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Evaluating a safety culture at a power generating organisation: case of Zimbabwe Power Company

By

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B190276B

A research project submitted in partial fulfilment of the requirements of the Bachelor of Science (Honours) degree in Safety, Health and Environmental Management.

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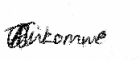
APPROVAL FORM

The undersigned individual certify that, they have read and agreed that Bindura University of Science Education to accept the dissertation entitled, **evaluating a safety culture at a power generating organisation: case of Zimbabwe Power Company,** in fulfilment of the BSc (Hons) Safety Health and Environmental Management.

By Alistair Chikomwe

Student Signature:  **Date: 30 May 2023**

Supervisor Signature:  **Date: 30 May 2023**

Chairman's Signature…….Date…….

DEDICATION

This research is dedicated to my mother; Priscillah Chikomwe, together with my grandmother, Gladys Madhara and my father, Pardon Madhara, for their love, patience and continual support.

ACKNOWLEDGEMENTS

I express my sincere appreciation to Dr. A. Kanda, my supervisor, whose unwavering guidance has been invaluable in the completion of this dissertation. Without his tremendous assistance, this achievement would not have been possible. I extend my gratitude to all the members of the Environmental Science department and Bindura University of Science Education (BUSE) for their educational support during my four-year tenure at BUSE. I am grateful to my family for their unwavering support and patience throughout these past four years. Above all, I thank God for the gift of life and good health, which enabled me to work on this dissertation.

ABSTRACT

Background: Safety culture is considered robust where beliefs and activities in an organisation are positive and shared, thus a reduction in chances of incidents. Workers continue to die from unsafe and unhealthy working environments which is a cause for concern: Do workers know, and have positive attitudes and good practices on safety?

Objective: The study determined perceived factors for establishing a safety culture and associated impacts at a power generating organisation in Zimbabwe. The knowledge, attitudes and practices of workers were determined.

Methods and materials: A descriptive cross-sectional study was undertaken by administering 52 closed-ended questionnaires and conducting two in-depth face-to-face interviews with key informants. A survey was done on workers' knowledge, attitudes and practices (KAP) on safety culture, and a SWOT analysis was used to categorise reported impacts of establishing it.

Key findings: Improving productivity (45%) and compliance with regulation (30%) were the most self-reported motivational factors to establishing a safety culture. Participants had good knowledge (score: 77.6%), positive attitudes (score: 75.5%) and adequate practices (score: 71.1%) towards safety culture. The main challenges reported were insufficient resources (40.4%) and poor communication (25%). SWOT analysis indicated main impacts to include compliance (strength), resource-intensive (weakness), improved customer satisfaction (opportunity) and economic challenges (threat).

Conclusion: Establishing a safety culture requires careful planning to engage all stakeholders and gain management commitment. Understanding of employees' KAP informs organisational safety policy and practice, and helps to establish training needs.

Key terms: attitudes, energy organisation; knowledge and practices; occupational health and Safety; safety culture

Table of Contents

CHAPTER 1: INTRODUCTION

1. INTRODUCTION

1.1 Background to study

Globally, about 27.8 million workers are estimated to die from occupational accidents and work-related diseases annually (UN Global Compact, 2021). Zimbabwe recorded an increased incidence rate of occupational injuries from 2020 to 2021, with 76 deaths (NSSA, 2021). Accident causation theories also attribute the occurrence of accidents to unsafe human behaviour (Wang, 2019; Guo, 2020). However, establishing a safety culture at an organisation (shared attitudes, values and perceptions towards safety) has been associated with several benefits, including reduced occurrence of accidents and injuries (Choudhry et al., 2007).

Measurement of safety culture is often done using employee surveys in a risk management programme (Choudhry et al., 2007). It is assumed to predict safety-related behaviour including compliance to safety rules and accident/incident reporting (Christian et al., 2009). A knowledge, attitudes and practices survey becomes inherent. Indicators used to define safety culture and safety performance in safety culture surveys and observational studies include total recordable injury frequency (TRIF) , lost time injury frequency (LTIF) (Matei, 2020) and various safety culture metrics like injury rates, safety audits and near-miss reporting (Huang, 2016). HSE (2005) identified five indicators for safety culture; (i) leadership, (ii) two-way communication, (iii) employee involvement, (iv) learning culture and (v) attitude towards blame culture. Employees may be educated but still demonstrate

negative attitudes and practices towards safety (Thakur, 2018) requiring targeted behaviour modification interventions such as training.

Establishing a safety culture requires the commitment of leadership, employee engagement, clear communication and continuous improvement (Munzara, 2014). However, the successful establishment of a safety culture can be threatened by the resistance to change, lack of resources, lack of buy-in by employees, contractors, linguistic and cultural barriers (Matei, 2020). Some organisations in the power generating energy sector were reported to have established safety culture (Alexander, 2004; Bushong, 2014; Acakpovi, 2016). However, it appears there is poor reporting on independent evaluations of the establishment of safety culture in resource-constrained power generating organisations from a participatory perspective, particularly from the developing world. The current study evaluated the establishment of a safety culture at an electricity generating organisation as a case study in Zimbabwe.

1.2 Problem statement

Workers in the energy industry (oil, gas and power generation) are exposed to various potential hazards along the production line (Boutetière, 2019) resulting in high accidents and injuries along with loss in productivity (Spinoy, 2019). Despite the existence of safety regulations and training programmes, employees continue to engage in risky behaviour that cause injuries and fatalities (Thakur, 2018) requiring an assessment of their knowledge, attitudes and practices on safety. There is a complex regulatory environment in the energy industry with constantly evolving regulatory requirements in tandem with advancing technology which introduces new risks. There appears to be few independent studies that evaluate the establishment of safety culture in resource-constrained power generating

parastatal in the developing world. The current work evaluated the establishment of a safety culture at an electricity generating parastatal in Zimbabwe.

1.3.1 Aim

To evaluate a safety culture at a power generating organisation in Zimbabwe.

1.3.2 Objectives

- To determine perceived motivational factors to establishing a safety culture at ZPC
- Determine knowledge, attitudes and practices of employees about safety culture
- To identify the challenges faced in establishing safety culture at ZPC.
- To determine the SWOT in establishing a safety culture at ZPC.

1.4 Research questions

- Which perceived motivational factors led to the establishment of safety culture?
- What are the knowledge, attitudes and practices of employees about safety culture?
- What are the challenges faced in establishing safety culture?
- What are the SWOT in establishing a safety culture at ZPC?

