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CHAPTER 1: ORIENTATION

1.1. INTRODUCTION

There is ample evidence in literature that shows that throughout the world, people die from work related accidents (see for example Akpan, 2011; Beriha, Patnaik and Mahapatra, 2011; Heaney and Irlincht, 2010; Iqbal, Iqbal, Taufiq and Ahmed, 2010; Jin and Courtney, 2009; Lauver, Trank and Le, 2011; Nag and Nag, 2010). Although it is difficult to quantify the number of fatalities globally, due to inconsistency and inadequacies of data across countries, Findley and Gorski (2005) pointed out that the annual level of occupational injuries arising from the workplace accidents and illnesses is estimated at 100 million.

In the Geneva conference held in April of 1999, the Chief of the International Labour Organisation (ILO), Dr. Jukka Takala, highlighted that world-wide 1.1 million deaths were experienced at the workplace, whilst an average of 999 000 mortalities were experienced due to road deaths, 502 000 fatalities owing to war, 563 000 deaths due to violence and 312 000 mortalities due to HIV/AIDS.

The Statistics presented by the World Health Organisation at the XIX World Congress on Safety and Health held in Istanbul on September 2011, depicted that the accident rates experienced across the industrial, agricultural and service sectors by the low to middle income countries within the African regions were amongst the highest reported. Agnihotram (2005), Akpan (2011), Beriha, Patnaik and Mahapatra (2012) and Dorman (2000), cite that worldwide a high number of fatalities is experienced in the agricultural sectors of the economy. This can be attributed to the poor skill levels, the pressure to produce to supply a booming economy, the utilisation of antiquate machinery and the lack of an affinity for health and safety (Beriha *et al.*, 2012; Brecker, 2010; Daud, Ismail and Omar, 2010; Fouke, 2010; Geldart, Smith, Shannon and Lohfeld, 2010; Leffakis, 2012; Shirouyehzad, 2011; Xiaorong, Siying, Qingkun, Lap-Ah, Yu, Tze-Wai and Griffiths, 2012; Zink, 2005; Zwetsloot, 2005).

Table 1.1.: Fatal work-related accident rates ** by the World Health Organisation regional grouping (2008).

WHO Regional Grouping	Industry	Services	Agriculture
High income countries (global)	4,3	1,6	10,2
LMIC* Africa Region	21,1	17,7	18,9
LMIC America Region	11,1	6,9	10,7
LMIC Eastern Mediterranean Region	10,1	5,3	20,0
LMIC European Region	10,3	4,5	19,1
LMIC South-East Asia and Western Pacific Regions	9,7	6,1	19,1

* LMIC - Low and middle income countries

** Accident incidence rates are number of fatalities per 100 000 employees.

Source: ILO Report: Global Trends and Challenges in Occupational Health and Safety, XIX World Congress on Safety and Health at Work (2011).

In 2004, the ILO reported that world-wide more than 6000 people died daily from work related accidents. Africa, China and India including the neighbouring islands around these continents accounted for 68% of the 2.3 million mortalities (see Figure 1.1.: Work Related Fatalities experienced globally).

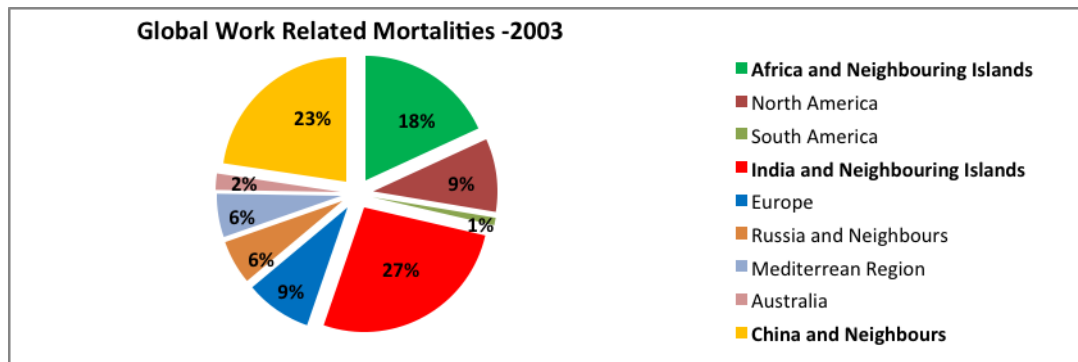


Figure 1.1: Work related fatalities experienced globally

Source: The International Labour Organisation Report 2004

South Africa is no exception as it experiences a high number of fatalities across all spheres of society (Du Plessis, 2001; English, Haupt and Smallwood, 2006; Eweje, 2005; Findley, 2005; Gunningham, 2008; Leger, 1994; Shahieda, Alexander, Jeebhay

and Mohaamed, 2007; Sieberhagen, Pienaar and Els, 2011). The fatality rate in 2005 was recorded as being at least 10 every day. Every 16 minutes of every work day, one person is permanently disabled. This resulted in 27 million working Man Hours lost in 2005 (extracted from the Fundamentals for Health and Safety Representatives, Oct 2006).

