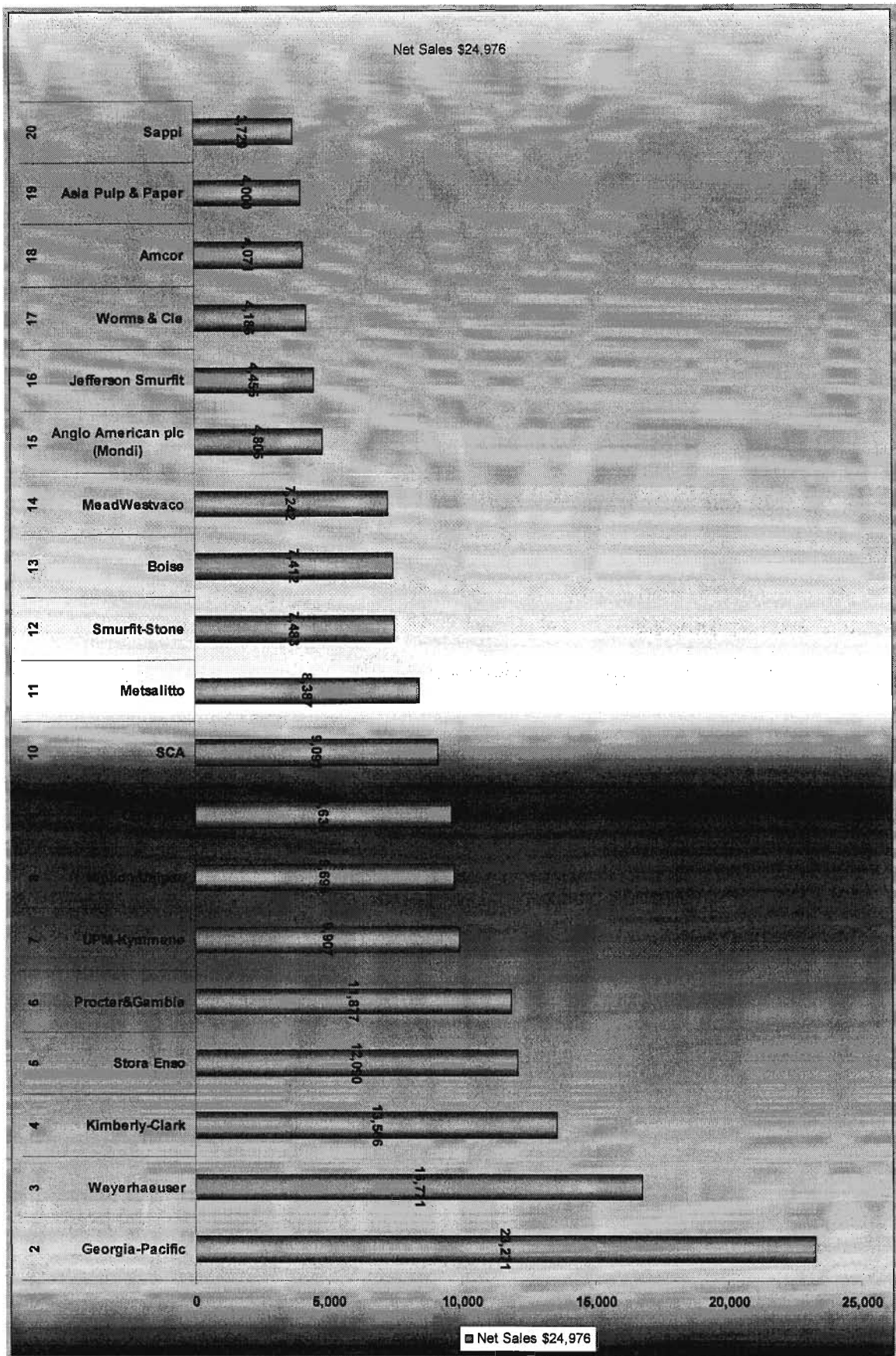


Figure 4.2: Representing Pulp & Paper market share sales (Positioning) ([http://wikipedia.org/Pulp\\_and\\_paper\\_industry](http://wikipedia.org/Pulp_and_paper_industry))

The table and figure above demonstrate the positioning of the International companies manufacturing Pulp and Paper. Sappi is also one of the top companies highlighted and Mondi retaining a higher position.

#### **4.8 Competition: Competitive Advantage**

Sappi has grown as a group with a variety of papermaking operations from the domestic to international market. Speciality in brown and corrugated paper has major business transactions and customer service. The company retain a sustainable and economic status, without relying on external support during unfavourable export conditions. Full control of core raw materials makes it a success in achieving stability. The company is positioned number 20 in the International chart and ranked second in the local market.

The Safety in Sappi Mills has been questionable from the Domestic to International. This aspect was triggered by the age of the Mills, especially Tugela and Ngodwana Mills. The management reviews from the Risk Assessment demonstrated a potential increase, which might have a bad reputation to customers and strengthen competitors. (Sappi Safety Conferences: 2004)

#### **4.8.1 SWOT Analysis**

##### **4.8.1.1 Strengths**

The company has its own Agricultural and forestry plantations in segmented areas of the KwaZulu-Natal Province. The Mill operations for production are structured according to planned plantations, quality of wood, timber and technological changes in product segmentations. Wood and timber plantations are the core raw materials to the manufacturing of core paper products. Company has the support processes to produce its own chemicals for pulping. Mill is located near railways for cheap transportation cost to harbour and export.

##### **4.8.1.2 Weaknesses**

The company still utilises the old technology for operations and needs to be transformed, to ensure excellent quality of products. The new high speed machinery can effectively transform the skills of employees and improve production. The

amount of paper rejects has increased and paper-reworking unit has increased operations. As Sappi does not sell low-grade paper, it is crucial that quality defects are reduced.

#### **4.8.1.3 Opportunities**

The strategic development of disadvantage citizens, Sappi managed to sell some plantations in equity shares to the private sector. This business deal created opportunity for Sappi to revitalize its image and associations with other business partners. The company also own the land on which its mills are built. This reduces rental expenses and promotes expansion capacity when favourable. The orientation of the mill provides the best opportunity to transport access, growing of trees, and environmentally viable.

#### **4.8.1.4 Threats**

The age of the plant and machinery has challenged changes to transform the current machinery for high-speed papermaking. During technological transformation, the following have become threat to achieve a coordinated transition:

- Safety resulting in serious injuries
- Training system lagging
- Competitive advantage

Safety has been a key aspect that the mill has monitored. The continual assessment of safety got neglected because of the following reasons;

- Inconsistent reporting systems being carried out.
- No conclusive follow up investigation reports and measures on incidents reported.
- Ineffective communication channels from Top Management to floor level.

The implementation of a revitalised strategy led to a clear and crucial analysis of Lost Time Injuries (LTI) and All Incidents Frequency Rate (AIFR). This was evident from Table 5.2, with the recognition of data from the frequency of reported to serious injuries. These injuries have an impact on indirect cost incurred.



The serious injuries were classified as Downgrading Incidents and reported to Workmen's Compensation of industries. These incidents carry costs from medical expenses to lost time off duty by the employees.

Staff Awareness Training became crucial in the skills transformation that is required in maintaining new technological machinery. The point of discussion is, how do we equip employees in identifying and document Risk Assessments in their area of responsibility.

Sappi productive performance is uncertain because of Rand versus Dollar economic environment, which favour export market and less profits. The attrition rate made it awkward, thus increasing workload to the current workforce. This crucial stage led to increasing working hours per employee. This became a symptom of the unsafe condition, which Statoil and Rolf Bye (2004) highlighted as causing fatigue resulting to workplace injuries. Risk Assessment analysis become a cautious task that employees have to use as a Safety Tool.

The safety weakness experienced created a negative impact and become the strength (competitive advantage) of and re-positioning by the competitors.

#### **4.9 Safety Department**

The revitalised strategy by Sappi Management in 2005, led to the implementation of a new and independent Safety, Health, Environment and Quality department. The department handles any risks with regards to safety, including tools, machinery, people, support structures, property, health and environment. The global strategy led to the implementation risk assessments in all areas of the organization, which could cause a threat in proper management.

##### **4.9.1 Recorded Statistics and Documented Data**

The department keeps statistical records of the reported accidents and incidents for the Mill. Recorded data becomes the secondary data and has to be analysed and investigated for a possible solution. The department will propose and implement

proactive and preventative measures, to ensure safety of the employees during normal working activities.

Management of the organization has fully committed itself to the effort of continual improvement of the safety records, with regards to workplace injuries. It is thus crucial that every accident or incident is reported, for documentation and improving work standards. This would also entrench a safety culture, which is aimed at reducing risks and injuries being experienced.

The department also devote its effort in streamlining the social responsibility of the employees through initiatives such as Employee Advancement Programmes, free visual testing, free psychological advice, HIV/Aids programmes, and Wellness programme via magazine.

#### **4.9.2 Revitalisation**

The department has a difficult task in improving safety performance through programme. The key problems at disposal are as follows;

- Communication and
- Sappi Management.

Communication issues relate to employees' understanding the need; what is expected of employees to do; feedback response period and closed book management (McSween: 2005).

Management problems highlight the lack of management skills and participation in activities, which measures, support, coach and help design a good performance plan.

Revitalisation observes and analyse the preparedness, Leadership and Support to the approved plan. The recorded and analysed data is a trigger to the revised implementation plan.

#### **4.10 Safety Proactive Measures**

The company has implemented June 14 as a Global Health and Safety Day. This day is the first in the history of the organization and participative style of employer-

employee is crucial and planned activities are scheduled to support this day. Sappi regard the day as encouraging social responsibility to the employees to take care of their health and safety, and those of their colleagues. The day encourages all staff to participate in suggestions to improve safety.

Sappi Safety Committee has especially nominated Friday, as a Safety, expected Injury Free for employees' and family to carry through the weekend. The day commemoration is recognized from employees by the wearing of a special T-Shirt with an attached Safety Logo. From observation, the number of employees wearing a special T-Shirt is increasing statistical awareness

The participation in the following programmes has improved staff awareness and intensified the sustainability of the safety issues;

- Implementation of OHS 18001 and Certification
- ISO 14001 and 9001 Audits
- Behaviour Based Safety
- Conferences and Seminars (Sappi Internal Bulletin: 2006)

#### **4.11 Organizational Performance**

The organization operates as a business enterprise and its performance is normally based on financials and production. The financials will not be discussed, but an evaluation on production figures is crucial for verification of progress. In brief, the organization is sustaining its financial position during unfavorable export conditions. Performances of individual employees and group are important.

##### **4.11.1 Individual Performance**

The organization has Human Resource structures that improve the working standards of the employees and demonstrate the vision towards organizational objectives, goals and sustainability. Performance measures are carried out annually to improve working standards. The development activities are guided by the performance criteria that demonstrate the line of authority of the individual contribution to the performance of the group and the mill. Scheduled and routine Performance appraisals are conducted within the organization and serve as a measure towards effort

recognition. The performance recognition is a measure of performance attained and progress towards promotion to the next level. Organization takes into account the integrated model factors into consideration and evaluate according to standard format. Concerned areas of absence, behavioural attitude, and work standards are discussed for improvement.

#### **4.11.2 Group Performance**

Departments or sections within Sappi hold meetings on continuous basis to eliminate bottlenecks and resolve problem areas, which have a direct impact on production. Each section is evaluated on problem areas captured from downtime, production and money spent. These evaluations are subject to performance and operational inconsistency. Every employee has an opportunity to participate, suggest or recommend better practices to ensure improvement of sections.

The shortage of staff, through attrition exerts pressure from workload and results in production bottlenecks and increase chances to incidents happening.

Sappi quarterly review its financial position in terms of the income statements, market review, outstanding orders, new customers and potential areas of improvement in the target market.

Export market became favourable from September and some profits were invested and some debts were part paid. The latest trend in production shows higher confidence levels reaching an increasing production in the next quarter (Income Statement: 2006).

The mill opts to reach the minimum stock levels in preparing for export product demand. Operations and maintenance issues are being improved to ensure lower downtime on production machines (Forecast: 2006).

Management tools such as Total Productive Management, called TPM, have been revitalised to clarify operating policies and guidelines to effective production. For strategic participation, SHEQ also entrench support of Safety awareness within the

Mill. Safety department initiated safety aspects in the work procedures, works instruction and revitalised audit system.

Group processes, as described by Hugo (2005), are broad and need to be fully coordinated and participative from employer to employee with feedback.

#### **4.11.3 Safety Performance**

Sappi Kraft has developed, established and implemented safety and risk incentive status called Kraft Incentive Supplementary Scheme (KISS). Incentive is sensitive to unsafe incidents; leave days, sick leave days and production achieved during the period. The overall incentive evaluates incidents, production, and revenue and incurred costs. Risk incidents are discussed at a higher level of authority and cascade to shop floor level as implementation measures. Safety Targets are set through the participation and commitment of the sections Stakeholders and those affected. Proactive measures to possible solutions are exhausted to reduce risks that can incur indirect cost impact on the organization.

The evaluation is based on a budget. This system encourages employees and improves mill performance. For the 2006 financial year, the performance incentive had been paid out to the employees because of safety improvement achieved as compared to 2005. The organization scheduled Safety get together achievements across the departments to encourage safety culture among the employees.

#### **4.12 Productivity**

The mill has developed a strategic approach to concentrate on Safety, as a measure to improve employee ability. Productivity is linked to performance, in terms of daily production, equipment efficiency and Normal working hours without loss of production from target production capabilities. Total Productivity Management strategies have been revitalised for effective production operations, maintenance and improvement of machine availability for production. This ensures equipment reliability and human capability for improved production.

### 4.13 Industrial Labour Relations

Sappi complies with the employer-employee-union relationship. Employed staff have a variety of Union organizations, representing them in organizational disputes. Sappi allowed every employee to democratically choose the union that can represent his or her requirements. The four recognized unions have an operational agreement with the employer, to ensure proper handling of conflicts. These unions also form part of the structures and processes for conflict resolution. Structures must fulfil strategic goals, handle conflicts and utilize power struggle through negotiations.

Sappi Complies with labour relations policy of South Africa, which allows the three parties to participate in conflict handling and expected to achieve goals. Government is considered the regulator and the chair of the negotiations between the employer organizations and employee organizations.