1.5 Significance of the study

Findings from the study may help the organisation to continually improve on occupational health and safety (OHS) by reviewing their safety culture. They may also be used to improve safety performance, reduce accidents and increase employee morale. An understanding of knowledge, attitudes and practices (KAP) of employees towards safety culture may help inform organisational OHS policy and practice. The findings may contribute to the current body of knowledge, debate on safety culture and be used for further studies.

1.6 Assumptions

- Respondents are knowledgeable and insightful on safety culture.

- The time of the study shall be sufficient for its successful completion.
- Respondents shall be truthful and willing to participate in the study.

1.7 Limitations

- Questionnaire may not be attended to timeously – Suggested follow ups.
- Respondents may withhold sensitive information for fear of victimization.

1.8 Delimitations

- The study focused mainly on ZPC-HPS employees inclusive of the top management and the risk and quality officer (SHE officer).

CHAPTER 2: LITERATURE REVIEW

2. LITERATURE REVIEW

2.1 Introduction

This chapter provides the current thinking in safety culture, factors influencing establishment of a safety culture and associated challenges. It looks at earlier research related to safety culture and identifies research gaps.

2.2 Characteristics of good safety culture

Good or positive safety culture is characterised by three key factors that are communication, responsibility and pro-activeness (Ransley, 2020). Key elements to an effective and positive safety culture in the workplace include shared values, leadership involvement, continuous learning, accountability and constant support (Durisko, 2018). Fig. 2.1 shows key factors of good safety culture.

2.3 Motivational factors to establishing an organisational safety culture

Organisations can be motivated to establish a safety culture which is crucial to ensuring the health and well-being of employees, as well as protecting the organisation from potential and legal and financial repercussions (Bruhn, 2023). There can be several motivational factors that lead to establishment of a safety culture which include protecting employees, compliance with regulations, improving productivity, building trust and loyalty and enhancing reputation (Clarke, 2006). Motivators for safety culture can both be intrinsic like attitudes, values and

influence as well as contextual factors such as motivational management, occupational culture, workplace resources and compliance (Bruhn, 2023).

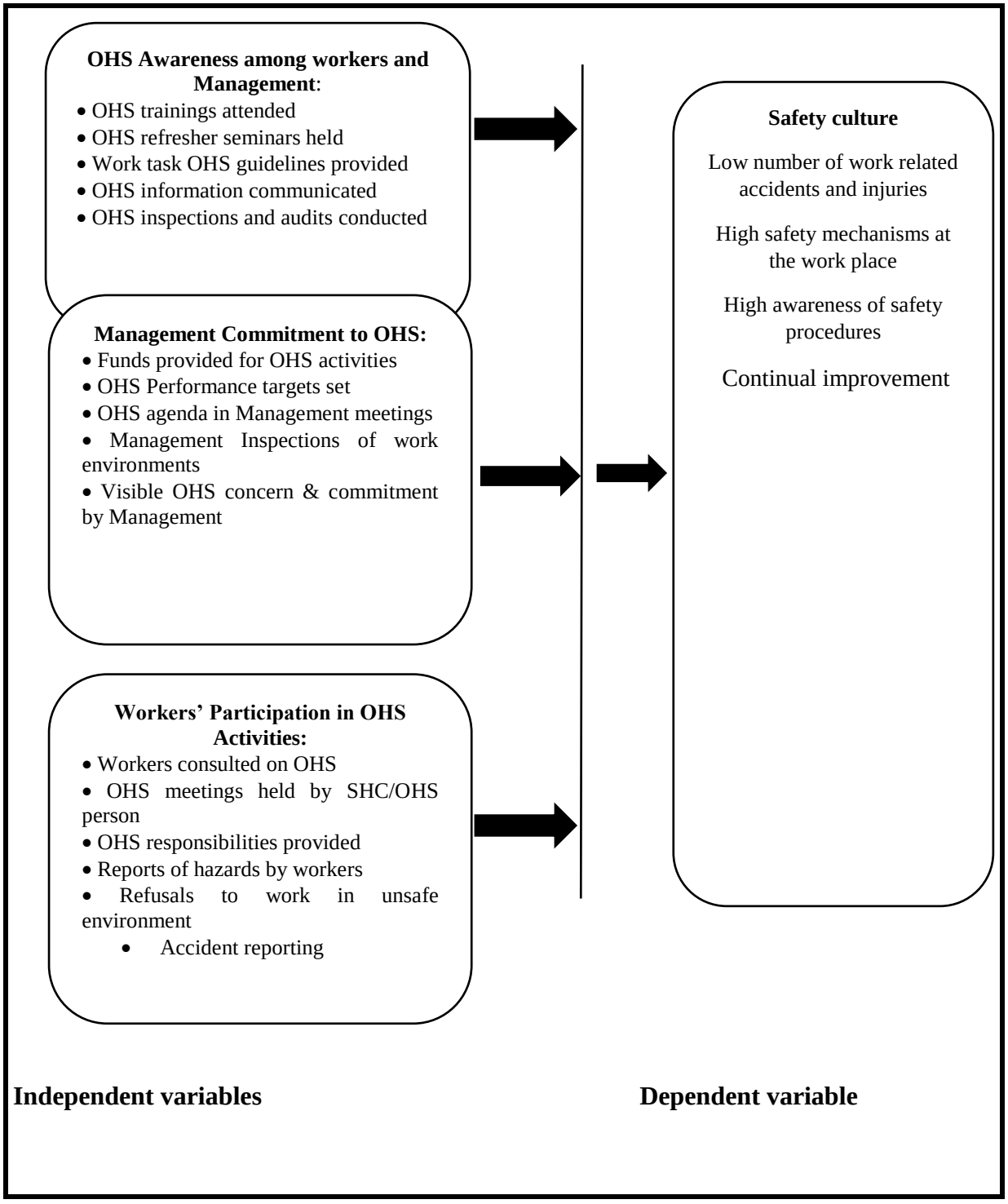


Fig. 2.1 key factors of good safety culture.

2.4 Knowledge, attitudes and practices about safety culture

Chopra and Meindl (2015) regarded knowledge, attitudes and practices of OHS to be key in the establishment and sustainability of an effective safety culture. A study in Kenyan supermarkets (Kaaria, 2015) concluded that knowledge, attitudes and practices affected OHS implementation. It is generally assumed that safety culture is considered robust where beliefs (attitudes) and activities as far as safety is concerned are positive and shared hence a reduction in chances of safety incidents. However safety culture is perceived as weak and increasingly susceptible to accidents where there is negativity and fragmentation as far as knowledge, attitudes and practices are concerned (Christian et al, 2009).