Governments and the Society at large have continually emphasised the need to find solutions to counteract the on-going loss of lives and serious accidents within the workplace. As captured by Bedford (2009), Bryne (2011), Cates (2010), Epstein (2012), Eweje (2005), Hohnen and Hasle, (2011), Kaila (2012), Krause and Weekley (2005), Dunlap (2011) and Raines (2011), this has led to the review of Management Systems, Management and Business Processes. Furthermore, the introduction of more stringent and onerous occupational health and safety legislative enforcement, the increased liability for offending organisational leaders and the education of employees to their rights with respect to health and safety. Yet people are injured or become a fatality statistic daily at the workplace.

Over the past century, numerous researchers have proposed an occupational health and safety intervention, to engage employees in health and safety matters, with the expectation that this engagement process will improve the occupational health and safety performance, thereby impacting positively on the initiative of the reduction of workplace mortalities (Alverson, 2011; Brogger, 2010; Bryne, 2011; Buske *et al.*, 2010; Carrillo, 2010; Dell' Aringa, 2011; Dietz, 2009; Eaton and Jeung, 2011; Joensson, 2008; Juniper, 2012; Kaufman, 2012; Markey and Patmore, 2011; Milgate, Innes and O'Loughlin, 2002; Mylett *et al.*, 2007; Raines, 2011; Tsuyoshi, Leng, Yi and Tun, 2011).

1.2. BACKGROUND TO THE RESEARCH PROBLEM

1.2.1. Overview of the Global Cement Manufacturers

Manufacturing organisations experience hundreds of serious accidents and mortalities due to exposure of workplace hazards (Akpan, 2011; Beriha *et al.*, 2011; Iqbal *et al.* 2010; Nag *et al.*, 2010). In line with the research by Iqbal *et al.* (2010) the global cement manufacturing industry is not isolated from this epidemic. The statistics presented by the World Business Council for Sustainability Development (WBCSD), in the 2011 Cement Sustainability Initiative report, depicted a decline in the number of disabling injuries during the period from 2003 to 2008. Although there has been evidence of substantial improvement in occupational health and safety performance, fatalities and serious accidents are still a normal occurrence within the Global Cement Industry (Cement Sustainability Initiative, 2011).