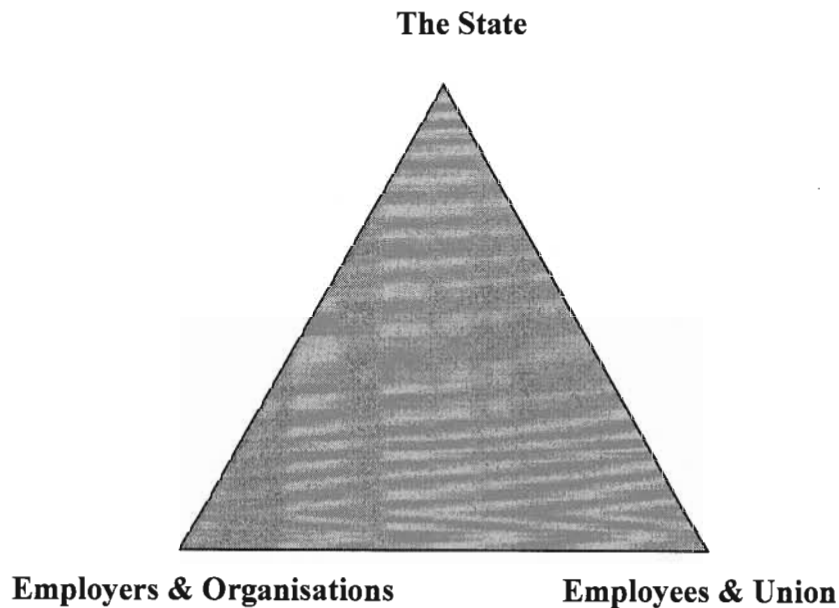
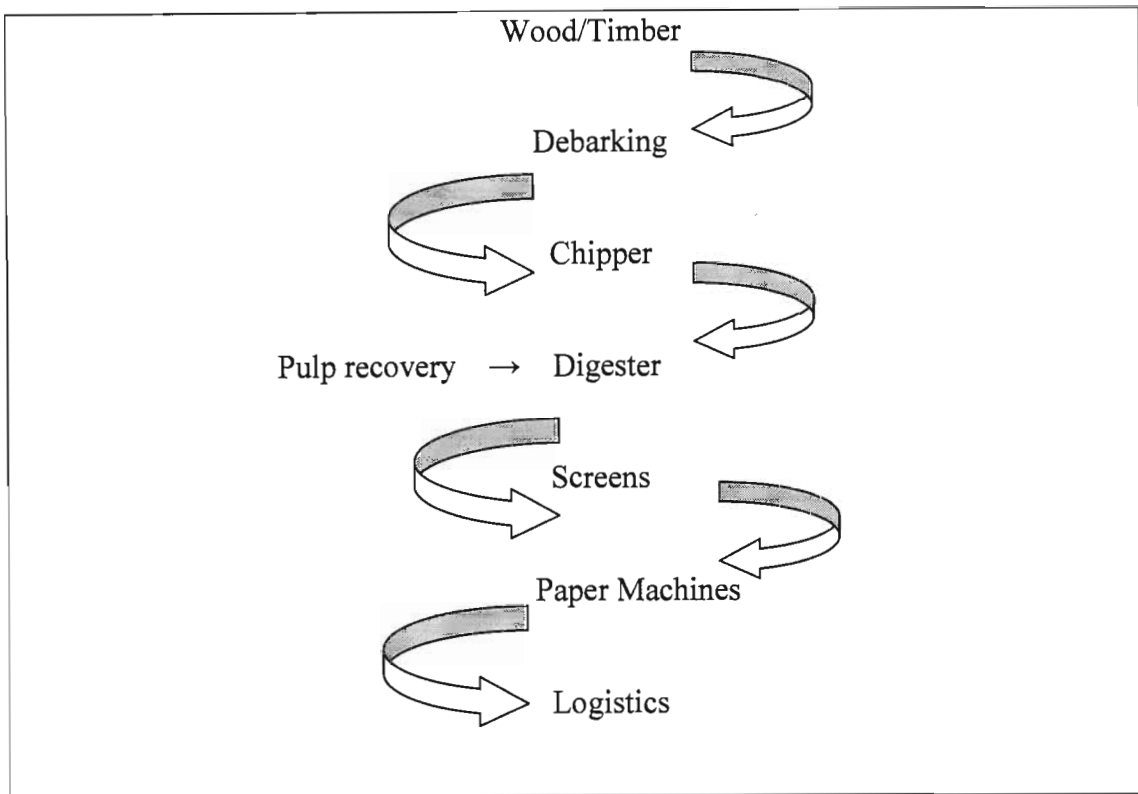


Figure 4.3: Labour Relations Framework of S.A (Finnemore: 2002)

### 4.14 Sappi: Paper Process

Mill has the capacity to produce on brown paper; no bleaching stage of the process is take place within this mill. Our basic process starts from;



Supporting sections are: Waste plant, Utilities and Repulper

Figure 4.4: Presentation of Process Flow

### 4.13 Conclusion

The organizational products and services are the backbone for the organization to run and be sustainable as a successful business. More of the business profits are obtained from export market, if economic conditions are favourable. The current unfavourable Economic and Operational conditions have also been threatened by unsafe risks employees get exposed to, because of ineffective technological transformation and production pressure to sustain profits. The emphasis on safety has been made crucial and proactive measures have been implemented, communicated to entrench safety culture. The Sappi case presents a proper study to evaluate the impact of safety towards expected growth in overall performance.

# CHAPTER 5

## Data Analysis and Results

### 5.1 Introduction

This chapter presents the data collected with reference to the study objectives and the questionnaires responses, as detailed in the previous chapters. Data analysis tools will demonstrate if there is progress on the subject of study and current status of the organization. Excel spreadsheet and SPSS tools are used for collective data analysis. Results are presented in graphical format and tables constructed, from SPSS to accommodate relevant data. Secondary data from previous statistics is captured as tables to demonstrate improvement of data to date. The current safety performance for the organization is presented for feasible recommendations to improve.

### 5.2 Theoretical Framework

This part will demonstrate the effect of awareness of Safety by employed staff and Sappi management within an organization by analysing the data collected from questionnaire. Analysis of Communication, Behaviour, Training and Safety should demonstrate progress to the safety strategic measures implemented. The relationship of these factors is expected to determine transformation of the Safety Department, during the implementation of safety towards zero achievement of injuries.

The number of workplace Injuries sustained from 2003 to 2006 should show the positive or the negative outcome of the project. For optimistic scenario, the number of LTI and AIFR must drop if compared to previous years. If not, the study objectives will fail and potential problem areas will have to be highlighted and recommendations to overcome them.



### 5.3 Demographic Profile of Interviewees

The information below was compiled from the questionnaire used during Interviews.

Table below provide clear analysis of the Demographic profile.

Interviewee	Gender	Grade	Service	Age Gap
1	M	11	9	46-55
2	M	5	30	46-55
3	M	5	12	36-45
4	M	5	14	36-45
5	M	13	12	31-35
6	M	4	5	56-65
7	M	3	16	46-55
8	M	5	21	46-55
9	M	4	2.6	36-45

Table 5.1 Tabulation of Demographics for presentation

Above interviewee profiles shows that the gender equity is lacking, since is male dominated. From grade 3 to 5, 72% of management members have more twelve years and more experience with Sappi. The interviewee employee service record is graphically presented below. The analyses of the record determine the awareness of Sappi Kraft's culture that is embedded within Sappi Management. The average service of management is 13 years, which demonstrate a good understanding of the Mill background and a Future Vision.

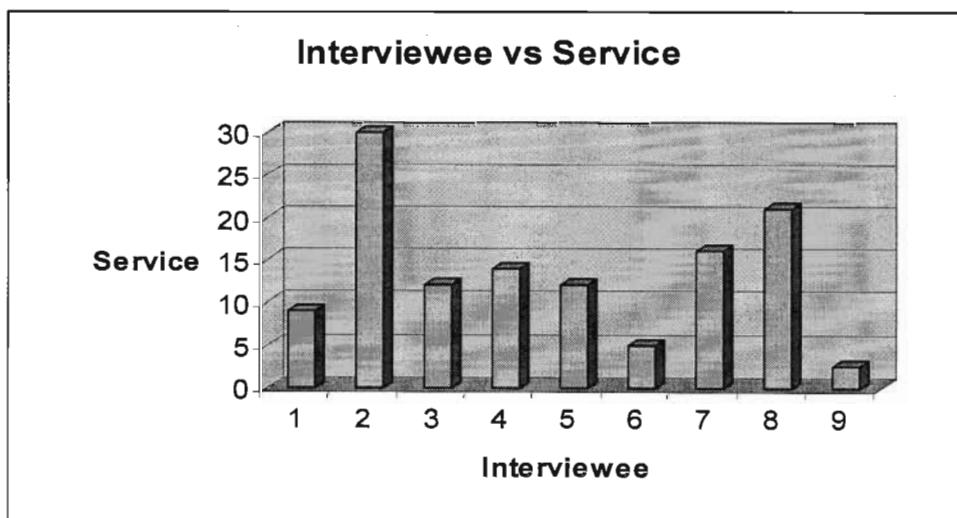


Figure 5.1 Graphical presentation of Demographic for Interviewees

## **5.4 Data Collection**

A number of methods of collection of data were used in the research study. This included observations, mill conference attendance and incident reporting. These methods are briefly detailed below.

### **5.4.1 Observations**

This part of data collection was possible because the researcher became a participant and an observer during the Research. The observations consisted of the following;

- Conferences
- Global SAFETY Day
- Behaviour Based Safety Programme
- Training Schedule and
- Housekeeping and ISO audits

#### **5.4.1.1 Conferences**

The first round of conferences was compulsory and every employee was expected to attend. Schedules were made to ensure all shift workers participated in the sessions. Crucial discussions regarding safety related issues, current operational of machinery and concerns of employees were openly shared.

The recorded data of attendance showed that only 65% of the employees attended. The remaining 35% consisted of Night shift workers, who could not attend day sessions.

To cover the shortfall, top management tasked Line Managers and Supervisors to continually discuss the Safety message to other employees

#### **5.4.1.2 Global Safety Day**

Sappi Kraft management and Stakeholders supported the nomination of the 14<sup>th</sup> day of June of every year as commemoration to employee Safety. This day is filled with scheduled activities to engage and strengthen the participation of employees and management at all levels of the organization. Core safety activities such as Behaviour

Based Safety (BBS), Interactive discussions, and Operational Safety suggestions are strengthened. Employees are motivated to forward suggestions with regard to safety awareness. Out of 900 staff members, 58 percent of staff contributed to the safety suggestion scheme for year 2006. All these suggestions were received on the 13<sup>th</sup> and the 14<sup>th</sup> June.

#### **5.4.1.3 Behaviour Based Safety**

The programme has been adopted from the United Kingdom based industries, because of the involvement of Sappi in International Business operations. Programme intensifies plant and safety observations, risk assessments and recognize multi-skills of the employees. The participation of Sappi employees within South African Mills (Cape Kraft, Enstra, Saiccor and Ngodwana) in this program is on the increase, with continuous training sessions being conducted.

The Quality of observations is improving with responses to non-conformances encountered during plant operations. The behavioural study dominates pitfalls if safety is not strengthened and intensified through participation. Sappi Kraft experienced pitfalls in the Quality of Safety response and timing of implementation. This was caused by a longer period of investigation to practically implement possible solutions. Continual training in SCATT Analysis is hoped to further improved inconsistencies in observation reporting and practical elimination of communicated risk, with practical solutions.

#### **5.4.1.4 Safety Training**

Sappi Tugela has formally approved training sessions to be carried out on continual basis. This is because of the following reasons:

- a foreseeable risk in increasing rate of recruitment and attrition of employees.
- to target areas such section Management Departmental Team, green area meetings and monthly safety meetings.
- To intensify Safety strategy and influence Culture

Skills to identify risks and operational risk machine areas are discussed. Green area meeting is grouped as a direct outcome based training because safety problems are highlighted and possible solutions are proposed.

### 5.4.1.5 Housekeeping

Sappi Kraft identified clean area of work as the start to any safe work to be carried out. Housekeeping is crucial in terms of an orderly manner in which tools, hosepipes, floor condition and paperwork is kept. This has become crucial to all departments and regular audits are scheduled weekly for inspections. Set standards of ISO 9001, ISO 14001 and OHS Act are used as benchmark measures to ensure proper housekeeping.

Legal practices of audits are followed and corrective actions must be carried to eliminate non-conformity. An overall audit assessment for the mill has reached 75% and there is room for improvement expected from the pulp mill departments.

### 5.4.2 SECONDARY DATA ANALYSIS

The following tabled statistic data has been evaluated according to Loss Control Studies by Bird (1969). The analysis was captured from secondary recorded data. The analysis does not depict the pyramid concept described from Loss Control studies.

Categories	2002	2003	2004	2005	2006	Comments
Serious Injuries	26	21	16	15	9	Recorded as downgrading
First Aid Incidents	226	125	82	85	82	Medical Record of treatment
Property Damage	124	90	149	97	130	Include theft and misuse
Near Missed	Not recorded	3	11	12	15	Shortfall
Total Incidents	376	239	258	209	236	-
Total Days Lost	6146	3728	449	7322	542	6780 difference from 2005

Table 5.2: Recorded Data vs. Bird Pyramid (Sappi Tugela Database, SHEQ department, 2006)

The near miss figures are increasing; this is because of better reporting and a better safety programme. This programme has also created awareness, which has resulted in reduced serious injuries from reports.

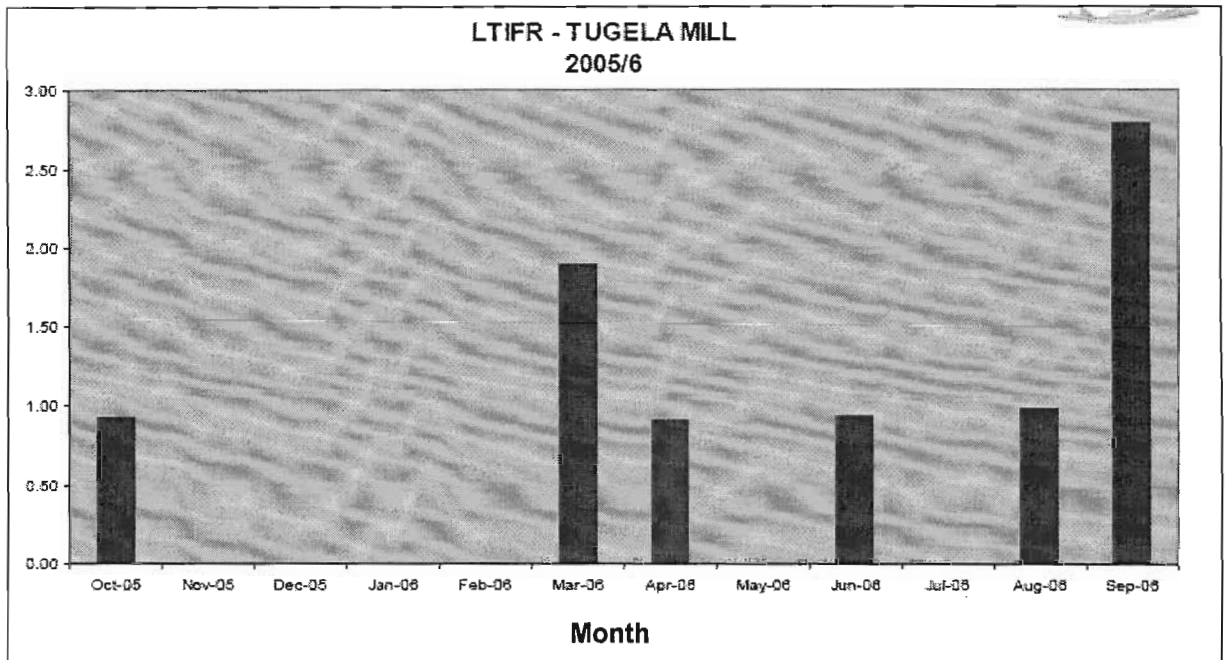


Figure 5.2: Graphical presentation of LTIFR for 2005/6 period (Sheq : 2006)

**Interpretation:**

During periods where no bar graph was indicated, means 'zero lost time 'was achieved. The organization has achieved 58% average on zero lost time for the first year period. This is an outstanding improvement from previous years, 2002 to 2005.