2.5 Challenges encountered in establishing an organisational safety culture

It is difficult to establish an organisational safety culture due to challenges such as knowledge, training and money, transient and temporary workers, working in different locations, not enough supervision, contractors and linguistic and cultural barriers (Matei, 2020). Tait et al. (2018) found out that lack of personal protective equipment was a major challenge on safety among health workers. Ndejjo et al. (2015) concluded that the persistence of exposure to occupational hazards among health workers in Kampala, Uganda was due to lack of appropriate protective equipment and over-working. Report of risk assessment (KMOH and IntraHealth International, 2013) conducted on Kenyan mining industry in 2011/2012 attributed the serious OHS risk level and severe non-compliance to lack of OHS policy and a designated resource person.

Electricity generating organisations face several challenges related to safety culture, given the hazardous nature of their operation like high-risk environment, aging infrastructure,

regulatory compliance, workforce diversity, emergencies and disasters and technological innovation (Hughes, 2016). Many organizations are faced with the challenge of structuring OHS policies and implementation programmes. Management leadership, training, and employee participation affect OHS implementation (Kaaria, 2015). The involvement of all employees at all levels and management is challenging when establishing a safety culture (Ndegwa, 2015).

2.6 SWOT analysis: impacts of establishing a safety culture

The tool was used in evaluating a safety culture (Dzonzi-Undi, 2015; Misbah, 2017). Its advantages are that it has a wide problem domain, it also has application neutrality, data integration and simplicity (Nordmeyer, 2019). SWOT analysis is intended to aid organisations in developing their advantages, overcoming their weaknesses, seizing their opportunities and eliminate their threats (Wang, 2020). Table 2.1 summarises findings from SWOT analysis applied in identifying the strengths, weaknesses, opportunities and threats in establishing an organisational safety culture.

2.7 Summary

The literature review identified key issues on safety culture: roles of leadership and employees, impact of technological change and of organisational structure. Research appears scattered on evaluating safety culture on various types of organisations mainly private, and not parastatal. Further, more work appears to be focused on developed countries. Most studies were cross sectional observational surveys.

Table 2.1. SWOT analysis on establishing safety culture

STRENGTHS	WEAKNESSESS
• Reduced risk of accidents and injuries. • Compliance with safety regulations. • Improved productivity and efficiency. • Improved reputation among stakeholders including customers, investors and regulators.	• Resistance to change among employees or management. • Limited resources including time, budget, and staffing which can make it challenging to prioritize safety initiatives. • Lack of awareness or training among employees, which can lead to non-compliance with safety protocols. • Difficulty in measuring the return on investment of safety initiatives.
OPPORTUNITIES	THREATS
• Increased customer satisfaction and loyalty, as safety is a major concern for many customers in the energy industry. • Attraction of new customers who prioritize safety and sustainability. • Improved employee retention and recruitment, as a strong safety culture can demonstrate a commitment to employee well-being. • Potential for innovation and creativity in developing new safety measures and protocols.	• External factors such as natural disasters, cyber-attacks can make it difficult to maintain a safe working environment. • Economic challenges such as budget cuts or market downturns, can make it difficult to prioritize safety initiatives. • Competition from other energy generation organisations that prioritize safety and sustainability. • Changes in safety regulation or standards, which can require additional resources or expertise to implement.

Sources (Dzonzi-Undi, 2015; Peterdy, 2022; Talin, 2022)

CHAPTER 3: METHODS AND MATERIALS

3. METHODS AND MATERIALS

3.1 Description of the study area

Zimbabwe Power Company (ZPC) was commissioned in 1996 following the unbundling of the electricity sector. It became operational in 1999. The organisation was authorised to construct, own, operate and maintain power generation stations for the supply of electricity. ZPC currently operates four coal-fired power stations (Hwange, Bulawayo, Munyati and Harare) and one hydro-power station (Kariba South). The five stations have an installed capacity of 1 960 MW. The current study focuses on Harare Power Station located in Workington industrial area (Fig. 3.1).