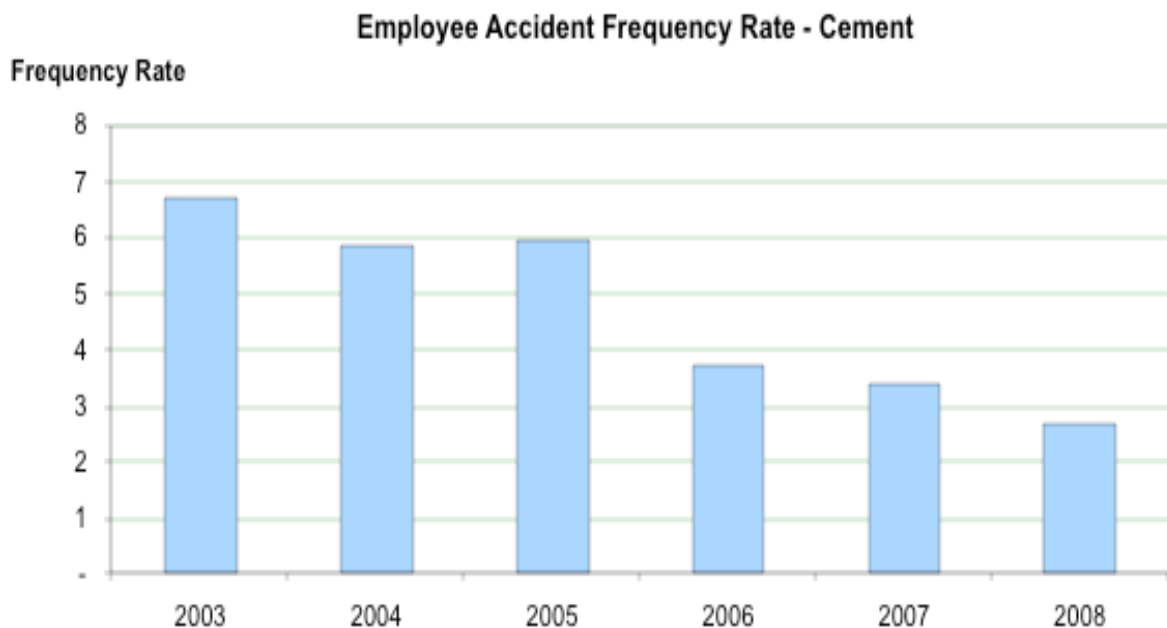


Figure 1.2.: Employee accident frequency rate – Cement

Source: World Business Council for Sustainability Development - 2011 Cement Sustainability Initiative report.

1.2.2. Overview of the South African Cement Industry

The South African Cement Manufacturing Industry, comprising several small to larger producers, are members of the Association of Cementitious Materials Producers (ACMP), a non-profit organisation. The OHS performances of four of the larger cement manufacturers that subscribe to the ACMP have fluctuated over the past decade, as illustrated in Figure 1.3. Although the performance has been better than most of other global cement operations, Du Plessis (2001), Edwards (2000), English (2006), Eweje (2005), George and Quinlan, (2009), Gunningham (2008), Leger (1994), Maller (1994), Zimmerman (2005) and Zungu and Setswe (2004) argue that the occurrence of a fatality is still not an acceptable occurrence.

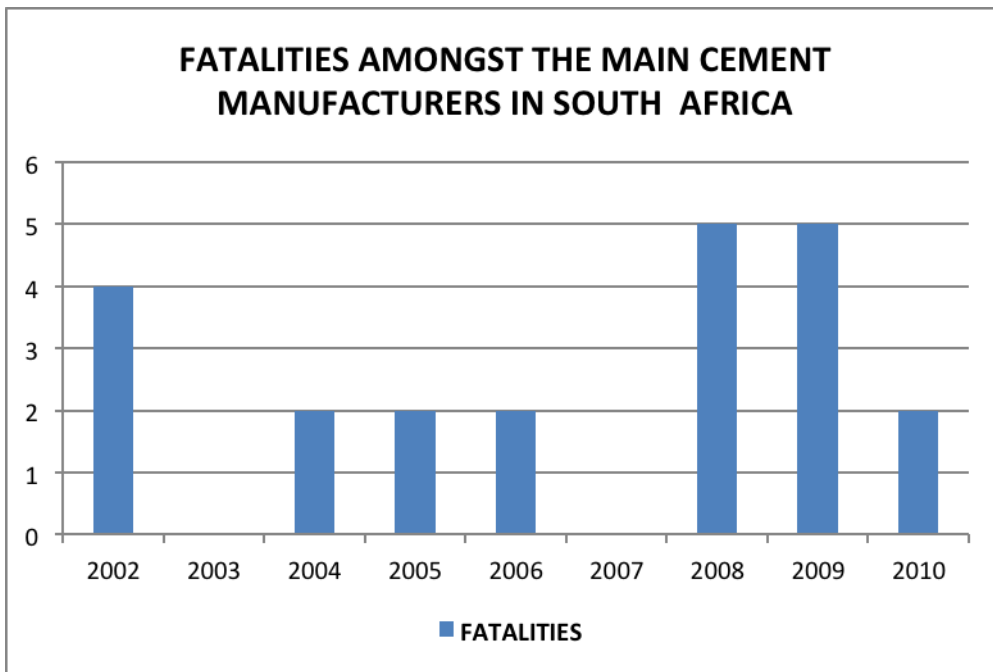


Figure 1.3: Fatalities experienced in the South African Cement Manufacturing Industry.

Source: The Association of Cementitious Materials Producers (ACMP) – 2012 Sustainability Development Report.

Bedfort and Budd (2009), Cates (2010), Epstein (2012), Joshi and Gupta (2004), Mei (2002), Sieberhagen, Rothmann and Pienaar (2009) and Zimmerman (2005) observe that there are various initiatives emanating from Governments, Labour, Employers and the Public that have attempted to address the poor occupational health and safety (OHS) performance levels and to drive organisations to achieve OHS performances that compare against current international benchmarks.