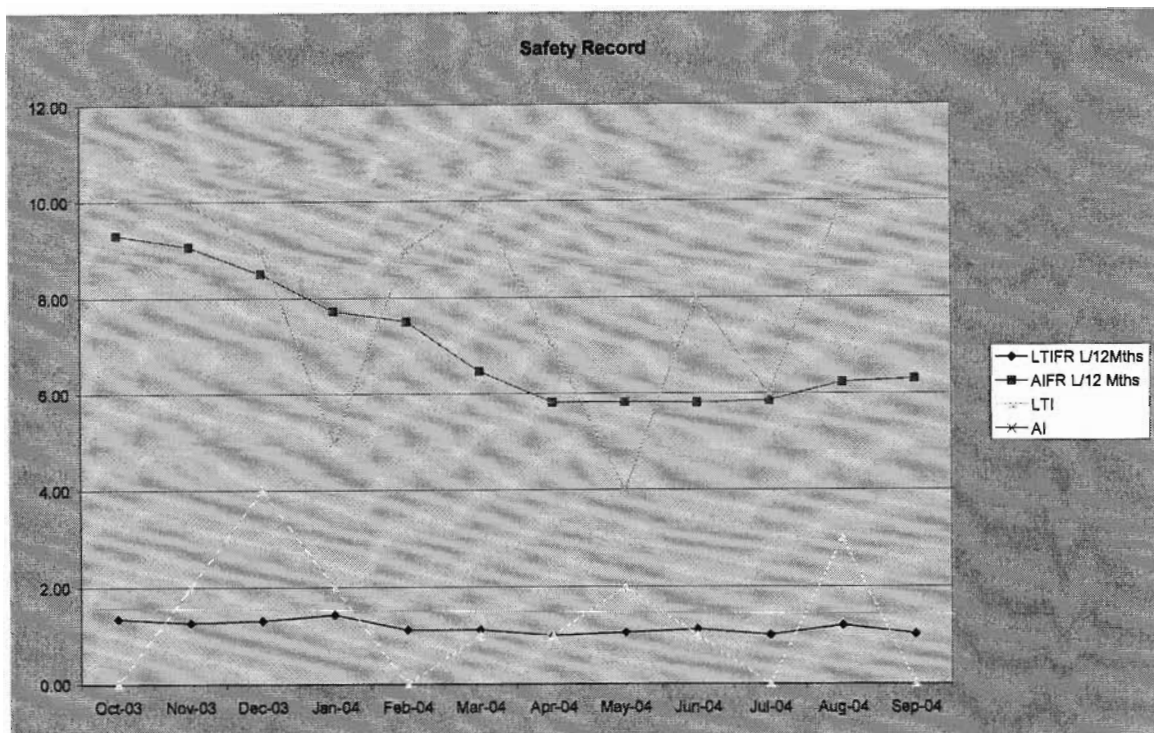


Figure 5.3: Present secondary Data for 2003/4 fluctuations in LTIFR.(Sheq Database: 2006)

**Analysis:**

The above recorded and graphical data does not conform to the pyramid prediction described from Loss Control studies by Bird Jr (1969). Near miss reporting deviation is high, if compared with 2005/6 achievements. This means employees do not report near misses, but incident reporting has increased relative to injuries sustained. The perception is that reports are generated only if employee is injured. The full campaign for the study is to encourage near miss reports, as a tool for identifying future awareness of risk areas, machinery and environment.

There is a great perception and psychological analysis that, performance is affected by low safety standards.

Lost Time Injury Trends – Recorded					
Year	2002	2003	2004	2005	2006
Days Lost	6146	3728	449	7322	542

PRODUCTION PERFORMANCE TREND										
Year	2001	2002	2003	2004	2005	Jan06	Feb06	Mar06	Target	Average
PM1	200	183	168	195	176	184	193	176	210	184.375
PM2	527	576	522	526	546	537	526	539	575	537.37
PM3	21	23	24	25	26	23	25	22	26	23.625
PM4	183	186	148	132	146	138	140	163	210	154.5
TOTAL	931	968	862	878	894	882	884	900	1100	899.875

Table 5.3: Lost Time vs. Performance (Paper Mill Database: 2006)

Analysis:

It is difficult to determine or quantify the production output from Lost Time Injury. The overtime worked can determine the impact of the time lost. The overtime worked could not be included to verify because of the sensitivity of the issue.

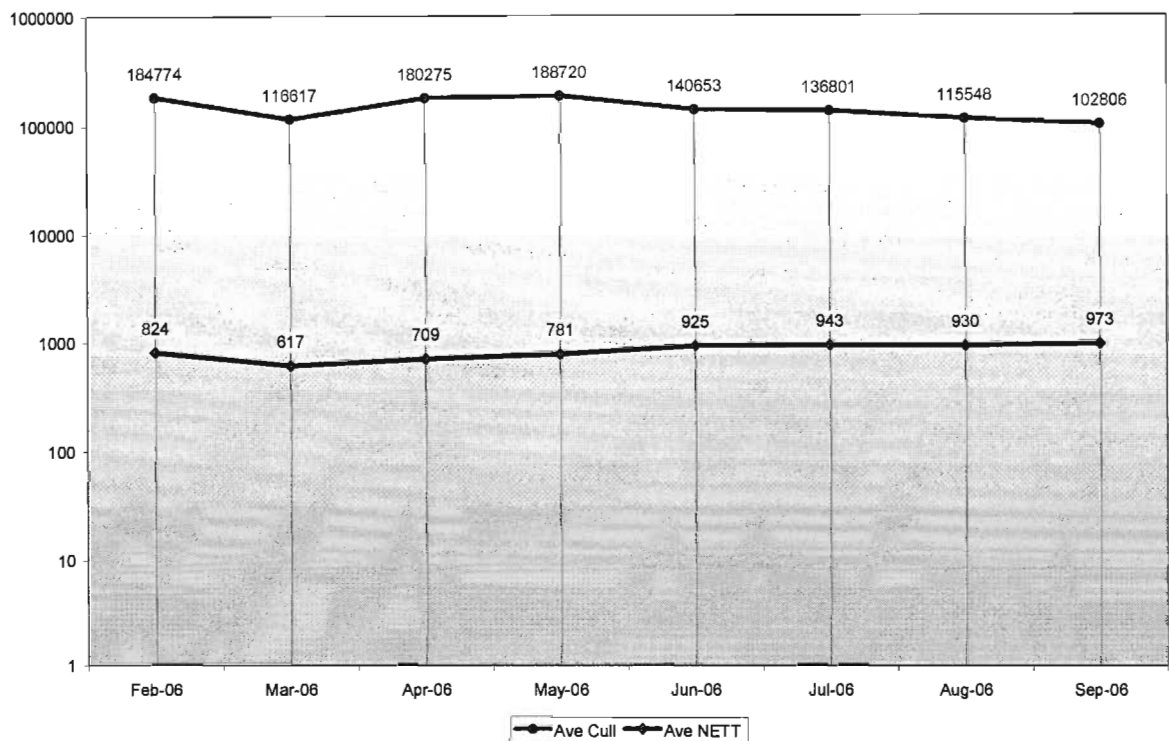


Figure 5.4: Graphical presentation of the 2006 production record (Paper Mill: 2006)

Analysis:

From the above data, the improvement in performance cannot be easily identified. The project strategy was implemented in October 2005 and production improvement can be identified from short term. The Project is aimed to run for at least five years, and management system progress to evaluate improvement.

### 5.4.3 PRIMARY DATA ANALYSIS

#### 5.4.3.1 Questionnaire Data

Data was collected from middle management to shop floor for response. Part of data was used as a trigger to the need. Full analysis was not carried out since data could not make the required sample number from the population.

The collected data has been attached in Appendix 9 and has full characteristic of the analysis to be determined. The analysis using Excel spreadsheet and the relationship is captured on the graphs below;

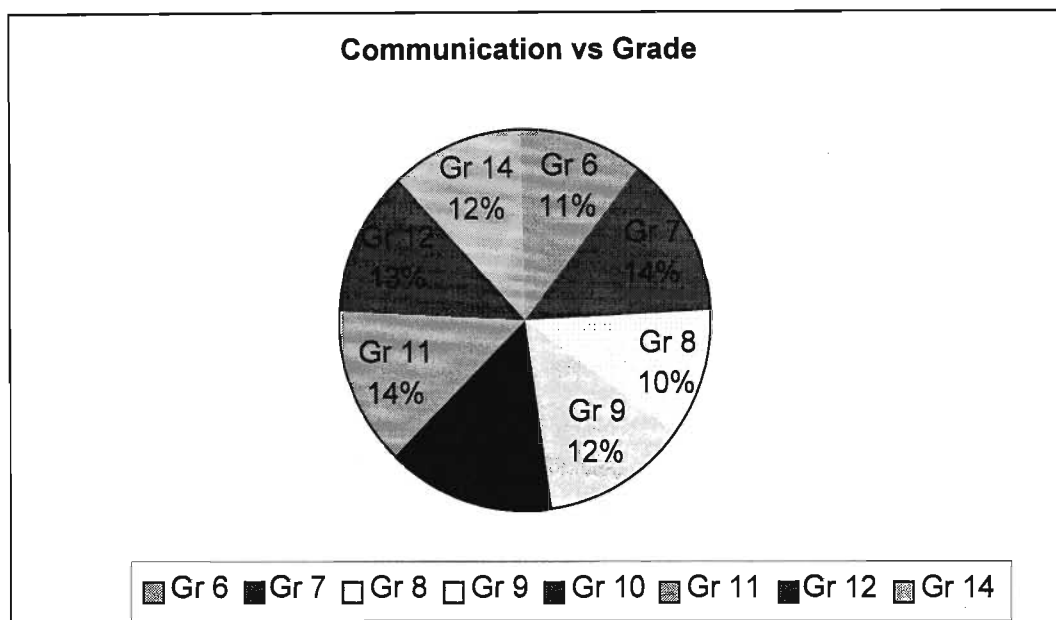


Figure 5.5: Graph presenting Communication versus Grade relationship

Analysis:

The above relationship represents the floor level responses. Grade 1 to 5 level represent management analysis carried out as Interviews.

The above figure demonstrates an even spread of information through communication modes to different grades. Employees have an interest in the strategy proposed by management.



This presents an excellent initiative to ensure further interaction to achieve expected objectives.

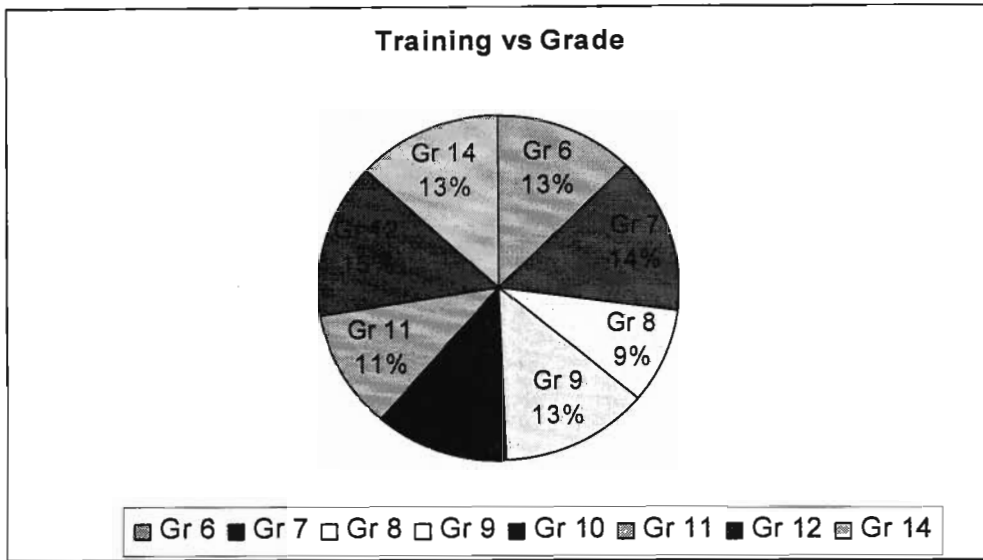


Figure 5.6: Graphical relationship between Training vs Grade

Analysis: (Figure 5.5 and 5.6)

Graph demonstrates a drop in training from the grade 8. This shows a negative impact on the technician level, with relevant to safety. This is a warning signs to improve safety training at this level.