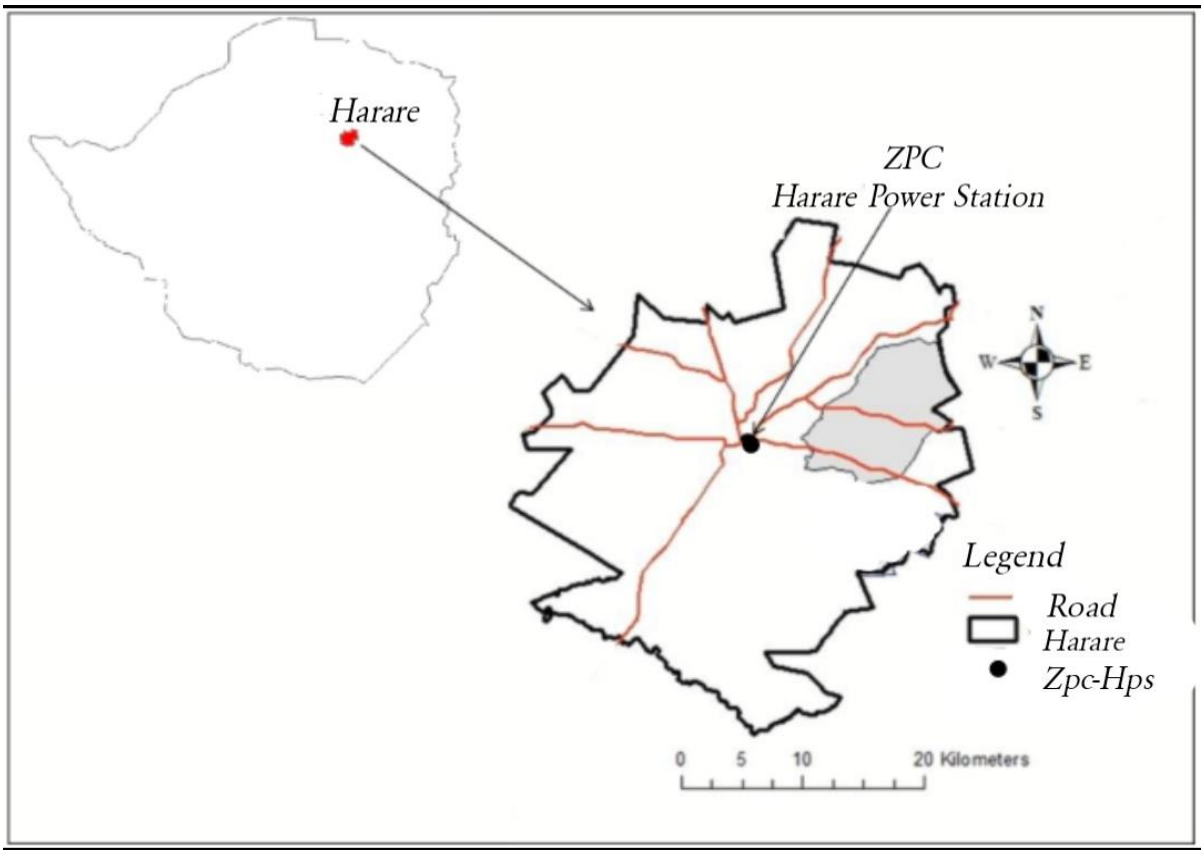


Fig 3.1 Location of ZPC Harare Power Station

Station 1 had a capacity of 21 MW but was decommissioned in 1970 while Station 2 had an initial capacity of 75 MW but was de-rated to 20 MW and decommissioned in 2014. With a capacity of 60 MW, Station 3 consists of pulverized fuel-fired boilers and has a dependable capacity of 30 MW.

3.2 Research design

The study assumed a mixed methods research design. A descriptive cross-sectional survey was used. It looks at the phenomenon of the moment and then describe precisely what is observed by the researcher (Paffenbarger, 2014). A closed-ended questionnaire and an in-depth face-to-face interview were used for data collection. The research design was adopted from literature (Munzara, 2014).

3.3 Determination of sample size and recruitment of participants

Yamane's formula was used to calculate the sample size. Of the total 120 employees at the organization, only 60 were available on-site. Assuming a margin error of 5% and 95% confidence level, the sample size was 52. Random sampling was used to recruit participants throughout the organization premises from all the departments. This was done by assigning unique numbers to each sampling frame for identification and sealed envelope randomization was carried out to select participants for the study. The section head of operations and the safety, health and environmental quality officer (SHEQ officer) were the two key informants.

3.4 Research instruments

3.4.1 Closed-ended questionnaire

A questionnaire adapted and modified from literature (Osman, 2020) was administered to 52 ZPC-HPS employees (Appendix 1). The questionnaire contained closed-ended questions which are relatively easy to quantify data when analysing it since such questions help to keep out data impurity that comes with waffling (Riffenburgh, 2012). The questionnaire solicited data on demography, perceived knowledge, attitudes, practices and challenges on safety culture. The questionnaire was designed in English but it was administered in *ChiShona* to be easily understood.

3.4.2 In-depth interview with key informants

A key informant interview guide (Appendix 2) was used to collect information from the section head of operations and the SHEQ officer. Interviews mainly focused on the questions to do with motivational factors for adopting a safety culture, associated challenges and measures that were put in place to address them. Two separate face-to-face interviews were carried out with each key informant for at most minutes. The interviews were audio recorded.

The interviews are easy to replicate as fixed sets of questions are used (interview guide) and easily quantifiable meaning easy testing for reliability (Pathfinder International, 2016).

3.5 Ethical considerations

Participants were informed about the study and how they would willingly participate before making their informed decisions. Privacy and confidentiality of shared information along with identities were honored throughout the study. Permission to carry out the study was granted from ZPC-HPS safety department and the Environmental Science department of Bindura University of Science Education. Participation was voluntary (Bruno, 2020).

3.6 Data collection

A close-ended questionnaire was administered to 52 ZPC-HPS employees. The participants were debriefed on the purpose of the study, the confidentiality of their responses and their right to refuse to participate. The questionnaire was administered in person at the same time since the target population was available at the same place. After the questionnaires were completed, they were collected for checking for correctness and completeness. Two interviews that were held with the section head operations and the SHEQ officer made use of the interview guide. The interviews were held in person at the organization premises at an agreed time. The interviewer had time to introduce himself, explain the purpose of the study and obtain participant's consent to participate and for audio recording in the interview without mentioning names. The interviewer made use of the interview guide and asked follow-up questions to clarify and probe for more detailed responses. The interviews were both transcribed for data analysis. Each interview lasted for 10 minutes.

3.7 Data management

Data were cleaned by checking for missing data, outliers and invalid responses and prepared for analysis. Quantitative data were analysed and presented using descriptive statistics in

SPSS version 20.0. KAP data were scored using a procedure developed by Baig (2020). Score < 50% = poor knowledge, 50 - 75% score = moderate knowledge, and > 75% score = good knowledge. Attitude score >70% was regarded as a positive score which indicated a positive attitude while < 70% was regarded as a negative score and indicated negative attitudes. Practice score > 60% was considered adequate and < 60% was considered inadequate.

Discourse analysis procedure described by Luo (2022) was used to analyse key informant interview data. It allows to uncover deeply held attitudes and perceptions that are important in data analysis (Mogashoa, 2014). It focuses on analysing the social context in which communication between the researcher and the participant occurred (Bhatia, 2018). Details of the 4-step procedure are provided as Appendix 3. SWOT analysis was used in a 5-step procedure as described by Pishehvar (2018) to identify the strengths, weaknesses, opportunities and threats that came with establishing a safety culture (Appendix 4).

CHAPTER 4: RESULTS

4.1 Characteristics of participants

Table 4.1 below shows results pertaining to the demographics of the 52 participansts. Most of the participants were in the 31 - 40 years age group (46.1%) with undergraduate degrees (40.4%). The most experienced workers had worked for the organisation for more than 7 years.

Table 4.1: Characteristics of participants

Characteristic	Category	Frequency	%

Department	Maintenance	16	30.8%
	Operations	13	25%
	Human resources	7	13.5%
	Loss & control	11	21.2%
	Risk & quality	5	9.6%
Gender	Male	33	(62.5%)
	Female	19	(36.5%)
Marital status	Single	12	(23.1%)
	Divorced	9	(17.3%)
	Married	21	(40.4%)
	Widower/widow	10	(19.2%)
Religion	Traditional	5	(9.6%)
	Christianity	40	(76.9%)
	Islamic	6	(11.5%)
	Other	1	(1.9%)
Age group (years)	21 - 30	13	(25%)
	31 - 40	24	(46.1%)
	41 - 50	8	(15.3%)
	> 50	7	(13.5%)
Highest qualification obtained	Secondary	1	(1.9%)
	Certificate	11	(21.2%)
	Diploma	12	(23.1%)
	Undergraduate	21	(40.4%)
	Postgraduate	7	(13.5%)

Work experience (years)	< 3	9	(17.3%)
	3 – 6	10	(19.2%)
	7 - 10	23	(44.2%)
	> 10	10	(19.2%)

4.2 Knowledge, attitudes and practices of participants on safety culture

4.2.1 Occupational health and safety knowledge of participants

Table 4.2 shows the knowledge of participants on OHS issues (safety culture). Results indicate that mean score was 77.6 % denoting good knowledge.