In South Africa, subsequent to the Amendment of the Mines Health and Safety Act, Act 74 of 2008, section 47, the Inspectorate has been given greater juristic enforcement powers and has been practicing this new power. In light of Section 50(7A), the Inspector may impose a prohibition on further functioning of a Mine where a person's death, serious injury or illness, health threatening occurrence, block, barricade or bar the site (Zimmerman, 2005). This affords the Inspector the right to prohibit a site from operating in the case of a death, serious injury, illness or health threatening occurrence, without giving the Manager a chance to represent himself. As explained by Behm, Veltri and Kleinsorge (2004), McGarity and Ruttenberg (2002), Nunez and Villanueva (2011), Tompa, Dolinschi and de Oliveira (2006) and Uegaki, Beek, Bruijne, Mechelen and Tulder (2010), these mandatory closure of operations amount to financial losses that can run into millions of Rands due to losses in the manufacture of potential products.

In South Africa, the mining operations of a Platinum Manufacturer were shut down by the Inspectorate for two weeks, due to the fact that the company experienced fatalities, resulting in production losses of about 2000 ounces of platinum. Furthermore a Cement Manufacturer in the Lichtenburg area in 2008 and Gold and Uranium Mining operations near Westonaria were stopped as the mines experienced three fatalities each in 2011. These operational outages account for losses in production, the irrecoverable loss in fixed cost expenditures such as salaries and electricity, and the financial costs related to the fatalities amounted to exorbitant losses in revenue (McGarity and Ruttenberg, 2002; Nunez and Villanueva, 2011). The consequences of these mandatory stoppages have led management to review

the long term sustainability of the mining operations, which will result in job losses (Business Report, 20 December 2011).

The South African Legislation caters for the prosecution of the Chief Executive Officer, the Factory or Mine Manager, the Engineer and the line management including the injured employee. There have been both civil and criminal prosecutions that have been successfully lodged against the Employer by the Inspectorate. According to Tompa, Dolinschi and Oliviera (2006), Montana (2014) and Zimmerman (2005), this tends to encourage Managers to focus on the minimal abidance to legislation.

- As captured by Bird (1966), Burkes, Sarpy, Smith-Crowe and Chan-Serafin (2006), FAM (2012), Kurtz, Robins and Schortz (1997), McGarity and Ruttenberg (1997), Smallwood (1995) and Monforton and Windsor (2010), the costs attributed to the consequence of a fatality or serious accident has both a financial as well as a social burden for the organisation. Hidden financial costs pertaining to the investigation time by the Line Management, the insurance costs, the cost of employing additional labour to supplement the injured person or the clearing of the site, the review of existing procedures, the communication to all stakeholders or the training of another replacement employee is borne by the organisation. In an article in the Professional Journal of 2008, Fouke E. Jr. cited that employers paid \$48.6 billion dollars to injured employees and to the respective medical care providers in Canada.
- Markey and Patmore (2011) and Nielsen (1979) highlight that the occurrence of fatalities and serious accidents attracts bad publicity, which subsequently conveys the message of a poorly managed organisation. The negative connotation is that the share prices of these organisations are adversely affected.

Parsons (2001), Pouliakas and Theodossiou (2013), Sass (1986), Walters (2006), and Werhane, Radin and Bowie (2004) observe that globally the drive for the future is to give employees legislated rights to conduct inspections, investigate accidents, participate in educational programs paid for by the employer, approve all aspects of an employer's occupational health and safety program and stop work in the case of unsafe or unhealthy conditions. These rights come at a cost to the organisation.

As captured by Eweje (2005) organisations have an ethical and social obligation to ensure the safety and health of employees in the workplace. Multinational companies have had a reputation of demonstrating unethical behaviour regarding hazardous employment and health and safety of employees especially in developing countries such as South Africa. The question often raised by Governments and Society at large is whether the economic benefits outweigh the ethical and social costs of the serious accidents and fatalities experienced in the Manufacturing Industry (Zimmerman, 2005).

1.3. STATEMENT OF THE RESEARCH PROBLEM

Dolinschi and Oliviera (2006), Haltom (2005), Nielsen (1979), Pouliakas *et al.* (2013), Tompa (2006) and Uegaki *et al.* (2010) note that the adverse OHS performance has resulted in the closure of operational facilities due to these organisations experiencing occupational fatalities, which has led to the prosecution and jailing of the Executives and Line Management. The losses in finances emanating as result of the fatalities, the abnormal usage of scarce resources such as additional labour and materials to ensure that the work environment is made safe, and negative publicity which equates to losses in share value of the listed companies.