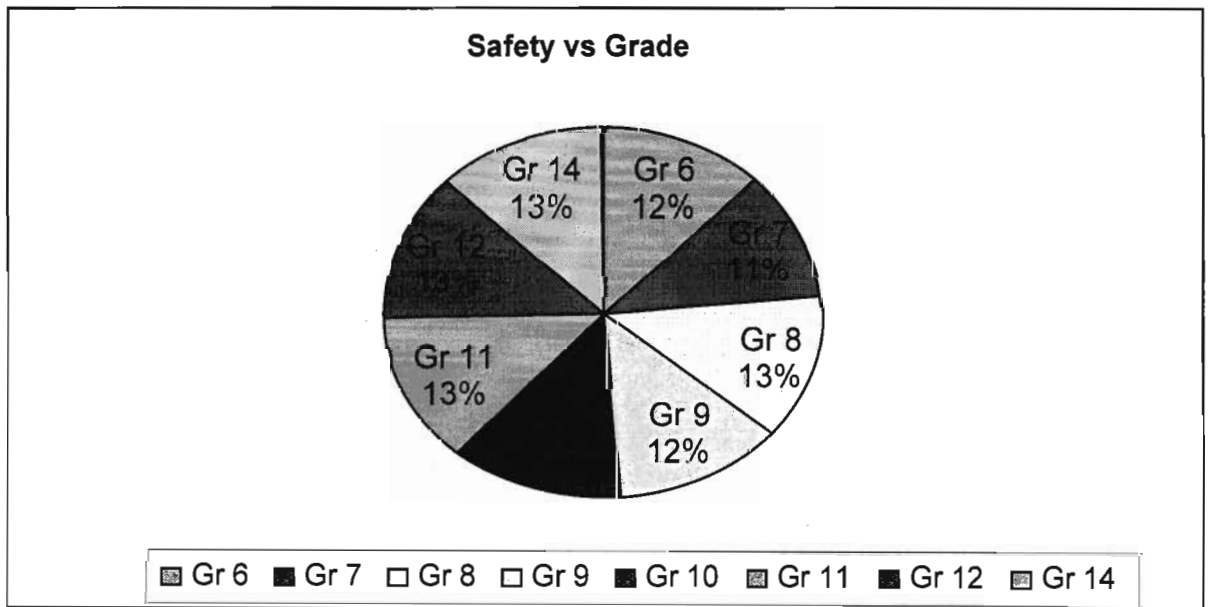


Figure 5.7: Graphical relationship of Safety versus Grade

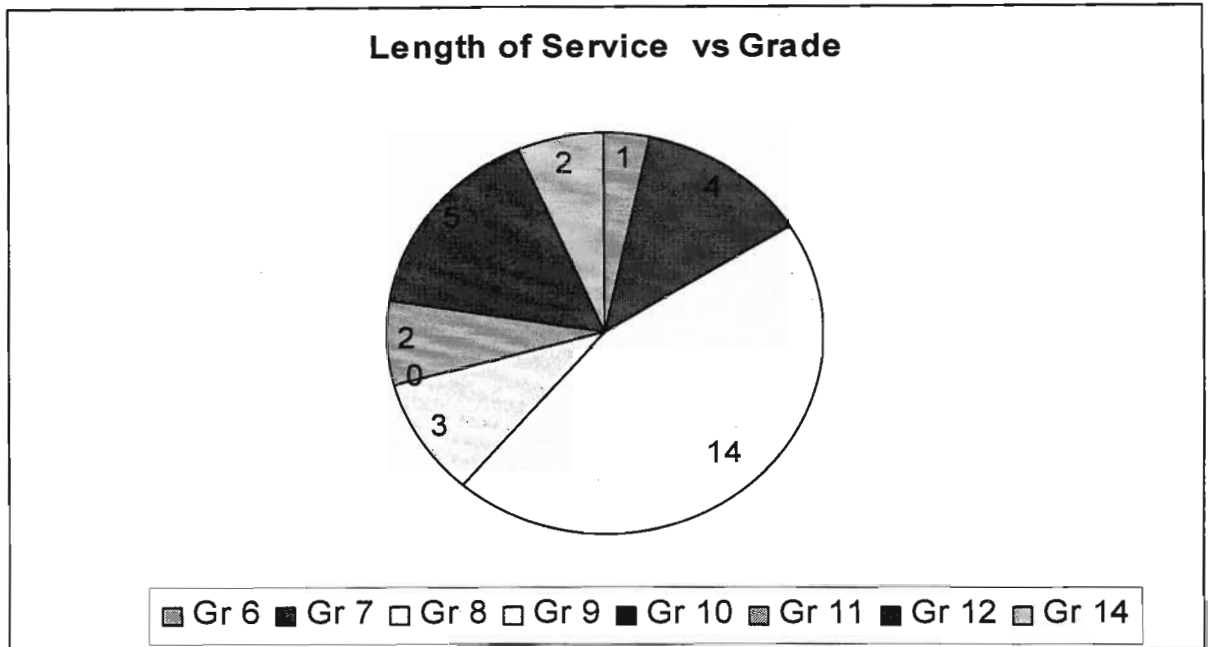


Figure 5.8: Relationship on Service versus Grade

**Analysis:**

The relationship shows that employees at grade 8 level of the organization have a long service history than other grades. The least percentage score in training and on communication demonstrate a high resistance to change. There is a level of risk since this level has the leadership role and supervisory capacity.

**5.4.3.2 Interview Data**

Data was captured and attached at the appendix. Analysis of the data was done using the SPSS statistical tools. The nature and the number of responses made it easy to precise analysis. The results of analysis were presented as follows;

Question 1: The importance of top management leadership in the current success of project zero (in %) (n=9)

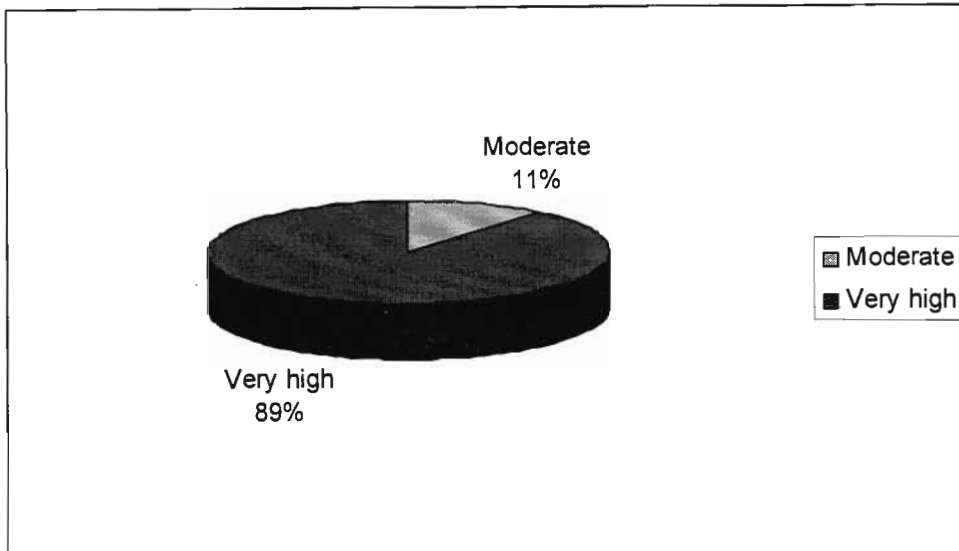


Figure 5.9: Leadership presentation

Analysis:

Management see their impact in the project very high. The 11% is observed as the participation of employees to demonstrate and recognize the management influence.

Question 2: Rating effectiveness of communication between management and employees regarding project zero message

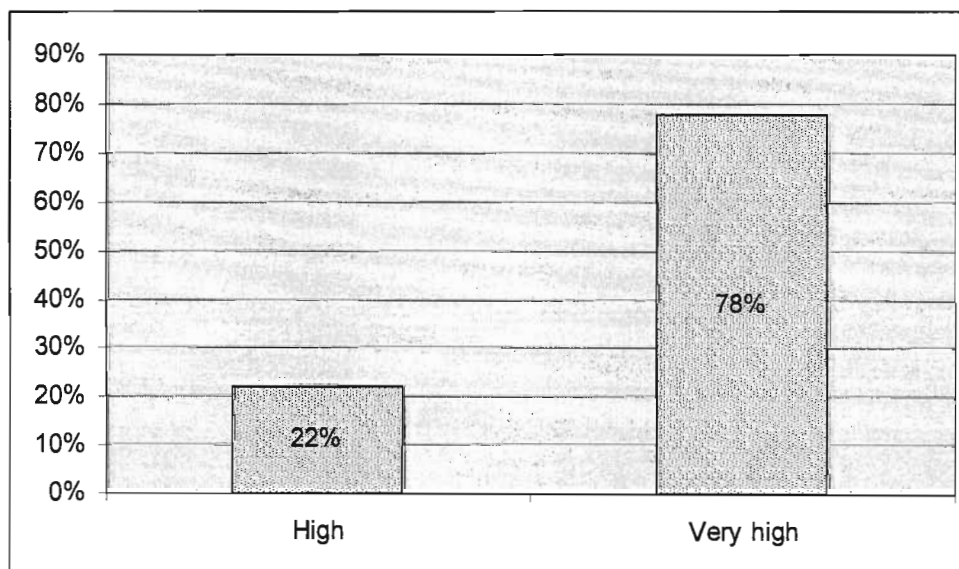


Figure 5.10: Graphical interpretation of Communication established

Analysis:

The shortfall remains a challenge to both employer and employees. Points of misunderstanding need to be attended to. Improving literacy of employees can improve the electronic access from 65% to at least 90%.

Question 3: Effectiveness of inspections and maintenance for preventing injuries in the workplace (in %) (n=9)

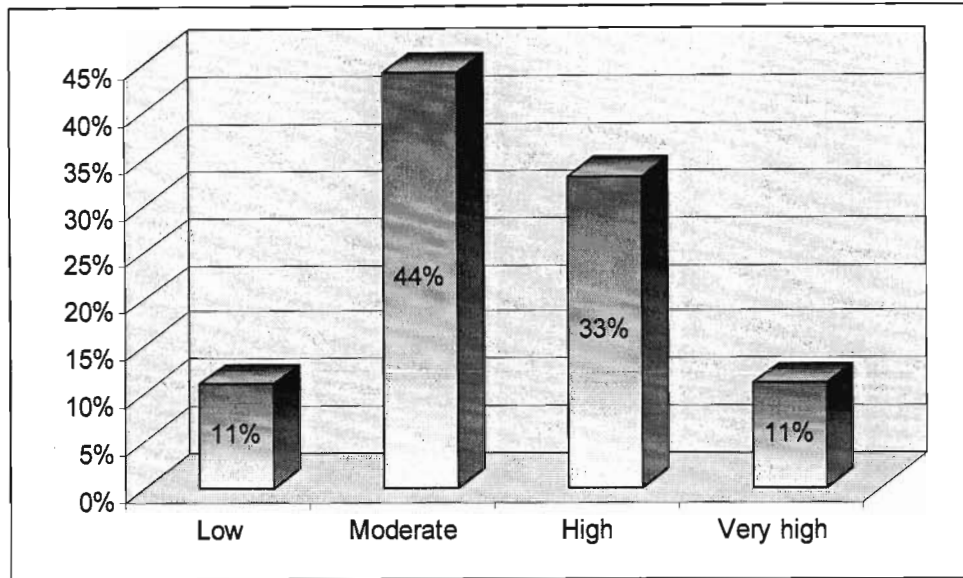


Figure 5.11: Interpretation of Inspections and Maintenance

Analysis:

There is an uncertainty on the effectiveness, but has to be done to influence culture of change. Housekeeping is the ideal activity audited. This activity is not easy but need transformation of mindset, culture and observational phases. The low rating represents the improvement that needs to be made in carrying out this activity.

Question 4: Effectiveness of the analysis and investigation of incidents or accidents (in %) (n=9)

Rating	T (n=9)
Moderate	32%
High	23%
Very high	45%

Table 5.4: Representation of analysis and investigation

Analysis:

The system can only be improved than to drop. Lot of improvement is needed, to focus on the highest level of investigation. Possibilities of facilitator or expert training needed for the key members of the mill.

This will improve response to full investigations and implement corrective to prevent reoccurrence.

Question 5: Extent at which the management is prepared for any emergency that can occur within the mill (in %) (n=9)

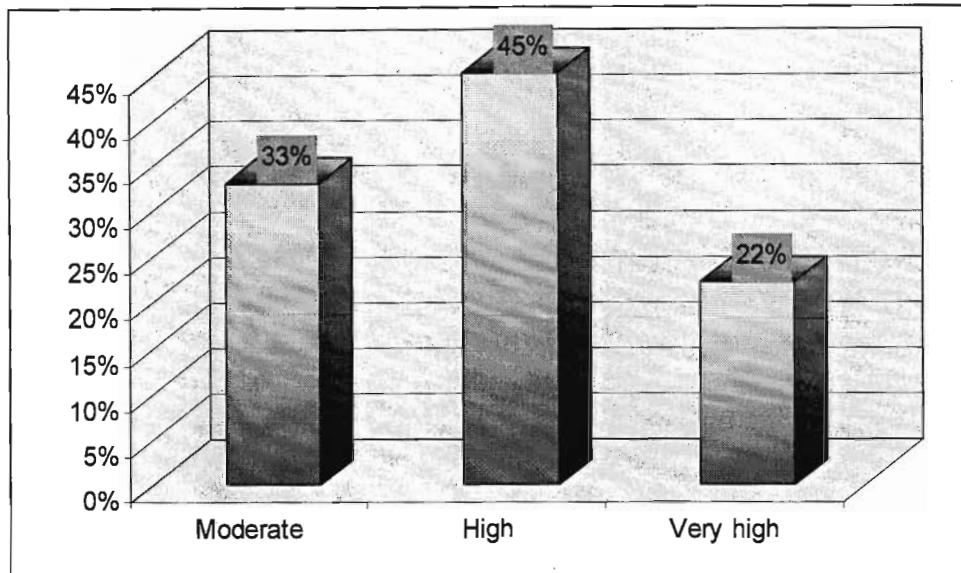


Figure 5.12: Indications of Emergency preparedness

Analysis:

The organisation has managed to handle emergencies that have happened so far. Extreme emergencies have not been encountered, but a key aspect of a safety programme is to ensure that such emergencies are avoided.

Question 6: Impact of staff training programmes in raising awareness about health and safety (in %) (n=9)

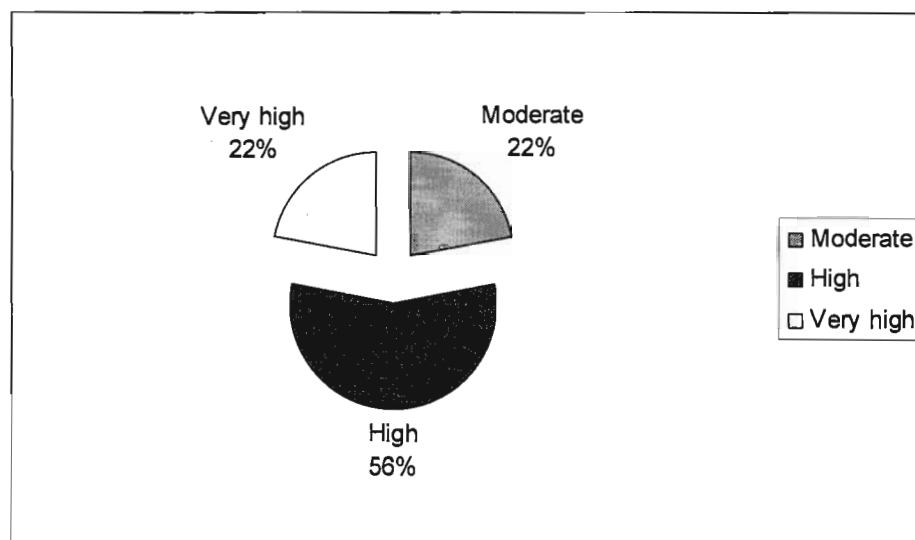


Figure 5.13: Impact of Staff Training towards awareness

Analysis:

Management see the need to educate its employees about health and safety. This is the managements responsibility of demonstrate their social responsibility and care of their employees.

Question 7: The extent at which health and safety culture has improved within the mill, since project zero inception (in %) (n=9)

Rating	T (n=9)
Moderate	22%
High	22%
Very high	56%

Table 5.5: Cultural Transformation on Health and Safety

Analysis:

The culture can be transformed to change. This progress can be verified on the shop floor. This demonstrates the managements ‘intention to change the culture.