4.2.2 Occupational health and safety attitudes of participants

Table 4.3 shows the attitudes of participants towards OHS issues (safety culture). Results indicate that the mean score is 75.5 denoting a positive attitude.

Table 4.2: Knowledge of occupational safety and health (n = 52)

Knowledge	Yes *(favoured)*	No	Not sure
Is your company certified to any safety and health standard?	42 (80.8)	7 (13.5)	4 (7.7)
Does your company have a Safety, Health and Environmental Management policy?	48 (92.3)	4 (7.7)	-
If the company has a policy, is it clearly communicated to you?	40 (76.9)	12 (23.1)	-

Are you aware of communication channels to use when reporting accidents or safety issues?	35 (67.3)	14 (26.9)	3 (5.8)
Do you know how to use the safety equipment provided to you?	41 (78.8)	11 (21.2)	-
Do you know the emergency preparedness procedures for your organisation?	26 (50)	13 (25)	13 (25)
Are you aware of the hazards associated with your job?	46 (88.5)	4 (7.7)	2 (3.8)
Are you aware of the safety and health risks associated with work environment?	45 (86.5)	5 (9.6)	2 (3.8)
Mean score	77.6		
Knowledge rating	Good		

Figures in brackets are % of the participants
(Favoured) means required figures to calculate mean score

Table 4.3 Attitudes of participants on safety culture (n = 52)

Attitudes	Yes *(favoured)*	No	Not sure
Do you believe that the personal protective equipment ensures your safety?	50 (96.2)	2 (3.8)	-
Do you think you can take care of your own safety when working?	48 (92.3)	1 (1.9)	3 (5.8)
Do you think the reward system in the company is fair?	31 (59.6)	21 (40.4)	-
Do you feel comfortable reporting safety incidents	38 (73.1)	14 (28.9)	-

and near-misses to your immediate superior?			
Do you feel employees concerned about their safety and that of their colleagues?	28 (53.8)	14 (28.9)	10 (19.2)
Do you feel employees need additional safety and health training?	50 (96.2)	2 (3.8	-
Do you perceive that safety is viewed by all employees as a shared responsibility?	38 (73.1)	10 (19.2)	4 (7.7)
Do you think employees are willing to report safety violations committed by their colleagues?	31 (59.6)	21 (40.4)	-
Mean score	75.5		
Attitude rating	Positive		

Figures in brackets are % of the participants
(Favoured) means required figures to calculate mean score

4.2.3 Occupational health and safety practices of participants

Table 4.4 shows the practices of participants on OHS issues (safety culture). Results indicate that mean score was 71.1% denoting adequate practices.

Table 4.4 Practices of participants on safety culture (n = 52)

Practices	Yes *(favoured)*	No	Not sure
Did you receive induction training when you got employed?	52 (100)	-	-
Did you use relevant effective personal protective equipment before you start work?	31 (59.6)	21 (40.4)	-
Do you carry out pre-task assessment before doing a task?	29 (55.8)	21 (40.4)	2 (3.8)

Do workers exposed to unsafe working conditions receive additional specific training?	34 (65.4)	14 (26.9)	4 (7.7)
Are safety procedures and protocols clearly communicated to all employees and contractors?	38 (73.1)	10 (19.2)	4 (7.7)
Are employees recognised and rewarded for demonstrating safe behaviour and practice?	38 (73.1)	14 (28.9)	-
Mean score	71.1		
Practices rating	Adequate		

Figures in brackets are % of the participants
(Favoured) means required figures to calculate mean score

4.3 Self-reported motivational factors to establishing a safety culture

Fig. 4.1 shows self-reported perceived motivational factors that led to the establishment of a safety culture at the organisation. The most reported factors was improving productivity (45 %) while the least reported was enhancing reputation (10 %).

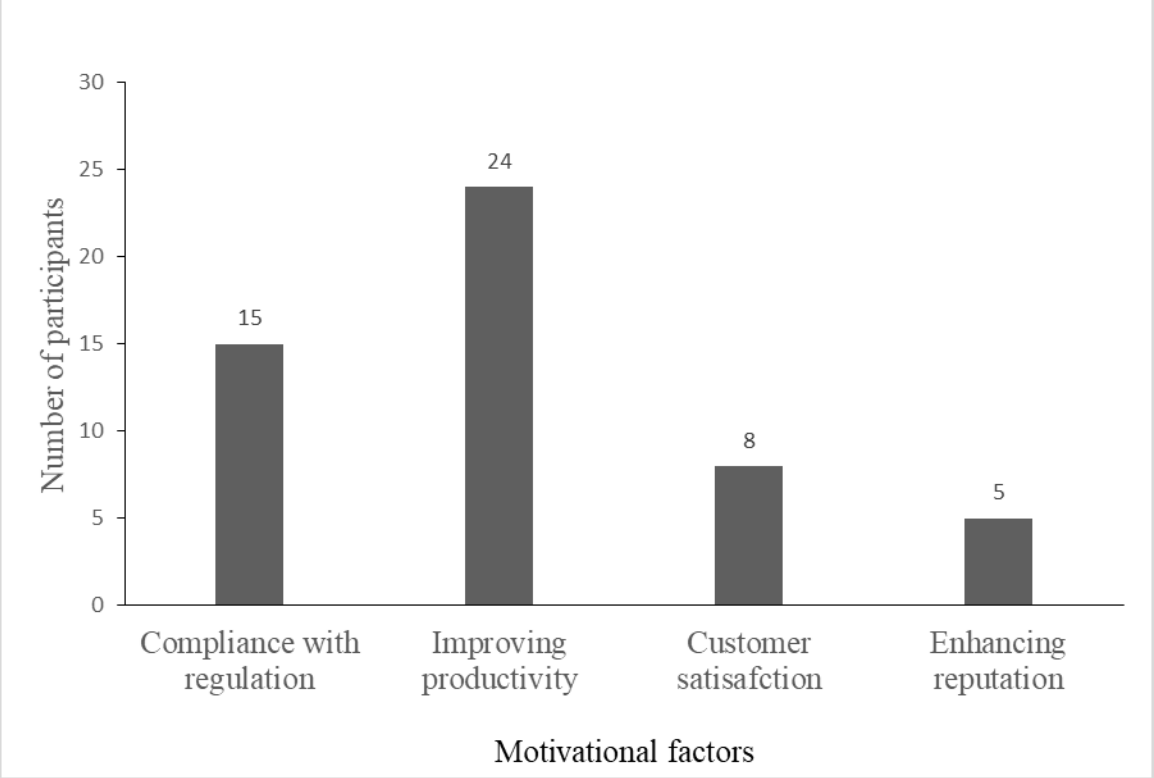


Fig 4.1 Self-reported perceived motivational factors for establishing an organisational safety culture