Ball, Wilcock and Aung (2009), Hohnen (2011), Tristan and O' Conell (2014) and Zanko (2011) point out that serious injury, damage to property and fatalities continue to be a challenge to management in the manufacturing organisations. The majority of the incidents have involved employees on the shop floor, as these employees are directly exposed to the workplace hazards. Mylett and Markey (2007) and Pater

(2013) are of the view that the fatalities and serious accidents endured by employees can be attributed to the lack of employee participation in the occupational health and safety programs.

This study seeks to explore the participative role of employees in the management of occupational health and safety (OHS) at the NPC-Cimpor cement manufacturing organisation and to investigate the impact of employee participation on the decision making processes that create a safe workplace. The study will reflect on whether employee engagement, in various participative channels, such as the joint labour-management committees, as stipulated and guided by South African Health and Safety Legislation, impacts on the prevention of injuries and the influence of employees at NPC-Cimpor to create a safe workplace.

Deficiency in employee participation is in two areas: firstly, employees are not involved at all levels in decision making within the various aspects of the work processes and activities. Secondly, managers do not encourage and support employee involvement in managing health and safety. Raines (2011) and Tristan and O'Connell (2014) noted that if changes that affect safety are made without seeking employee input and involvement, organisations find it difficult to continuously improve OHS performance over time.

Certainly it can be argued that organisations are accountable and responsible for the poor OHS performance. Governments have been pressurised to intervene and undertake measures to curb this social injustice, in the form of the loss of lives and serious accidents emanating from the workplace. In South Africa, the tool utilised is that of legislation, making employee participation mandatory. Most legislatures have prescribed participation of employees within safety committees, defining the constituents, primarily focusing on the appointment of OHS representatives and Senior Managers, and the role of the committee. The failure of this intervention is attributed to the poor commitment by management who do the very minimum to comply with legislation. In addition the lack of enforcement by the Government

Inspectorate to ensure legal compliance, the regulations that attempt to cover all types of organisations that have different employee compliments or technology, and employees who do not have the knowledge of the rights and obligations that the legislations affords them (Cates, 2011; Epstein, 2012; Kelloway, Mullen and Francis, 2006). These insufficiencies have made the mandatory participation in the OHS committees a failure. Epstein (2012), Mei (2002) and Soediono and Kleiner (2002) allude to the fact that globally legislation takes the route of punitive measures rather than seeking corrective measures to enhance OHS performances.

Alverson (2011), Busck, Knudsen and Lind (2010), Eaton and Nocerino (2000), Glew, O'leary-Kelly, Griffin and Van Fleet (1995) and Gunningham (2008) observe that it is no co-incidence that in most countries, as is the case in South Africa, trade union councils, work councils, labour-management joint committees and other forms of worker participation are used to improve the safety at the workplace. The declining representation of employees and the reduction in power base of trade unions have influenced the ability of these entities to influence and impact positively on the organisations' OHS performance (Walters, 1995). In South Africa, the collective form of representation has a number of benefits including representing the collective preferences of workers with regards to working conditions. In addition to that, the collective form of representation is viewed as a vehicle to efficiently gather and disseminate information on rights, administrative procedures, the workplace risks, and a means of providing protection from employer discrimination against individual workers. These collective voices however have not been able to efficiently influence the health and safety of workers. Fatalities remain a norm within the manufacturing and mining sector of the economy, as the focus is that of an economic nature both for workers and management (Eweje, 2005).

In addition Coyle and Leopold (1981), Franca (2011), James and Walters (2002) and Kleiner and Lee (1997) have highlighted that there is an inadequate use of joint labour-management committees to regulate OHS matters within the workplace. These committees provide workers with the authority to act on daily problems that

these workers encounter. Success has not been achieved by governmental enforcement agencies because it is difficult to police every organisation. The study notes that the approach of encouraging joint decision making in managing OHS and the voluntary compliance to legislation has the potential to reduce injuries and diseases (Parsons, 2001). The insufficient use of the voluntary approach, which emphasises the use of innovative solutions being jointly developed and implemented by workers and managers, has resulted in poor health and safety performances. It was the opinion of Kaufman (2011) and Raines (2011) that showed that there is a need to work together to find innovative solutions to the hazards, that workers know best. This notion is based on the fact that workers are at the operational forefront, and managers can provide the economic backing for the implementation of such positive solutions to mitigating the risks that workers assess.