Question 8: Importance of the mill’s safety record to the market and customers (in %) (n=9)

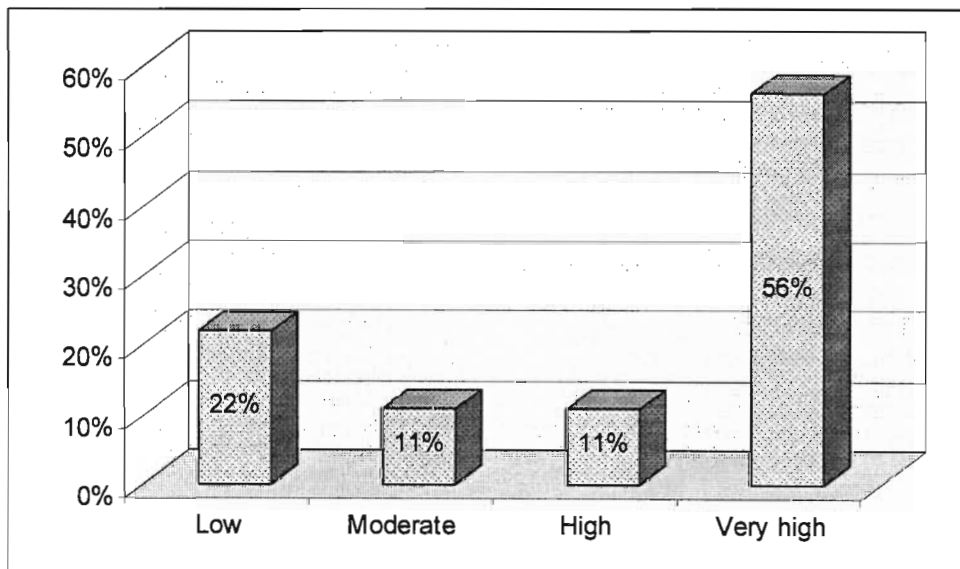


Figure 5.14: Presentation of Mill Safety Record

Analysis:

The Safety Record is seen as important. One way or the other, customers could perceive Sappi Kraft’s record as bad and change to competitor products because of that good reputation. This analysis also shows that some customers do not care about health and safety record.

Question 9: Risk of a high staff turn over since new employees have not been exposed to the mill or project zero (in %) (n=9)

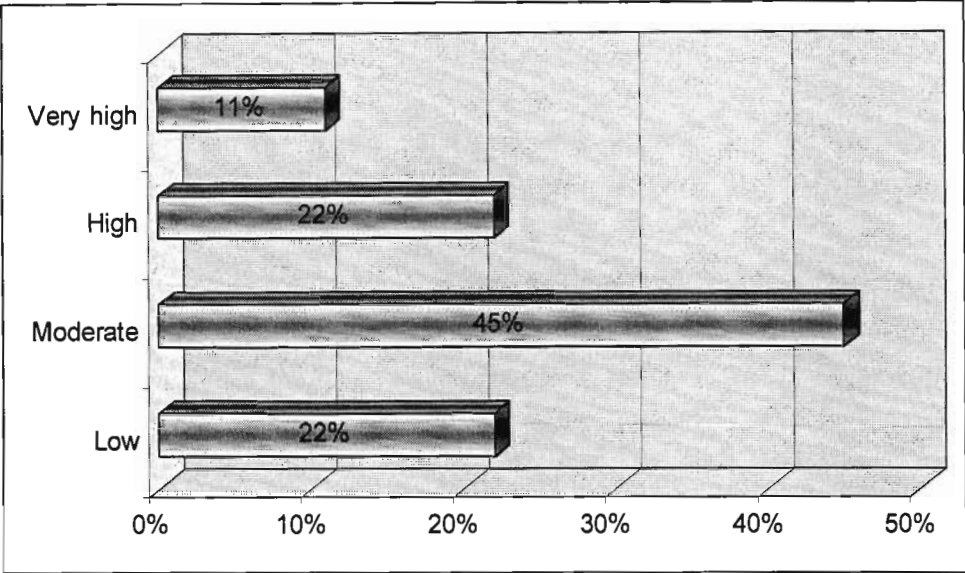


Figure 5.15: Impact of staff turnover

Analysis:

Sappi does not currently look at staff turnover as a threat to their operations. This can only be measured by the number of skilled personnel leaving and hired by the mill.

Question 10: Rating of project zero conference attendance (in %) (n=9)

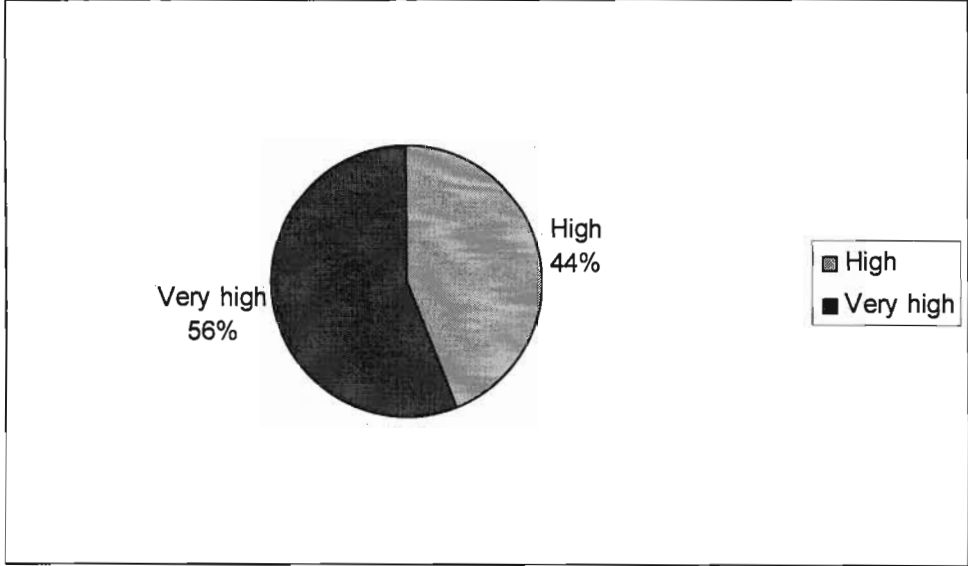


Figure 5.16: Attendance of conference rating

Analysis:

It was expected that all employees would attend. The list provided for the attendees show a 65% attendance. The 35% of staff who failed to attend creates a void. In addition some contractors were not invited to attend.

Question 11: Overall impression of the current status to the objective of the project (in %) (n=9)

Rating	T(n=9)
Moderate	56%
High	22%
Very high	22%

Table 5.6: Management impression of current status

Analysis:

The impression demonstrates current level of confidence by management and can improve over a long term. There are outstanding issues that need proper implementation and improved levels of confidence from employees.

Reliability of Data received on Leadership, Communication, inspection & maintenance, health and safety.

#### Reliability Statistics

Cronbach's Alpha	N of Items
.733	5

Table 5.7: Present reliability of information gathered

This means, the reliability of information received is 73.3% regarding the above key issues. The remaining 27% demonstrate a shortfall on information collected for the analysis of the research.

#### T-test

The importance guideline of the responses received on performance rating questionnaire:



## Test Statistics

	how effective are inspections and maintenance for preventing injuries in the workplace	to what extent are we prepared for any emergency that can occur within the mill	How important are the staff training programmes in raising awareness about health and safety	how important is the mill's safety record to the market and customers	what is the risk of a high staff turn over since new employees have not been exposed to the mill or project zero	how would the project zero attendance be rated	what is your overall impression of the current status to the objective of the project
Chi-Square (a,b,c)	3.000	.667	2.000	4.778	2.111	.111	2.000
Df	3	2	2	3	3	1	2
Asymp. Sig.	.392	.717	.368	.189	.550	.739	.368

a 4 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 2.3.

b 3 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 3.0.

c 2 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 4.5.

Table 5.8: Test Statistics analysis

Analysis provides the importance of questions and how respondents answered them. The differential determine the sensitive questions and identify priority questions which are a must happen. On the above table; project zero attendance and emergency preparedness are crucial in developing the safety strategy.

## 5.4.4 ANALYSIS OF OBSERVATIONS

### 5.4.4.1 T-Shirts Statistics

The information was captured whilst acted as a participant observer, for the research chosen. The main idea was to foresee the transformation from employees in articulating the cultural change. Observation was captured on the Fridays and employees are expected to wear their casual T-shirt with a Zero Injury emblem.

Graphs demonstrate an improving average of employees adhering to cultural change. The trend provides an optimistic view to cultural improvement within the mill.

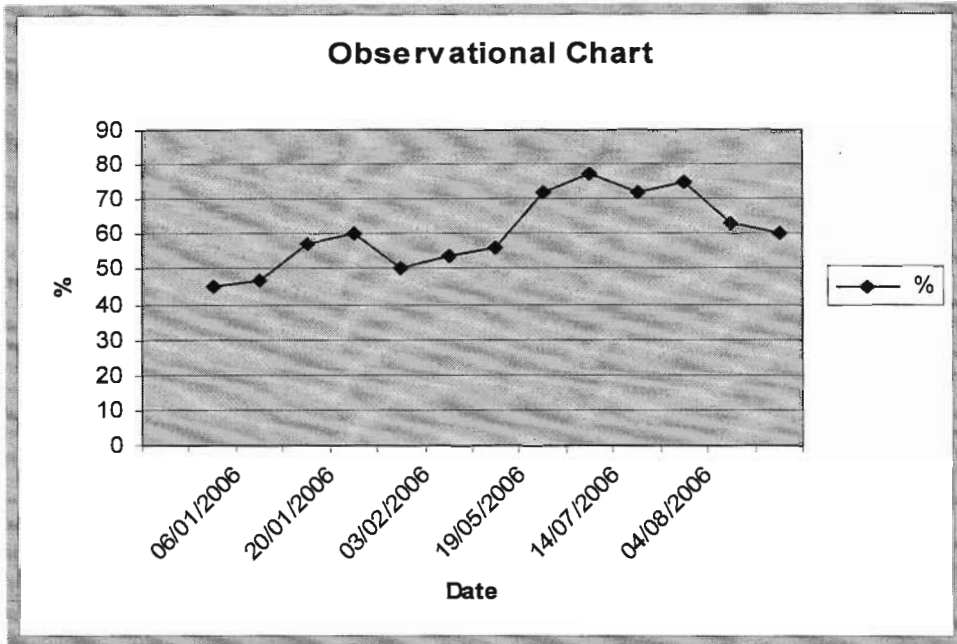


Figure 5.17: Presentation of T-shirt Observational Chart

**Other Attributes implemented to the change of culture through participation:**

Safety strategy became a global Sappi strategy with the implementation and success of 14 June as the *Global Safety Day*. The participation of approximately 900 employees within the mill, contributed to *518 safety suggestions* forwarded *within 48 hours*. This was a tremendous turnaround towards aggressive approach in entrenching safety culture. The best 5 suggestions, which conform, to Best Operating Practices were chosen and published on the Sappi Global Newsletter.

The Mill achieved the *1 Million Man Hours* in February 2006, without any serious injury resulting to Lost Time. This was last achieved in 2001.

Intensified activities to obtain compliance with OHSAS 18001, was rewarded by the certification of Compliance in August 2006.

**5.4.4.2 Behaviour Based Safety**

The implementation of the program improved the observations on areas, which have potential risks associated safety. Full risk assessments of such areas can only be documented and responded to if assessors perform quality observations, to result in quality responses.

2005/6 Quality Observations														
Month	April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
%	85	80	83	85	88	92	78	64	55	55	56	80	73	80

Table 5.9: Record of quality observations

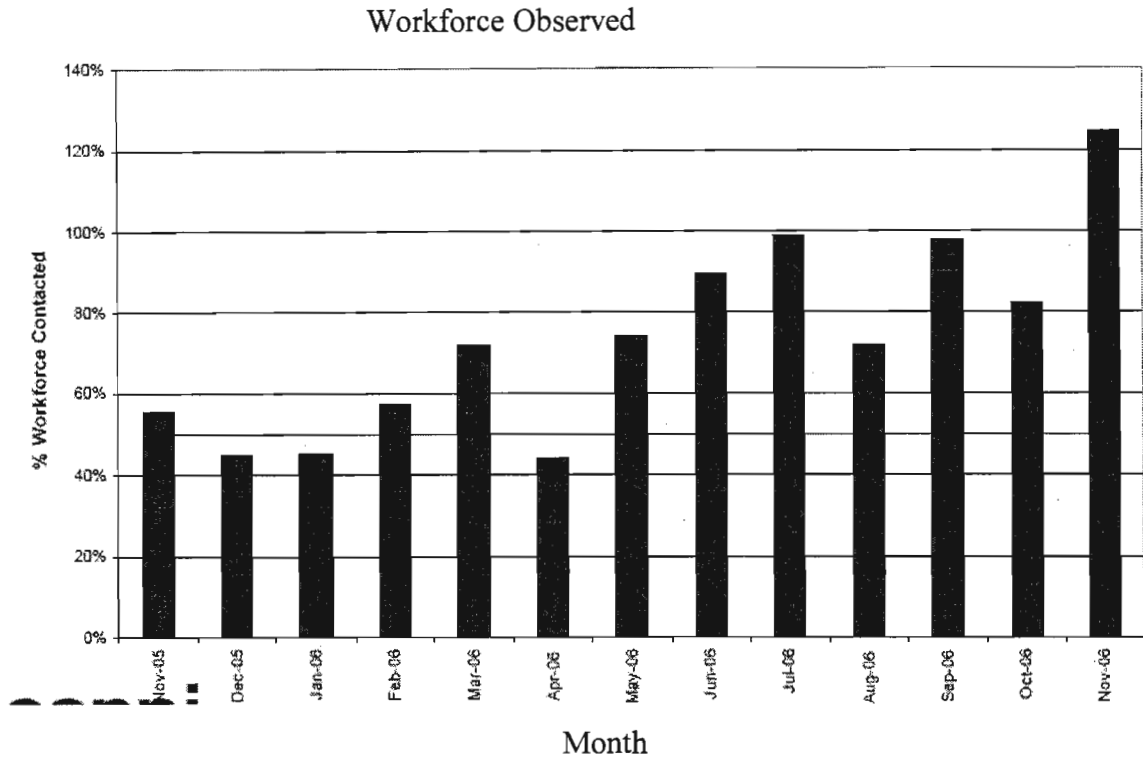


Figure 5.18 Graph of BBS workforce observed within the Mill

The above trend demonstrates an effort to cultivate safety behaviour as an approach to psychological mindset of employees. Similar optimistic response has been observed on the questionnaire data, where employees have become accustomed to safety and how should they respond in unsafe conditions. Continuous involvement in schedule training of employees will ensure improved employee behaviour. The increasing number of workforce observed, assures an increasing level of participation of the observers for risk assessments.

#### **5.4.4.3 Safety Training**

The mill has the capability to offer suitable training with assistance from the training department and superintendents who organize and schedule courses. The issue is that, not all employees have attended special safety training courses. Employees do not know the information on the course schedule. The informative discussion on what the course content can offer is not known and what is offered. Such training will equip employees to skills awareness in identifying risk areas in their speciality. BBS contribute to the practical assessment of risk but does not enforce the legal requirement and implications, as opposed to OHS Act course.

### **5.5 Conclusion**

The data provided from management interview demonstrated crucial aspects of importance such as leadership, employee attendance of safety conferences, communication and emergency preparedness. The responses verified this importance and management recognize the impact these factors will have in entrenching safety culture. Other factors such as staff turnover, inspections and maintenance take a second priority.

The management have to work harder to be convinced, since their overall safety impression is moderate. The secondary data analysis demonstrated a reduction in LTI cases from 15 in 2005 to 9 in 2006. This shows part improvement of safety performance.

It must be noted that, cultural transformation takes time and the implementation of measures must be developed to engage employer-employees to follow a learning cycle.