4.4 Reported challenges encountered in establishing a safety culture

Fig. 4.2 shows the reported challenges that were encountered when a safety culture was implemented at the organisation. The most reported challenges were lack of resources for safety (40.4 %) and poor communication (25%) while the least reported was lack of expertise (5.8 %).

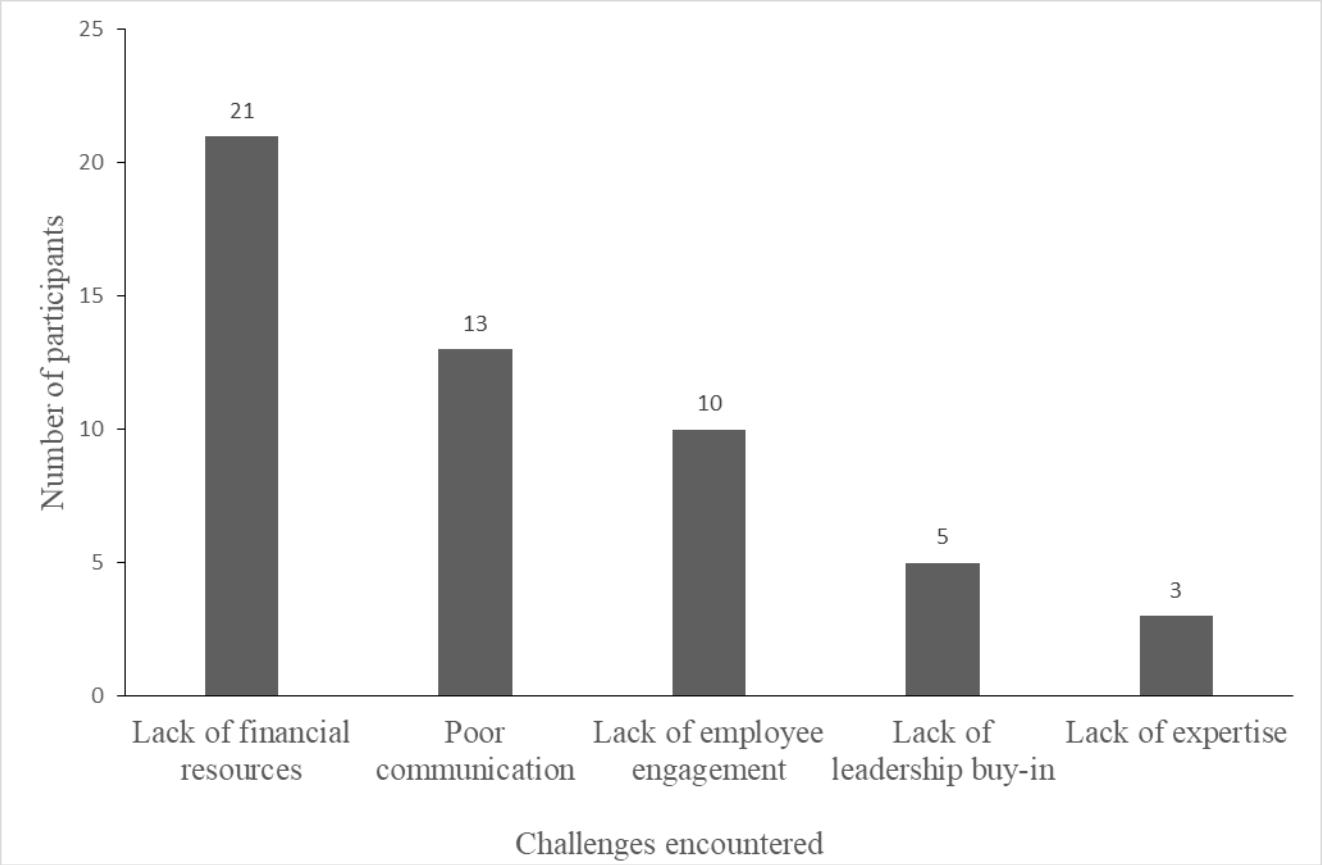


Fig 4.2 Self-reported challenges encountered in establishing an organisational safety culture

4.5 Results of SWOT analysis

Table 4. 5 shows the results of SWOT analysis on establishing a safety culture that were derived from the impacts of its implementation during a FGD. The main ideas that participants discussed included reduction of risk of accidents and injuries (LTI) for which the

participant quoted "there was reduction of LTI and near miss cases" and improved productivity (*strength*) for which the participant quoted:

"generation increased and less expenses were incurred towards safety and health of workers".

Lack of awareness or training among employees (*weakness*) was observed as a participant retorted:

"training in regards to health and safety issues was lacking and employees were not aware of other key issues of safety culture".

There was increased customer satisfaction and improved employee retention (*opportunities*). A participant noted:

"customers were giving positive feedback as they were satisfied with services and recruitment was high as the organisation showed commitment to employee well-being".

Changes in safety regulation or standards (*threat*) was mentioned.

Table 4.5 showing the FGD results of SWOT analysis

STRENGTHS	WEAKNESSESS
• Reduced risk of accidents and injuries. (LTI) • Compliance with safety regulations. • Improved productivity and efficiency. (generation) • Improved reputation among stakeholders including customers, investors and regulators.	• Resistance to change among employees or management. • Limited resources including time, budget, and staffing which can make it challenging to prioritize safety initiatives. • Lack of awareness or training among employees, which can lead to non-compliance with safety protocols.

OPPORTUNITIES	THREATS
• Increased customer satisfaction and loyalty, as safety is a major concern for many customers in the energy industry. • Improved employee retention and recruitment, as a strong safety culture can demonstrate a commitment to employee well-being. • Potential for innovation and creativity in developing new safety measures and protocols.	• External factors such as natural disasters, cyber-attacks can make it difficult to maintain a safe working environment. • Economic challenges such as budget cuts or market downturns, can make it difficult to prioritize safety initiatives. • Changes in safety regulation or standards, which can require additional resources or expertise to implement.