As pointed out by Dunlap (2011), Krause and Weekley (2005), Luria and Morag (2012) and Petrick and Rinefort (2004) that although joint decisions are ideal, the commitment by both management and the workforce, the accountability of senior management, the acceptance of personal responsibility for poor performances and enthusiasm shown by management are the vital ingredients to ensure that OHS has strategic value within organisations. Managers are not bringing out the best in workers by not showing them the inherent contributions of their input towards the achievement of the overall goals of the organisations. This lack of inclusion is not inspiring them to be self-accountable (Geller, 2008). It is the manager's role to encourage employees to perform the right work the right way, enhancing the drive to make the workplace safe. Furthermore Hansen (2006) and George (2013) allude to the fact that a failure within organisations is that managers lack the understanding of systems management in establishing a culture that promotes a healthy and safe working environment. Regardless how well a person is trained, when the systems and processes expose employees to hazards, day to day activities may pressurise employees to employ unsafe work practices that contribute to injuries and serious accidents.

The malfunction of business processes such as joint Management-Employee goal setting, the review of annual OHS objectives at strategic level, the communication of operational targets across the hierarchical organisational structures and the promotion of health and safety awareness have been major contributors to not meeting the overall objective of zero harm at the workplace. The additional benefit is that this allows workers and managers to work as teams tasked to achieving common goals with a common cause - the reduction of harm to all. The process is proactive rather than reacting to the outcome of OHS performance (Akpan, 2011; Beriha *et al.*, 2011; Dyreborg, 2011; Iqbal *et al.*, 2010; Nunez, 2009; Nunez and Vilanueva, 2011).

1.4. RATIONALE OF THE STUDY

Raines (2011) suggests that those organisations that were successful had engaged employees at all levels in all disciplines and further valued the input from the employees. Raines (2011) argued that when employees are involved and engaged with health and safety aspects at the workplace, they make recommendations of improvements that needed to be implemented to make the workplace safer. This being the case, this research seeks to focus on employee participation in managing health and safety at the workplace. The rationale behind this approach is based on the following points:

- Participation increases the extent of employee involvement in the decision making process (Beirne, 2008; Brogger, 2010; Bryne, 2011; Buske, Knudsen and Lind, 2010; Carrillo, 2010; Jeung, 2011; Juniper, 2012; Kaufman, 2012; Macey and Schneider, 2008; Markey and Patmore, 2011; Muthuveloo *et al.*, 2012; Olson, 2009; Pugh and Dietz, 2008; Raines, 2011; Walters and Nichols, 2007).
- Employee engagement processes are believed to enhance human dignity and motivate employees, thereby contributing to personal growth and job satisfaction of employees at the workplace (Cabrera, 2007).

The ratio of “leaders” to “workers” varies from one leader to four workers (1:4) in highly industrialised countries, whilst the ratio is one leader to 20 workers (1:20) in developing countries (Tsuyoshi, Leng, Yi and Tun, 2011). On the shop floor, there are more workers than leaders, and it is not always possible for employees to be constantly supervised. Labour is an expensive resource that organisations strive to utilise efficiently. There is therefore a need for employees to take more ownership of the health and safety matters, thus making it possible for employees to require less supervision. In addition, a number of scholars, such as Geller (2008), Jirjahn and Smith (2006), Kelloway, Mullen and Francis (2006), Krause *et al.* (2005), Luria and Morag (2012), Mason (2007), Petrick *et al.* (2004) and Zohar (2002) have observed that the synergies attained from a greater number of employees working together towards a common goal of “zero harm” will contribute to improving safety performance, even possibly more expeditiously than what is currently being experienced.

Most manufacturing organisations are continuous operations that have manufacturing processes that operate 24 hours a day, 7 days a week. Beriha *et al.* (2011) and Brogger (2010) argue that there are occasions when minimum or no supervision is present, during periods when workers are undertaking their normal tasks. This is an accepted fact. It is impractical to provide supervision twenty-four (24) hours a day, seven (7) days a week and at every task that is being performed. These continuous manufacturing processes consist of repetitive monotonous tasks and the working of shift cycles that have been contributors to the cause of serious accidents in the work environment.

Noticeably, it is the employees on the shop floor that have the likelihood of having an accident, when compared to the potential of supervisors meeting with the same fate. Eweje (2005), Grawitch, Gottschalk and Munz (2006) and Gunningham (2008) attribute this to the fact that employees working at the cold face are exposed to a greater level of hazards than their leaders. Workers experience unprecedented levels of fatalities and injuries more often than their leaders. Studies by Burkes, Chan Serafin, Sarpy and Smith-Crowe (2006), Glasbeek and Tucker (1999), Hall (1999)

and Storey and Lewchuk (2000) have shown that although employees have a clear knowledge of extremely hazardous conditions, they often accept those unsafe conditions, to the extent that they are willing to breach safety rules and take chances, exposing themselves to accidental risks.