# CHAPTER 6

## Conclusions and Recommendations

### 6.1 Introduction

The quantitative research conducted for this study has been an interactive experience with difference levels of discussions and suggestions from employer, colleagues and friends on the topic chosen. The analysed data demonstrate and clarify different viewpoints, for which the hypothesis stated could not specify the number of LTI that will be achieved. This hypothesis remains open to achieve the zero LTI. This objective has been set as a long-term objective, with annual progressive targets for the organization for achievement. This means that an effort will be made to reduce LTIs' yearly.

The analysis of the shop floor data was carried out, compared with management data, analysed, and limitations concisely summarized. These limitations would be highlighted and used as strengths to the next level of study. The results from Excel spreadsheet demonstrated a lack of training from the Technician level of the organization. The organization needs to re-assess its training requirements of the level and evaluate the scope of the tasks being done differently. The attendance of scheduled mini safety conferences was optimistic with full participation of employees. The answers to critical questions were highlighted, with possible solutions implemented to alleviate and prevent reoccurrence. Proactive measures to key factors are evaluated and the impact they had for the twelve months of implementation. Plant, people, health and safety problems are discussed and possible solutions proposed.

Findings from the analysis were being drawn for verification of the research factors from questionnaire interviews data and observations. Conclusions drawn from the study are enclosed, regarding the current situation. Recommendations and suggestions will be drawn up to improve the current safety and reduce injuries towards zero, as a long-term objective. This part of the study has to provide a way

forward in addressing issues of safety and other practical measures can the organization implemented to ensure safety of employees.

## **6.2 Research Study Limitations**

The shop floor questionnaires were awkward to administer. The following issues were experienced:

### **6.2.1 Resistance to Change**

A doubtful participation of employees from middle management to shop floor was experienced. Employees are still fearful of the change and cannot fully commit themselves to participation. Some questionnaires were returned without full demographic details. Some employees preferred to talk to the researcher than responding to the questionnaire. Inabilities to express feelings by employees deteriorate their morale and effective understanding of the current safety situation.

### **6.2.2 Management of Safety**

Safety problems responses were not handled properly and professionally to implementation. Behaviour Based Safety has suffered that shortfall. The programme has become a paper exercise and not effective to resolve safety problems. The issues discussed during conferences have not been highlighted for further discussion. Other issues were working conditions (overtime), training related to specific tasks and effective use of competent staff to areas of speciality. The Leadership of Safety remained a crucial task, which require full participation of Managers in planning, organizing, leading and controlling of staff members and contractors towards the expected vision.

### **6.2.3 Questionnaire Responses**

Responses received did not make up the expected sample and some respondents were negative towards their participation. Some of the reasons were received telephonically, such as, not enough time to complete and flooding of electronic mail with unnecessary documents. This became evident when electronic mailed questionnaires were deleted without being read and not seen as important. It was also exciting to receive optimistic responses from staff members who are

challenged by the Health and Safety programme. Most responses were from shop floor level and were documented, analysed and output results used for the research.

### **6.3 Answers to Critical Questions**

Two critical questions formed the base of the research:

1. What impact do factors such as behaviour, training, safety and communication have on the success of the research of study? Null Hypothesis,  $H_0$ , to be proven.
2. How is Safety related to Performance? Alternative Hypothesis,  $H_1$ , impact to the organization.

The drafted questionnaires highlighted crucial rules; regulations and legalities that abide employers and employees to ensure proper understanding of, to alleviate deficiencies, resulting to organizational performance. The outcome of these factors brought the awareness to a broader picture of social responsibility, psychological effect that activities can evolve from employees at work. Employee behaviour is important to ensure engagement of interaction by way of activities among employees. This results in employee communication among each other, with the willingness to fulfil their scope of work in a safe manner. Skills and safety training is one factor which employees can teach each other good practices and approach the employer to improve their competencies.

Safety becomes the least of the factors mentioned because if employees are skilfully trained, effectively communicate and restore workplace mindset; they are bound to produce an outstanding performance. To achieve safety performance, behavioural mindset, continuous training and communication process, participative style leadership by management is recommended. Other issues such as attitude, has been considered the trigger to behaviour resulting to unsafe behaviours. Communication through participation of employers and employees serve to reduce concerns unattended and suggestions are exhausted to eliminate. The handling and analysis of these issues pertain to an ideal organization, where Null hypothesis exist. Such

organization attains industrial records of no workplace injuries, near misses and no danger threatening employees.

In situations where factors affect performance, management must strengthen the interactive and strategic tools of situational management. Sappi Kraft use Total Productivity Management, as a safeguarding tool. This means strengthening management and leadership by implementing awareness, communication; encourage teamwork in terms of strategic, analytical and operational thinking. The success was achieved on Communication and safety, from analysed data. The shortfall was experienced on required training and behaviour. Lack of behaviour demonstrates high indications of employee attitude still exist within the mill. BBS programme has to be reassessed and involvement planning.

The safety performance achieved within the mill has not made a clear distinction or impact on production output. Currently, the effect of technological machinery has not reached its efficiency. This made it difficult to quantify the safety performance to production performance.

It has been noticed from operational activities that some employees lack discipline and there are symptoms of frustrations, failure to follow procedures and blame fixing.

The use of Personal Protective Equipments such wearing of safety glasses, is one of the examples. The other impact to performance is the unfavourable economical environment in which the organization operates, that created the situation unbearable.

The organization has invested in technological machinery and there is still a lack of training from shop floor. The technician level demonstrated a low score and the management response to inspection and maintenance has been 44% high on moderate and 11% on very high. The analysis shows a low confidence in ensuring that the machinery can perform safely without affecting organizational performance.

#### **6.4 Conclusions**

The strategic implementation of safety measures has completed the first 12 months and is scheduled for five years to achieve zero injuries. The year has had intense



activities, such as conferences, Global Safety day, 1 million man-hours reached, certified in OHS Act 18001, and management involvement in housekeeping audits.

The progress towards zero lost time could not be achieved in 12 months and cannot be achieved in such a short time frame. This is because of the organizational size and effective participation of each employee within an organization, with the employer's supervision. The effort achieved by two out of twelve departments show commitment, determination and seriousness of safety. This contributed achievement improved safety performance by 16.67% by departments and reduced Lost Time Injuries by 40% for the organization.

Shop floor questionnaire interpretation of analysis results demonstrated an outstanding improvement of safety awareness within the organization. Training and behaviour need further strategic planning for improvement. More concentration and commitment to BBS programme is required to ensure risk assessments areas are identified.

The research results, from table 5.1, on improved day's lost and serious injuries have reduced fears of stress and fatigue that other employees suffer on when working excessive hours.

Productivity of employees towards objectives and targets has been mediocre. Such a rating is not productive for the required performance of the International Company. The current safety performance has improved and productivity remains a challenge. The raw material inputs are in abundance but the operational conversion processes. These processes are described by Hugo and affected by safety risks. The operational strategies need to be intensified with reference to the core operational activities of the organization.

Management of Sappi has set clear goals and objectives from the safety to performance. Clear strategies on leadership, communication, and emergency preparedness and safety awareness have improved vision and awaiting production performance with time. The favourable turnaround of the economic environment projected the performance closer than expected.

It must be noted that, an exceptional amount of funds were invested and used for the implementation of the safety project. The return on investment cannot only be calculated on a monetary basis; it must consider staff safety and other issues.

The commitment demonstrated by Sappi management to the effectiveness of the Safety strategy could not be valued, as the awareness continuously bears expected performances in sustaining health and safety of employees.

The initiatives implemented by Sappi Kraft management on the Safety, of its employees could not have been awaited until extreme loss of life and huge costs are incurred. This was exemplary to neighbouring industries such as Indian Ocean Fertilizers and Chrome Chemicals in Merebank, South of Durban.

## **6.5 Recommendations**

### **6.5.1 Eye Injuries**

These incidents contributed approximately 50 % of the injuries sustained in 2005 and 2006. This demonstrates a weakness in the effective use of Personal Protective Equipment (PPE) and the 'no name no blame' observation on PPE has allowed freedom and as an excuse for not wearing goggles. It has also been noticed that; special safety glasses have not been prescribed for specific application within departments. The strict application of disciplinary measures and re-assessments of PPE per department will reduce the injuries currently experienced. Proper use of PPE is crucial.

### **6.5.2 Resistance to Change**

The resistance to change at the grade 8 level have a great impact on the cultural transformation within the organization. The cultural change in the level has not taken place and management must focus on this grade. From observation, employees in this level have vast experience of operations and any change in their operations could cause conflict. The employees in this level have not received recognition relevant to the effort to the success of the organization.

Management has developed practical measures, which require full participation of employer and employees. Strategic measures have not been fully cascaded from the middle management to the shop floor. There is still fear and no freedom of expression from employees. The level of illiteracy within the organization has contributed to the misunderstanding of what direction the organization is shifting. This misunderstanding creates a gap on safety and responses that do not reach shop floor. Communication processes need to be strengthened in other Nguni languages, such as dominantly IsiZulu.

### **6.5.3 Employee Development**

The technological developments in machinery require skills training and knowledge sharing. This aspect demonstrated a shortfall in the prescribed training required at the technician level of the organization. Previous experience showed that the organization lost skilled employees and part of, is the inability for the organization to keep abreast with training requirements.

### **6.5.4 Way Forward**

Sappi Kraft Safety status has achieved 1 Million Man-hours without Lost Time Injury during the first year of implementation, which is 2006. This is an optimistic Safety sign of forthcoming improvements to entrench safety culture through Risk Assessments.

The shortfall on Contractors Safety awareness strategy experienced has raised concerns. Alternative approach has to be implemented to engage them in the Sappi Kraft-Tugela Mill's strategy and has to be cautiously reviewed. The communication result from continuous communication with reference to Contract Awarded must be reviewed with the Safety Policy. It is thus expected that On-Site Contractors be aware of unsafe environments that can cause harm on fellow employees and other contractors. It would be a tremendous effort and achievement for the Contractors to reach their own 1 Million Man-Hours.

The possible next focus will be to revitalize strategies for the second year and improve on inspections and maintenance confidence. It would be an outstanding

achievement if Sappi Kraft staff can reach another 1 Million Man-Hours in second year consecutively.

It will also be worth reassessing staff turnover, as valuable skills might be lost and the current production and safety performance can drop.

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**APPENDIX 1**  
**Organisation History**

<b>Year of Engagement</b>	<b>Business Transaction</b>
1959	Company takes majority shares in Union Corrugated Cases
1960	Company acquired majority shares in Cellulose Products for manufacturing of tissue wadding.
1963	Commissioning of Ngodwana Mill
1966	Construction completed and produced unbleached pulp
1968	Sappi applies for International patents Sapoxyl bleaching. Establishment of new timber division.
1971	Company Sapoxyl production for Export Market started.
1973	Re-registration as “Sappi Limited” . Strategic Brand Identification and Image.
1977	Segmentation of Sappi Subsidiary Operations: Sappi Fine Paper, Kraft and Forests.
1980	Formation of a new division called Sappi Timber Products.
1981	Timber products took over Elandshoek sawmill. Commissioning of new Cape Kraft Mill to produce Linerboards.
1982	Sappi acquired Novoboard, a particle board manufacturing.
1983	Acquisition of Timberboard by Sappi Novoboard.
1985	Ngodwana Mill expansion.
1988	Acquisition of Usutu Pulp Company in Swaziland.
1990	Acquisition of Five fine paper mills in United Kingdom, and establishment of Sappi Europe.
1991	Acquisition of speciality pulp services of Hong Kong.
1992	Acquisition of Hannover Paper in Germany’s leading producer of coated wood free.
1995	Commissioning of Sappi Saiccor for dissolved pulp production.
1997	Acquisition of Europe’s largest producer of coated wood free paper.
2000	Sappi Novoboard sold



<b>Year of Engagement</b>	<b>Business Transaction</b>
2002	Closed its carbonless paper at Transcript Mill in Scotland. Acquired Portlatch Corporation (in Minnesota)coated fine paper.
2003	Sold Boskor sawmill to Swartland Meubels.
2005	Closed its PM4 and Muskegon mill in Michigan.

*Source from <http://www.sappi.com> (2006)*

APPENDIX 2

Theme: Concept Matrix

Each cell below of the electronic document contains a tick mark (✓). Concepts identify part subjects or key aspects research for the Literature Review of the Research Project.



Concepts \ References	Formal Training	Informal Training	Organizational Behaviour	Occupational Health	Workplace Safety	Management of Change	Communication	Company Performance	Customer Focus	Workmen's Compensation/Legislation	Organizational Culture	Educational Level	Marketing Strategy	Social Responsibility	Sampling	Statistics Techniques	Leadership	Supply Chain	Productivity	Organizational Development
Accident Prevention Manual@1954	✓			✓	✓					✓										
Business Statistics@2001															✓	✓				
Crafting and Executing Strategy©2003							✓						✓							
Fundamentals of Management@2004	✓							✓									✓			✓
International Turnaround Management©1999								✓						✓			✓	✓		
Legal Principles of Contract and Commercial Law@2004	✓									✓				✓						
Loss Prevention in the Process Industries Vol. 1@1980			✓		✓															

Literature Review: Concept Matrix

Concepts	References	Organizational Development	Productivity	Supply Chain	Leadership	Statistics Techniques	Sampling	Social Responsibility	Marketing Strategy	Educational Level	Organizational Culture	Workers's Compensation/Legislation	Customer Focus	Company Performance	Communication	Management of Change	Workplace Safety	Occupational Health	Organizational Behaviour	Informal Training	Formal Training
	Management and Organizational Behaviour@2005			✓	✓										✓				✓		
	Management Today@2006		✓	✓												✓					
	Managing Human Resources, International Edition@2004								✓			✓						✓	✓		
	Marketing Management @2003,								✓			✓									
	Mastering People Management©2003				✓			✓			✓			✓	✓				✓		
	Occupational Health and Safety Act@2005																✓	✓			
	Occupational Health and Safety Manual@1993														✓			✓		✓	
	Operations Management@2001			✓										✓							
	Organizational Behaviour@2002										✓								✓		
	Safety and Security Manual@2005																✓	✓			

Literature Review: Concept Matrix

Concepts	Organizational Development	Productivity	Supply Chain	Leadership	Statistics Techniques	Sampling	Social Responsibility	Marketing Strategy	Educational Level	Organizational Culture	Workmen's Compensation/ Legislation	Customer Focus	Company Performance	Communication	Management of Change	Workplace Safety	Occupational Health	Organizational Behaviour	Informal Training	Formal Training
References				✓			✓							✓		✓		✓		
Safety Health Environment and Management@1998																				
Statistical Techniques in Business Economics@2004			✓			✓														
Supply Chain Management@2004			✓									✓								
The Essence Of Leadership@1991,				✓										✓						
Understanding and Managing your Organization@2005																		✓	✓	✓

### APPENDIX 3

To: Christel Haddon  
MBA Thesis Administrator  
Graduate School of Business  
University of KwaZulu- Natal

Date: 31/10/2006

From : Mr Sabelo W. Mkhwanazi  
Dissertation Student – 202 526 931

#### LETTER OF RETROSPECT

I completed my Research Methodology Course in 2005 and registered for Thesis in 2006. Since then, the Course has changed for 2006 and new information has been communicated to the current student.