CHAPTER 5: DISCUSSION

5. DISCUSSION

5.1 Characteristics of participants

The participants were all fairly educated which may imply that they were able to address the requirements of the questionnaire easily. Male participants dominated (62.5%). Wazomwe (2020) reported that most employees in energy organisations in the SADC region were males. These are the workers in the energy sector who may be exposed to occupational health hazards.

Most participants fell in the 21 to 40 years of age which is within the ZETDC Youth Policy (2016). This covers the most productive age group (ZETDC Youth Policy, (2016) for most demanding work that characterises the energy sector.

5.2 Knowledge, attitudes and practices of safety cuture by participants

5.2.1 Knowledge of participants

Participants had good knowledge of safety culture (mean score of 77.6%). This could be attributed to the educational demography as more than half of the participants had obtained a university degree (53.8%). Knowledge of safety culture has been considered to result in success in an organisation (Maseko, 2016). This ensures competence and safe conduct,

among workers in the discharge of their duties. Thakur (2018) observed that an OHS awareness (gain in knowledge) increases organisational productivity, indicating that good knowledge on safety culture influences the success of an organisation.

5.2.2 Attitudes of participants

Participants had positive attitude towards a safety culture (mean score of 75.5%). This positive attitude could be due to majority (63.4%) of the participants having work experience over 7 years which influences their attitudes towards their work. Damaza (2021) indicated that the availability of protective equipment, reporting of incidents and near misses, and training shape attitudes. Positive attitudes for employees are important for improving employees overall well-being, workplace relationships and improving safety performance (Koppler, 2019). Earlier studies reported positive attitudes of employees towards a safety culture (Zucker and Koppler, 2019; Damaza, 2021). They established that for the energy sectors in Egypt and Kenya, positive attitudes were attributed to the availability of protective equipment and training of employee on OHS issues.

5.2.3 Practice of participants

Participants had adequate practices towards safety culture (mean score of 71.1%). Similar scenarios where adequate practices were indicated in studies were reported elsewhere (Glendon, 2016; McKenna, 2016). Adequate practices could be due to long work experience over 7 years which influences their attitudes towards their work (Clarke, 2016). Baldiwn (2018) concluded that effective training of employees on OHS enhances knowledge and attitude, and hence care is taken in practice leading to a safe working environment and success of an organisation.

5.3 Reported motivational factors for establishing a safety culture

The most reported factor was improving productivity (45%) while the least reported was enhancing reputation (10%). Motivational factors on safety culture were considered important to ensure occupational health and well-being, prevent potential legal and financial repercussions (Bruhn, 2023). Clarke (2006) identified several motivational factors that lead to establishment of a safety culture including (i) protecting employees, (ii) compliance with regulations, (iii) improving productivity, (iv) building trust and loyalty and (v) enhancing reputation. Results from the current study appear to suggest that the organisation's main focus could have been improving productivity and compliance with regulations. However, there is need to consider the safety and health of employees first before production.

5.4 Reported challenges encountered when establishing a safety culture

The most reported challenges were lack of resources for safety (40.4 %) and poor communication (25%) while the least reported was lack of expertise (5.8 %). Results may indicate occupational safety concerns. Poor safety resources can have significant impacts on an organisation which can increase the risk of workplace accidents and injuries, increased absenteeism, lowered productivity, increased workers' compensation costs, decreased employee morale and job satisfaction (Guillaume, 2017). The lack of adequate financial allocations was reported as a challenge to enable the requisition of high quality safety clothing within the energy sector in Zimbabwe (Mutomba (2019). This could result poor quality safety clothing for employees, a matter that Chikanga (2021) identified as a risk factor.

A study by Wambilianga and Waiganjo (2015) claimed that communication and training affected compliance with OSH regulations. Ndegwa (2015) noted that the involvement of all

employees at all levels when establishing a safety culture faced communication challenges. Although the majority of participants had attained undergraduate qualifications, lack of coordination in communication was highlighted. Poor communication within an organisation can have significant impacts on its overall performance and success as clarity can lack, decreased morale and motivation and can damage the organisation's reputation, as customers become frustrated by lack of responsiveness (Whitehead, 2015).

5.5 SWOT analysis

The main strengths of establishing a safety culture at the organisation was the reduction of risk of accidents and injuries, and improved productivity. These can help reduce or off set expenses incurred compensating and medical needs, and improve on profitability and increased and efficient generation of power (Pishehvar, 2018). Limited resources including time, budget, and staffing which can make it challenging to prioritize safety initiatives (Guillaume, 2017). Increased customer satisfaction and improved employee retention may help build corporate (Hoe, 2018). The main threat included changes in safety regulation or standards as risks and hazards are not static but dynamic and change with time which can require additional resources or expertise to implement (Teece, 2016).

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

Establishing a safety culture is motivated by striving for continual improvement on employee safety and health. However, it is characterised by several challenges including resource requirement, management commitment and employee engagement. An understanding of knowledge, attitudes and practices of employees towards a safety culture informs occupational health and safety policy and practice, and help tailor-make training of employees. A SWOT analysis assists organisational strategic planning by unravelling strengths and threats, identifying weaknesses and opportunities. The results of the study may be interpreted considering its limitations, particularly generalisability of the findings. Further studies may be needed to investigate the impacts of establishing an organisational safety culture using performance indicators.

6.2 Recommendations

- Establishing an organisational safety culture requires careful planning using an all-inclusive approach

- Needs assessment may be repeatedly done to tailor make training of employees for continual improvement, followed by reviews and auditing.

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APPENDICES

APPENDIX 1: QUESTIONNAIRE

BINDURA UNIVERSITY OF SCIENCE EDUCATION
DEPARTMENT OF ENVIRONMENTAL SCIENCE

Organisational safety culture research questionnaire

Introduction

My name is *Chikomwe Alistair*, Reg Number B190276B. I am a Bindura University of Science Education student in my 4th year from the department of Environmental Science. I wish to evaluate the safety culture at the Zimbabwe Power Company, Harare region by soliciting for information on percieved motivational factors leading to the establishment of a safety culture and associated challenges. Findings from the study may be useful for maintainng and contimual improvement for your organisation's safety culture.

Your responses to this questionnaire will be treated *confidential* and will be useed for academic purposes only. They will not be shared with anyone else without your written permission. Your voluntary participation will be appreciated.