Parsons (2001) suggests that the best way to deal with health and safety activities is to engage employees in managing health and safety so to share joint accountability OHS by employees and line management. This accountability should go hand in hand with affording all participants with the necessary authority to act on daily problems that they encounter. This research will seek to understand the joint participation of employees and line management in safety committees.

Weibert and Plunkett (2006) and Raines (2011) allude to the fact that when employees are involved in their workplace issues, the greater the chance of them being motivated to resolve health and safety problems. It is perceived that when employees are involved and engaged in the solution of a safety problem, it becomes obligatory for them to ensure that the solution works effectively. They can only blame themselves if the solution does not work.

Numerous studies have proposed a number of interventions by implementing initiatives to curb the occurrence of fatalities and serious accidents. In the last few decades there has been the expectancy that employee participation in occupational health and safety will improve OHS in workplaces, contributing to higher productivity, higher performing employees and organisations, and improved employee wellbeing (Alverson, 2011; Bryne, 2011; Busck, Knudsen and Lind, 2010; Carrillo, 2010; Jeung, 2011; Markey and Mylett, 2011; Raines 2011; Tsuyoshi, 2011). However in Britain, despite 70 years of Government encouragement and support for the establishment of participative forums, with the mandatory joint committees in Canada, these interventions did not yield the desired safety performances in these countries (Milgate, Innes and O' Loughlin: 2002).

1.5. AIM OF THE STUDY:

India, China, Africa and the surrounding islands continue to experience the highest number fatalities at the workplace (ILO: 2003 Annual Report). The constant arguments made by Trade Union Representations are that the responsibility of ensuring a safer working environment is solely the responsibility of the line management. This is misleading as pointed out by a number of authors because manufacturing organisations still continue to experience the loss of lives (Gollan, 2006; Hasle and Petersen, 2004; Liu, 2011; Mylett *et al.*, 2002; Nichols and Walters, 2007; Scheuer, 2007; Taska, 2009; Werhane, Radon and Bowie, 2004).

It is apparent when analysing the contributions of Bryne (2011), Pater (2013) and Werhane *et al.* (2004) that a greater emphasis in enhancing occupational safety is to engage employees to be responsible for their safety, thus resulting in a safe and decent working condition. In line with this thinking, this research intends to explore the employee engagement process in managing occupational health and safety, which according to Mylett and Markey (2007) is expected to improve the health and safety performance at the workplace.

In the International Encyclopaedia of Organisational Studies, Cabrera defines employee participation as a process that allows employees to exert influence over the decisions that affect their work and work environment. A goal of this research is to extend this definition of employee participation in managing occupational health and safety to include the different employee participation types and its applicability as a tool in the intervention to assist organisations in managing occupational health and safety activities at the workplace (Bolger, 2004; Brogger, 2010; Budd, 2011; Gunningham, 2008; Jeung, 2011; Kobayashi *et al.*, 2008; Meldrum *et al.*, 2009; Shearn, 2004). The research will endeavour to argue that the different types of participative approaches, when used appropriately, will yield the maximum benefit in managing OHS.

The researcher aims to capture the different types of employee participation that are utilised by the different groups of employees in managing OHS decisions within the organisational perimeter. The different types of participation constitute of directed participation, involvement, pro-active participation and ownership. The premise is that directed participation is ideal, when little or no input is sought from employees, whilst the participative process of involvement is applied in situations where critical decisions are made outside the domain of the employee. The pro-active participative process entails the sharing, consulting and the making of joint decisions, in particular, the process of ownership empowers employees to champion the OHS activities. Notwithstanding the views of Werhane *et al.* (2004) and Bryne (2011), this research argues that all the types of the participation are concurrently necessary to manage OHS at the workplace.