These new developments in the course introduced the letter of Consent, which has to be circulated with the Questionnaire for signing of the participants.

As per older presentation of the course, the demographic information regarding the participants was filled, but not as a consent form. Responses received have documented proof of participants for the questionnaire. Questionnaires and Interviews were distributed without prior information on a consent letter. If the consent letter is to be implemented at this stage, this might cause confusion and mission to get the participants to complete the consent letter.

The above information serves as a reason, not the denial to implement but considering the time frame and stage of my thesis.

## APPENDIX 4

### Information For Research Participants: Top Management Interview

I am delighted to have accepted the challenge in doing a Dissertation Project, regarding Project Zero as the Topic of study. The project has categories and requirements to satisfy the outcome of my investigations. One of them is to collect data with application of feasible methods to achieve objectives of the Dissertation.

The interview has the allocated time of 10 minutes planned. It is imperative that session be accommodated from the 14<sup>th</sup> to the 23<sup>rd</sup> of August 2006. During a planned interview, a rated (1 to 5) questionnaire will be asked. This rating indicated the following:

1 ≡ Very Low

2 ≡ Low

3 ≡ Moderate

4 ≡ High

5 ≡ Very High

The information required below is compulsory to participants into the Case study of the Sappi Kraft (Pty) Ltd, Tugela Mill.

#### **Personal & Demographic Details:**

Name	
Surname	
Gender	
Grade	
Highest Qualification Obtained	
Years of Service	
Age Range: Between	23 – 30
	31 – 35
	36 – 45
	46 – 55
	56 – 65
	66 – 75 and More

## APPENDIX 5

### Quantitative Analysis: Questionnaire

**Activity:** Interview

#### **Introduction**

The activity is based on the Senior (Top) managements' view of OSH Act, as the potential drive to Project Zero success. The rated questionnaire response should demonstrate progress and success achieved, thus far, and continual to long-term implementation of programmes for overall achievement of objectives.

Ten (10) to 15 minutes maximum time has been allocated for the session, including any pending discussion.

#### **Performance Rating**

No.	Key Assessment Question	Rating(1 to 5)
1.	How important was Top Management <b>Leadership</b> in the current success of Project Zero?	
2.	How well Project Zero message was <b>communicated</b> to middle management and shop floor?	
3.	How effective are the <b>inspections and maintenance</b> for preventing injuries in the workplace?	
4.	How effective is the <b>analysis and investigation</b> of incidents or accidents?	
5.	To what extent are <b>prepared for any emergency</b> that can occur within the mill?	
6.	How important are the <b>staff training programmes</b> ( BBS, OHSAct) in raising awareness about Health and Safety?	
7.	To what extent has <b>Health and Safety Culture</b> improved within the mill, since Project Zero inception?	
8.	How important is the Mill's <b>Safety Record</b> to the market And customers?	
9.	What is the risk of a high <b>staff turnover</b> since new Employees have not been exposed to the Mill or Project Zero?	
10.	How would the <b>Project Zero attendance</b> be rated?	
11.	What is your <b>overall impression</b> of the current status or progress towards meeting long term objectives?	

**Interview List: Candidate**

<b>No.</b>	<b>Surname &amp; Initials</b>	<b>Designation</b>	<b>Interview Date(Propose)</b>
1.	Mr A	Financial Manager	√
2.	Mr B	Technical Manager	√
3.	Mr C	Engineering Manager	X
4.	Mr D	Services Manager	√
5.	Mr E.	Human Resource Manager	√
6.	Mr F	General Manager	√
7.	Mr G	Paper Mill Manager	√
8.	Mr H	Pulp Mill Manager	√
9.	Mr I	Union Representative	√
10.	Mr J	Union Representative	√



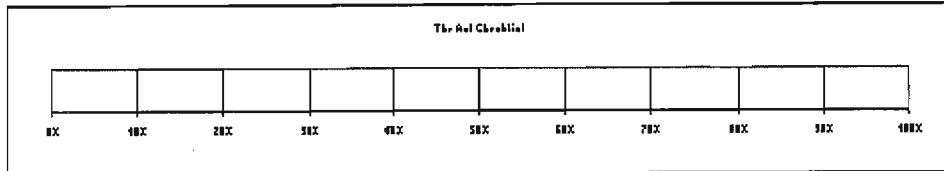
**APPENDIX 6: Shop Floor Questionnaire**

**OHS ACT CHECKLISTS**

**THE ACT CHECKLIST**

	<b>Score</b>
Initial possible score for this element:	260
Less "Not Applicable" items:	0
Actual possible points for this element:	260
Points scored:	<b>0</b>
Percentage scored:	<b>0%</b>

**Graphical Presentation**



**Scoring: (Yes - 5 points, No - 0 points)**

**1. SECTION 7: (40 possible points) -COMMUNICATION 0**

- 1.1 Is the SHEQ policy in writing?   
*Comments:* \_\_\_\_\_
- 1.2 Does the policy discuss the *protection of employees*?   
*Comments:* \_\_\_\_\_
- 1.3 Does the policy give a *description of the company*?   
*Comments:* \_\_\_\_\_
- 1.4 Does the policy describe arrangements for the *carrying out of the policy*? (does it describe *how* the policy will be carried out?)   
*Comments:* \_\_\_\_\_
- 1.5 Does the policy discuss arrangements for *reviewing* the policy?   
*Comments:* \_\_\_\_\_
- 1.6 Have the policy items been carried out, and has the policy been reviewed, (ie have 1.4 and 1.5 been done)?   
*Comments:* \_\_\_\_\_
- 1.7 Is the policy prominently *displayed*? (in an obvious place)   
*Comments:* \_\_\_\_\_  
*In all Notice boards*
- 1.8 Is the policy *signed by the General Manager*?   
*Comments:* \_\_\_\_\_

- 1.9 How effective is information sharing throughout the mill? Do you receive new messages on time?  
*In Blue Prints / E-Mails ,Posters and Internet*
- 2.1 Are employees informed of the company performance or productivity?  
*Information available on Internet for those who have access but not illiterate people*

2.

**SECTION 8: (130 possible points)- BEHAVIOUR**

**0**

- 2.1. Is the workplace safe and without risk?  
*Some areas have high Risk and require extra caution from incumbents*
- 2.2 Is the workplace maintained in a safe condition (housekeeping), so that it is without risk?  
*House keeping is done but does not eliminate hazards from moving machinery*
- 2.3. Are safe plant, machinery and methods (procedures or instructions) of work provided?  
*Comments:*
- 2.4. Has the employer made any effort to eliminated the hazards (dangers)?  
*Comments:*
- 2.5. If not reasonable or possible to eliminate a danger, has the employer seen the danger and tried to make it as small as possible?  
*Gurads in Place*
- 2.6. Are dangers removed before workers are asked to wear PPE?  
*Comments:*
- 2.7. Are dangers made small as possible before workers are asked to wear PPE?  
*Comments:*
- 2.8 Are hazards (dangers) identified or seen and understood by employers?  
*Comments:*



2.9. Are hazards (dangers) evaluated - does the employer know how dangerous it is?   
*Risk Assessment carried out before work commences*

2.10. Are hazards (dangers) controlled - does employer ensure the danger doesn't "get out of hand"?   
*Comments:*

2.11 Does the employer do everything possible to make sure everyone (employees, contractors, visitors etc) on site obeys the rules in the OHS Act?   
*Comments:*

2.12 Does the employer provide SWP (Safe Working Procedures) eg Works Instructions (WI's) and Procedures (WP's) especially for dangerous jobs?   
*Comments:*

2.13. Does the employer provide instructions for the use of plant, machinery and substances (alcohol, drugs, cigarettes etc)?   
*Comments:*

2.14. Does the employer provide training?   
*Comments:*

2.15. Does the employer provide information (eg instructions, messages on noticeboards, handouts, magazines etc) to ensure the safety at work of his employees?   
*Comments:*

2.16. Does the employer provide supervision?   
*Comments:*

2.17. Does the employer control the employee at work by way of control measures as stated in paragraphs (2) (b) and (d)?   
*2(b) Eliminate or mitigate any hazard or potential hazard*  
*2(d) Establish health and safety hazards employees exposed to with precautionary measures.*  
*Comments:*

116073

2.18 Does the employer make sure that everyone knows about the Act and what it means?   
*Comments:*

- 2.19. Does the employer make sure that everyone understands what the Act means?   
*Comments:*
- 
- 2.20. Does the employer ensure that procedures are in place to check whether the Act is being contravened (does the employer check that the rules in the Act are being followed)?   
*Comments:*
- 
- 2.21 Does the employer discipline people who break the rules?   
*Comments:*
- 
- 2.22 Is work done under the supervision of a supervisor? Is the supervisor allowed to take action to prevent danger?   
*Comments:*
- 
- 2.23. Is work done under the supervision of a supervisor who is trained to prevent danger?   
*Comments:*
- 
- 2.24. Do employees know of what scope of authority means?   
*Comments:*
- 
- 2.25. Are employees told about their scope of authority? (ie are employees told how far their authority goes?)   
*Comments:*
- 
- 2.26. *How effective is the hierarchy structure in transforming a proper scope of authority?*   
*Comments:*
- 

3

**SECTION 13: (50 possible points) - TRAINING**

**0**

- 3.1 Have the employees been given information (handouts, booklets, WI's, procedures) about the dangers of their jobs?   
*Comments:*
- 
- 3.2 Have the employees been given training (videos, lectures, demonstrations etc) to learn about the dangers of their jobs?   
*Comments:*
-

- 3.3 Have the employees been given hands-on training (training at the actual place of work) to learn about the dangers of their jobs?   
*Comments:*
- 
- 3.4 Is relevant training given up to date? (has everyone been trained recently?)   
*Comments:*
- 
- 3.5 Have employees been told what must be done so there is no danger when doing their jobs, or as little danger as possible?   
*Comments:*
- 
- 3.6 Have health and safety representatives been trained on how to carry out their responsibilities?   
*Comments:*
- 
- 3.7 Are health and safety representatives informed of incidents and investigation progress?   
*Comments:*
- 
- 3.8 Have health and safety representatives been told when an inspector is coming to do a formal enquiry?   
*Comments:*
- 
- 3.9 Are health and safety representatives informed promptly (quickly) of the occurrence of incidents?   
*Comments:*
- 

**4. SECTION 14: (40 possible points) - COMMUNICATION 0**

- 4.1 Do employees know that they must also take care of their own health and safety?   
*Comments:*
- 
- 4.2 Do employees know that they must also take care of the health and safety of others?   
*Comments:*
- 
- 4.3 Do employees know that they must co-operate with the employer in the interests of health and safety?   
*Comments:*
-

---

4.4. Do employees know that they must obey all the employers' lawful occupational health and safety orders?

*Comments:*

---

---

4.5. Do employees know that they must obey health and safety rules and procedures?

*Comments:*

---

---

4.6. Do employees know that they must report unsafe or unhealthy situations to the employer or a health and safety representative?

*Comments:*

---

---

4.7. Do employees know that they must report any incident/near miss to the employer or a health and safety representative?

*Comments:*

---

---

4.8. Do employees know that they must report incidents/near misses as soon as possible?

*Comments:*

---

---

## APPENDIX 7

# sappi

**Forest Products**

**Tugela mill**

**To** MBA Administrator  
Graduate School of Business  
University of Kwa-Zulu Natal (Westville Campus)

**Copy**

**From** Technical Manager

**Date** 24 November 2006

**Reference** Letternov06

**Subject** Letter of Consent - Dissertation

Sappi Kraft (Pty) Ltd  
(Reg. no. 1976/03293/07)  
Private Bag X6034  
4490 Mandeni  
Tel +27 (0)32 456 1111  
Fax +27 (0)32 456 1484  
www.sappi.com

Dear Sir/Madam

This letter serves to acknowledge and confirm the permission granted to Mr S Mkhwanazi (details included below), to conduct the Research Study topic within the Mill premises. His academic research further required access to the following:

- Employee/respondent participation in questionnaires and interviews for the collection of Primary Data.
- Use of secondary data from Sappi Kraft – Tugela Mill, with the assistance from SHEQ department.
- To conduct observational patterns.

The student was provided guidelines on the subject by Sappi, but was formally supervised by an academic nominated by the University of KwaZulu-Natal. If this research is to be published it is assumed that the confidentiality of the respondents will be maintained.

The academic research report findings will also benefit the organization to improve on Health and Safety deficiencies.

**MBA Dissertation Student/Sappi Employee details:**

Mr Sabelo Wiseman Mkhwanazi  
Registration number – 202 526 931

Kind regards

Mr. C. Clarence  
Technical Manager

**APPENDIX 8**

**SPSS Data Input and Output Results**

SPSS DATA INPUT											
Respondent	leadership	communicated	inspections	analysis	preparedness	stafftraining	culture	safetyrecord	turnover	attendance	impression
1	5.00	5.00	5.00	5.00	4.00	3.00	4.00	5.00	3.00	4.00	3.00
2	5.00	5.00	4.00	5.00	5.00	4.00	5.00	5.00	3.00	4.00	5.00
3	5.00	4.00	3.00	3.00	3.00	4.00	4.00	3.00	2.00	4.00	3.00
4	5.00	5.00	3.00	4.00	3.00	3.00	5.00	2.00	4.00	5.00	4.00
5	3.00	5.00	2.00	3.00	4.00	4.00	3.00	5.00	5.00	5.00	3.00
6	5.00	5.00	4.00	5.00	4.00	4.00	5.00	5.00	3.00	5.00	5.00
7	5.00	5.00	4.00	3.00	5.00	4.00	5.00	5.00	3.00	5.00	3.00
8	5.00	5.00	3.00	4.00	4.00	5.00	5.00	4.00	2.00	5.00	4.00
9	5.00	4.00	3.00	5.00	3.00	5.00	3.00	2.00	4.00	4.00	3.00



The importance guideline of the responses received on performance rating questionnaire:

**Test Statistics**

	how effective are inspections and maintenance for preventing injuries in the workplace	to what extent are we prepared for any emergency that can occur within the mill	how important are the staff training programmes in raising awareness about health and safety	how important is the mill's safety record to the market and customers	what is the risk of a high staff turn over since new employees have not been exposed to the mill or project zero	how would the project zero attendance be rated	what is your overall impression of the current status to the objective of the project
Chi-Square(a,b,c)	3.000	.667	2.000	4.778	2.111	.111	2.000
df	3	2	2	3	3	1	2
Asymp. Sig.	.392	.717	.368	.189	.550	.739	.368

a 4 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 2.3.

b 3 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 3.0.

c 2 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 4.5.