Instructions

For each question, please encircle or strike an X against the number in bold corresponding to your response.

SECTION A : Personal Information

1. Department / Section

1. Maintenance **2.** Operations **3.** Human Resources **4**. Loss Control **5.** Risk & Quality

2. Gender **1**. Male **2**. Female

3. Marital Status **1.** Single **2.** Divorced **3.** Married **4.** Widower or Widowed

4. Religion **1.** Traditional **2.**Christian **3.** Islamic **4.** Other

If other, please specify ……..

5. Age group (years) **1.** 21-30 **2.** 31-40 **3.** 41-50 **4.** > 50

6. Highest level of education completed

1. Secondary **2.** Certificate **3.** Diploma **4.** Undergarduate **5.** Postgraduate

7. Working experience (years) **1.** < 3 **2.** 3 - 6 **3.** 7 - 10 **4**. > 10

SECTION B: Knowledge

8. Is your company certified to any safety and health standard?

1. Yes 2. No 3. Not sure

9. Does your company have a Safety, Health and Environmental Management policy?

1. Yes 2. No 3. Not sure

10. If the company has a policy, is it clearly communicated to you?

1. Yes 2. No 3. Not sure

11. Are you aware of communication channels to use when reporting accidents or safety issues?

1. Yes 2. No 3. Not sure

12. Do you know how to use the safety equipment provided to you?

1. Yes 2. No 3. Not sure

13. Do you know the emergency preparedness procedures for your organisation?

1.Yes 2. No 3. Not sure

14. Are you aware of the hazards associated with your job?

1.Yes 2. No 3. Not sure

15. Are you aware of the safety and health risks associated with work environment?

1.Yes 2. No 3. Not sure

SECTION C: Attitudes

17. Do you believe that the personal protective equipment ensures your safety?

1. Yes 2. No 3. Not sure

18. Do you think you can take care of your own safety when working?

1. Yes 2. No 3. Not sure

19. Do you think the reward system in the company is fair?

1. Yes 2. No 3. Not sure

20. Do you feel comfortable reporting safety incidents and near-misses to your immediate superior?

1.Yes 2. No 3. Not sure

21. Do you feel employees concerned about their safety and that of their colleagues?

1.Yes 2. No 3. Not sure

22. Do you feel employees need additional safety and health training?

1.Yes 2. No 3. Not sure

23. Do you perceive that safety is viewed by all employees as a shared responsibility?

1.Yes 2. No 3. Not sure

24. Do you think employees are willing to report safety violations committed by their colleagues?

1.Yes 2. No 3. Not sure

SECTION D: Practices

25. Did you receive induction training when you got employed?

1. Yes 2. No

26. Did you use relevant effective personal protective equipment before you start work?

1. Yes, always 2. Yes, at times 3. No

27. Do you carry out pre-task assessment before doing a task?

1. Yes, always 2. Yes, at times 3. No

28. Which is the MAIN strategy/method you normally use to spread the safety culture in your workplace?

1. Signage 2. Induction 3. Toolbox talks 4. Safety awareness campaigns 5. SHEQ meetings 6. Other

If other, please specify ……

29. Do workers exposed to unsafe working conditions receive additional specific training?

1. Yes 2. No 3. Not sure

30. Which medical examinations are done for employees?

1. Pre-placement 2. Periodic 3. Post-placement 4. All 5. None

31. Are safety procedures and protocols clearly communicated to all employees and contractors?

1. Yes 2. No 3. Not sure

32. Are employees recognised and rewarded for demonstrating safe behaviour and practice?

1. Yes 2. No 3. Not sure

SECTION E: Challenges

33. On a scale of 1 to 5, how would you rate the level of safety culture within your organisation?

1. Poor 2. Moderate 3. Good 4. Very Good 5. Excellent

34. Which of the following is the biggest challenge your organisation faces in promoting a strong safety culture?

1. Lack of leadership buy-in 2. Insufficient resources for safety 3. Poor communication 4. Lack of employee engagement in safety efforts 5. Other

If other, please specify ……

35. Has your organisation taken any steps in the past year to improve safety culture?

1. Yes 2. No 3. Not sure

36. How does your organisation measure the effectiveness of its safety culture efforts?

1. Employee surveys 2. Incident and near-miss reporting 3.Safety audits and inspections 4. Key perfomance indicators (KPIs) 5. Others

If other, please specify ……

37. Has your organisation experienced any incidents or near misses in the past year that could have been prevented with a stronger safety culture?

1. Yes 2. No 3. Not sure

38. On a scale of 1 to 5, how important do you believe leadership is in promoting strong safety culture?

1. Not important 2. Slightly important 3. Important 4.Very important 5. Extremely important

39. How does your organisation ensure that all employees understand the importance of safety and importance of raising safety concerns?

1. Regular training and education 2.Open-door policy 3.Safetycommittees
4.Recognition and rewards for safe behaviour 5. Other

If other, please specify ……

SECTION F: Motivational factors

40. Which of the motivational factors that led to the establishment of a safety culture?

1. Compliance with regulations 2. Improving productivity 3. Customer satisfaction

4. Enhancing reputation

END OF QUESTIONNAIRE

APPENDIX 2: Interview Guide

EVALUATING A SAFETY CULTURE IN AN ENERGY ORGANISATION: CASE OF ZIMBABWE POWER COMPANY.

Date:
Venue:
Age (years):
Work experience (years):
Highest educational qualification:
Introduction (time): 2 minutes
Main questions (time): 8 minutes

1. What motivated the organisation to adopt a safety culture?
2. What challenges are you facing in issues to do with occupational health and safety?
3. How to overcome the challenges on occupational health and safety in production?

APPENDIX 3: Procedure on Discourse analysis

For the first step, the research question was clearly defined on evaluation of safety culture looking at motivational factors, challenges and strengths, weaknesses, opportunities and threats. Information was gathered through the interviews which were carried out and transcription of the interview from spoken language into written format. There was the analysis of the information whereby there was close examination of various elements of the information such as words, phrases and overall structure and relating them to attributes and patterns relevant to the research question. Lastly, there was reviewing information and drawing a conclusion.

APPENDIX 4: SWOT analysis procedure

SWOT analysis was carried out in five steps which were provision of a list of major strengths on safety culture within the organization, provision of a list of main weaknesses, provision of a list of major opportunities, provision of a list of major threats and there was comparison of strengths and weaknesses while opportunities and threats were also compared. Finally a table with prioritized strengths, weaknesses, opportunities and threats towards safety culture in the organization was created.