**Quantitative Data: Interview Response**

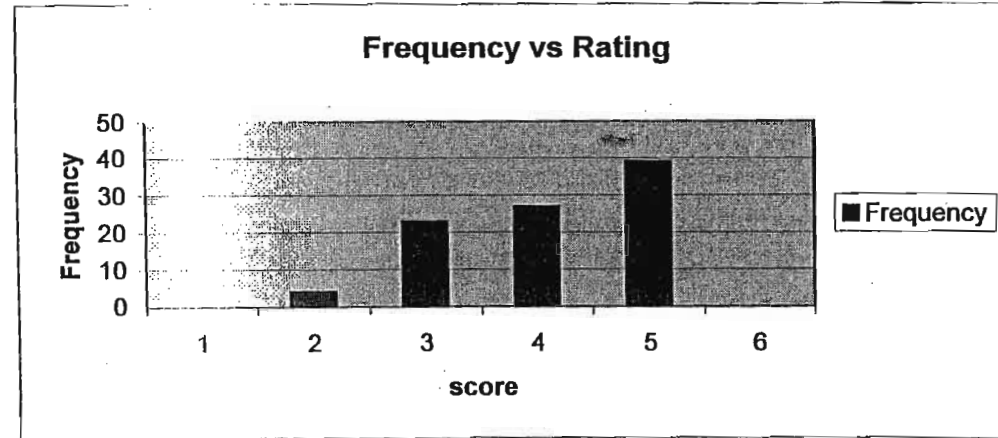
Candidate	Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10	Q 11	Total	Yrs of Experience
Oostehuizen	5	5	5	5	4	3	4	5	3	4	3	46	9
Moodley	5	5	4	5	5	4	5	5	3	4	5	50	30
Clarence	5	4	3	3	3	4	4	3	2	4	3	38	12
Wesson	5	5	3	4	3	3	5	2	4	5	4	43	14
Mthembu	3	5	2	3	4	4	3	5	5	5	3	42	12
Koch	x	x	x	x	x	x	x	x	x	x		0	
Schlebusch	5	5	4	5	4	4	5	5	3	5	5	50	8
Engelbreght	5	5	4	3	5	4	5	5	3	5	3	47	16
Carelsen	5	5	3	4	4	5	5	4	2	5	4	46	21
Rossi	5	4	3	5	3	5	3	2	4	4	3	41	2.6
													12
<b>Average</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>5</b>	<b>4</b>		<b>14</b>

**125**

- 1 = Very Low
- 2 = Low
- 3 = Moderate
- 4 = High
- 5 = Very high

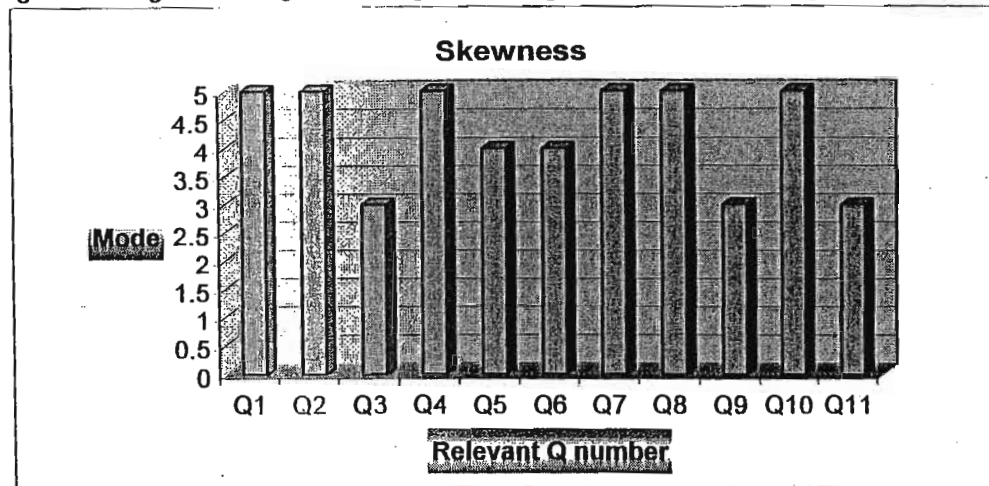
## DATA ANALYSIS

Score	Frequency
1	0
2	4
3	23
4	27
5	39



## Skewness

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Mode	5	5	3	5	4	4	5	5	3	5	3
Median	3	3	3	3	3	3	3	3	3	3	3



APPENDIX 9

UNIVERSITY OF KWAZULU-NATAL

ETHICAL CLEARANCE APPLICATION FORM

Aug 2005

(HUMAN AND SOCIAL SCIENCES)

Inquiries:

Ms Phumelele Ximba

Tel: 260 3587

Email: ximbap@ukzn.ac.za

PLEASE NOTE THAT THE FORM MUST BE COMPLETED IN TYPED SCRIPT;  
HANDWRITTEN APPLICATIONS WILL NOT BE CONSIDERED

SECTION 1: PERSONAL DETAILS

- 1.1 Full Name & Surname of Applicant : Sabelo Wiseman Mkhwanazi
- 1.2 Title (Ms/ Mr/ Mrs/ Dr/ Professor etc) : MR
- 1.3 Student Number (where applicable) : 202526931
- Staff Number (where applicable) : N/A
- 1.4 School : Business Management Studies
- 1.5 Faculty : Business
- 1.6 Campus : Westville
- 1.7 Existing Qualifications : Post grad Business Management
- 1.8 Proposed Qualification for Project : Project Zero  
(where applicable)

2. Contact Details

- Tel. No. : 032-456 1398(w)
- Cell. No. : 082 337 5661
- mail : sabelo.mkhwanazi@sappi.com

Postal address (in the case of students and external applicants):

- : P.O Box 1038  
Mandeni  
4490

3. SUPERVISOR/ PROJECT LEADER DETAILS

NAME	TELEPHONE NO.	EMAIL	DEPARTMENT / INSTITUTION	QUALIFICATIONS
3.1 Mr Maxwell Phiri	031-2607508	<a href="mailto:phirim@ukzn.ac.za">phirim@ukzn.ac.za</a>	UKZN	MBA /DBA

## SECTION 2: PROJECT DESCRIPTION

Please do *not* provide your full research proposal here: what is required is a short project description of not more than two pages that gives, under the following headings, a brief overview spelling out the background to the study, the key questions to be addressed, the participants (or subjects) and research site, including a full description of the sample, and the research approach/ methods

2.1 Project title Project Zero

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2.2 Location of the study (where will the study be conducted)

Sappi Kraft (Pty) Ltd–Tugela Mill

2.3 Objectives of and need for the study

(Set out the major objectives and the theoretical approach of the research, indicating briefly, why you believe the study is needed.)

- Marketing Strategy; Management Responsibility; Continual Improvement; Organizational Behavior
- Compliance with Health & Safety Policies –legal Requirements.
- For any organization to remain competitive in the industry or sector in which it operate, it has to monitor and implement strategies which have a bearing or affect the business

2.4 Questions to be answered in the research

(Set out the critical questions, which you intend to answer by undertaking this research.)

**What pro-active and practical measures have been implemented? How is the response from the employee-employer relationship? What are the actual causes of incidences or injuries? What are the contributing factors? How is the success measured?**

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## 2.5 Research approach/ methods

(This section should explain how you will go about answering the critical questions which you have identified under 2.4 above. Set out the approach within which you will work, and indicate in step-by-step point form the methods you will use in this research in order to answer the critical questions.

- For a study that involves surveys, please append a provisional copy of the questionnaire to be used. The questionnaire should show how informed consent is to be achieved as well as indicate to respondents that they may withdraw their participation at any time, should they so wish.)

**A suitable questionnaire is being drafted. This provisional copy will be based on Occupational Health and Safety Act, which is a legal document that regulated by the Gazette. Section 7, 8, 9 and 10 are important for the analysis of the project.**

## 2.6 Proposed work plan

Set out your intended plan of work for the research, indicating important target dates necessary to meet your proposed deadline.

STEPS	DATES
Literature Survey:	03 June to 03 July 2006 (allocated one month )
Collection of Data: Interviews	15 July to 25 August 2006 (6 weeks)
Observation and Documentation:	28 August to 12 October 2006 (6 weeks)
Analysis and Interpretation:	17 October to 20 November 2006 (1 month)
Results and Report writing:	19 November to 14 December 2006 (1 month)

### SECTION 3: ETHICAL ISSUES

The UKZN Research Ethics Policy applies to all members of staff, graduate and undergraduate students who are involved in research on or off the campuses of University of KwaZulu-Natal. In addition, any person not affiliated with UKZN who wishes to conduct research with UKZN students and or staff is bound by the same ethics framework. Each member of the University community is responsible for implementing this Policy in relation to scholarly work with which she or he is associated and to avoid any activity, which might be considered to be in violation of this Policy.

All students and members of staff must familiarize themselves with AND sign an undertaking to comply with the University's "Code of Conduct for Research".

#### QUESTION 3.1

<b>Does your study cover research involving:</b>	<b>YES</b>	<b>NO</b>
Children		no
Persons who are intellectually or mentally impaired		no
Persons who have experienced traumatic or stressful life circumstances		no
Persons who are HIV positive	yes	
Persons highly dependent on medical care		no
Persons in dependent or unequal relationships		no
Persons in captivity		no
Persons living in particularly vulnerable life circumstances		no

**Yes: Project does not specify or discriminate but anyone who is an employee of the organization**

#### QUESTION 3.2

<b>Will data collection involve any of the following:</b>	<b>YES</b>	<b>NO</b>
Access to confidential information without prior consent of participants		no
Participants being required to commit an act which might diminish self-respect or cause them to experience shame, embarrassment, or regret		no
Participants being exposed to questions which may be experienced as stressful or upsetting, or to procedures which may have unpleasant or harmful side effects		no
The use of stimuli, tasks or procedures which may be experienced as stressful, noxious, or unpleasant		no
Any form of deception		no

### QUESTION 3.3

<b>Will any of the following instruments be used for purposes of data collection:</b>	<b>YES</b>	<b>NO</b>
Questionnaire	yes	
Survey schedule	yes	
Interview schedule	yes	
Psychometric test		no
Other/ equivalent assessment instrument (Observations)	yes	

Questionnaire: A rating questionnaire is being prepared pertaining to OHS Act

Observation Survey Schedule: Weekly awareness schedule is monitored

Interview: Managements

### QUESTION 3.4

<b>Will the autonomy of participants be protected through the use of an informed consent form, which specifies (in language that respondents will understand):</b>	<b>YES</b>	<b>NO</b>
The nature and purpose/s of the research	yes	
The identity and institutional association of the researcher and supervisor/project leader and their contact details		No
The fact that participation is voluntary	Yes	
That responses will be treated in a confidential manner	yes	
Any limits on confidentiality which may apply	YES	
That anonymity will be ensured where appropriate (e.g. coded/ disguised names of participants/ respondents/ institutions)	yes	
The fact that participants are free to withdraw from the research at any time without any negative or undesirable consequences to themselves	yes	
The nature and limits of any benefits participants may receive as a result of their participation in the research	yes	
Is a copy of the informed consent form attached?	yes	

The participant's information is controlled as "NO NAME NO BLAME". The information gathered is an analysis of awareness and has no bearing to specific individuals.

Management of Sappi Kraft recommended this route to ensure safety related information is handled openly.



**QUESTION 3.5**

**Specify what efforts been made or will be made to obtain informed permission for the research from appropriate authorities and gate-keepers (including caretakers or legal guardians in the case of minor children)?**

The authority from Sappi Kraft has been granted and any suggestions or recommendations to the research will have to improve the project status for the organization. This means the Dissertation will benefit the organization, in terms of further analysis of the case.

The anonymity of the document made it acceptable as an outside study. Some information regarding the project may not be exposed for security reasons and protection of the company's assets.

**QUESTION 3.6**

**How will the research data be secured, stored and/or disposed of?**

The researched material data will be kept at GSB for a period of 5 years. Copies and data will be secured back up and stored in an electronic disc as a File. Hard Copies of the data will be provided as proof of the research conducted.

**QUESTION 3.7**

**In the subsequent dissemination of your research findings – in the form of the finished thesis, oral presentations, publication etc. – how will anonymity/ confidentiality be protected?**

The information will not be exposed or mentioned in the report.

**QUESTION 3.8**

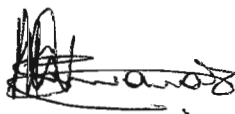
	<b>YES</b>	<b>NO</b>
<b>Is this research supported by funding that is likely to inform or impact in any way on the design, outcome and dissemination of the research?</b>		no

**SECTION 4: FORMALISATION OF THE APPLICATION APPLICANT**

**APPLICANT**

I have familiarised myself with the University's Code of Conduct for Research and undertake to comply with it. The information supplied above is correct to the best of my knowledge.

**NB: PLEASE ENSURE THAT THE ATTACHED CHECK SHEET IS COMPLETED**

S.W Mkhwanazi		24 January 2006
SIGNATURE OF APPLICANT		DATE

**SUPERVISOR/PROJECT LEADER**

**NB: PLEASE ENSURE THAT THE APPLICANT HAS COMPLETED THE ATTACHED CHECK SHEET AND THAT THE FORM IS FORWARDED TO YOUR FACULTY RESEARCH COMMITTEE FOR FURTHER ATTENTION**

DATE: .....

SIGNATURE OF SUPERVISOR/ PROJECT LEADER \_\_\_\_\_

**RECOMMENDATION OF FACULTY RESEARCH COMMITTEE/HIGHER DEGREES COMMITTEE**

FULL NAME : \_\_\_\_\_ (CHAIRPERSON) \_\_\_\_\_ DATE...

SIGNATURE : \_\_\_\_\_

**RECOMMENDATION OF UNIVERSITY RESEARCH ETHICS COMMITTEE (HUMAN AND SOCIAL SCIENCES)**

FULL NAME : \_\_\_\_\_ (CHAIRPERSON) \_\_\_\_\_ DATE...

SIGNATURE : \_\_\_\_\_

UNIVERSITY OF KWAZULU-NATAL  
RESEARCH OFFICE

ETHICAL CLEARANCE: HUMAN AND SOCIAL SCIENCES

CHECK SHEET FOR APPLICATION

TICK	PLEASE
1. Form has been fully completed and all questions have been answered	yes
2. Questionnaire attached (where applicable)	yes
3. Informed consent document attached (where applicable)	yes
4. Approval from relevant authorities obtained (and attached) where research involves the utilization of space, data and/or facilities at other institutions/organisations	yes
5. Signature of Supervisor / project leader	yes
6. Application forwarded to Faculty Research Committee for recommendation and transmission to the Research Office	yes



UNIVERSITY OF  
KWAZULU-NATAL

RESEARCH OFFICE (GOVAN MBEKI CENTRE)  
WESTVILLE CAMPUS  
TELEPHONE NO.: 031 - 2603587  
EMAIL : [ximbap@ukzn.ac.za](mailto:ximbap@ukzn.ac.za)

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8 DECEMBER 2006

MR. SW MKHWANAZI (202526931)  
GRADUATE SCHOOL OF BUSINESS

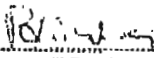
Dear Mr. Mkhwanazi

**ETHICAL CLEARANCE APPROVAL NUMBER: HSS/06828A**

I wish to confirm that ethical clearance has been granted for the following project:

"Project Zero"

Yours faithfully

  
MS. PHUMELELE XIMBA  
RESEARCH OFFICE

cc. Faculty Office (Christel Haddon)  
cc. Supervisor (Mr. M Phiri)