Globally, legislation has prescribed or encouraged joint participation of Blue Collar Workers and Management in safety committees. Brewster *et al.* (2007), Eaton *et al.* (2000), Franca (2011), Hovden *et al.* (2008), Kleiner *et al.* (1997), Milgate *et al.* (2001) and O' Grady (2000) point out that the establishment of Safety, Health and Environmental (S.H.E.) committees in the workplace is believed to foster employee participation and consultation in the workplace. Despite the emphasis on South African Legislation towards employee participation in relation to occupational health and safety, little is known about the effectiveness of the strategies used to involve employees in health and safety matters. This study also seeks to explore the level of employee participation within the obligatory safety, health and environmental forums (S.H.E. committees) and the contribution that this participation has on the number of injuries experienced by organisations (Glennon, 1987). There is little anecdotal evidence published in relation to the implementation of S.H.E. committees and their effectiveness in the South African workplace. Few opinions are substantiated by empirical evidence. The study considers several factors such as employee work experience, employee knowledge of the management systems and processes, the knowledge of the legislation, the exposure to hazard identification, risk assessments

techniques and employee encouragement that impact on the effectiveness of employee participation within the SHE committees.

South African Legislation provides employees with rights to OHS participation on the premise that such involvement will improve OHS performance at the workplace, resulting in motivated employees that impact positively in the creation of a safe working environment (Mylett and Marley, 2007). This study is concerned with the level of participation in the decision making process undertaken by the employee groups within the operational forefront, and the propensity of these employees to create a safer and healthier working environment. The employee groups will constitute of the Safety, Health and Environmental (S.H.E.) Practitioners (Abrams, 2006; Daud *et al.*, 2010; Franca, 2011; Groover and Spigener, 2008), Engineers and Technicians (Clarke and Ward, 2006; Dunbar, 1975), First Line Supervisors (Krausse and Weekley, 2005) and Blue Collar Workers (Busbin and Campbell, 1999; English *et al.*, 2006; Hall *et al.*, 2006; Howell, 2000; Shearn, 2004).

Amongst the work of Carrillo (2010), Eaton and Nocerino (2000), Milgate, Innes and O'Loughlin (2002), Muthuveloo, Abdul, Ping and Nee (2012), Mylett and Markey (2007), Raines (2011), Spath (2005), Soehod (2008) and Walters (2006) in manufacturing organisations, employees across the operational hierarchy at the forefront can have an astronomical positive contribution on safety initiatives, which subsequently will have an effective intervention in curbing this unacceptable loss in lives.

Raines (2011) highlights that the process of turning OHS followers into active participants strengthens the level of participation, which gives employees a sense of security when working in a perceived healthy and safe workplace. In Lockwood's research in 1997, he suggests that employee participation is directly correlated to the amount of involvement that employees have in their work processes and activities.

As such the researcher seeks to explore how employees who are encouraged and engaged in the participation in the OHS decision making process influence safety in the workplace. The physical environment in a manufacturing operation is an integral part of the management processes. A well maintained and safe workplace, for example, a clean and well-engineered machine in addition to guarded equipment, gives employees an indication as to the safety and hygiene standards that are expected. In addition a safe environment requires a major investment of time and other resources to maintain a safe environment and well managed engineering practices, Employees perceive these indicators as the extent to which management cares about the safety of employees, and as the extent to which management are willing to put money into ensuring a safe workplace. Durbar (1975), Dunlop (2011), Dyreborg (2011), Halbesleben, Leroy, Dierynck, Simons, Savage and McCaughey (2013) and Tristan (2014) also elucidate the fact that a safe environment encourages employees to participate in the various occupational interventions such as ensuring that a clean workplace is continuously maintained. A dirty workplace discourages employees as it is perceived that the supervisors and employees do not regard safety as a value in the company's culture.

1.6. THE RESEARCH OBJECTIVES:

Fatalities and serious accidents continue to send alarm bells to governments and business, with society and employee representatives stressing greater employee involvement in influencing the decision making processes within occupational health and safety management. Epstein (2012), Jamieson and Westcott (2001) and Sass (1986) point out that legislation in OHS has attempted to influence the poor OHS performance by prescribing employee participation. This intervention has been complicated as the legislators have struggled to create acts and regulations that are adaptable, applicable and suitable to all organisations, namely the philosophy of “one size fits all”.

This study explores employee participation, as an intervention in the management of OHS within organisations. The study also seeks to establish the types of participation in occupational health and safety activities utilised by internal stakeholders. These types of participation include: (1) employee directed participation, (2) employee involvement, (3) employee proactive participation and (4) employee ownership. This differentiation will assist S.H.E. practitioners to understand that there exist different approaches in employee participation within the management of OHS and the appropriate type of employee involvement can be applied in the decision making process within the organisations.

Another objective of the study is to explore the relationship between the employee participation in safety committees and the injuries experienced at NPC-Cimpor. Eaton and Nocerino (2000) and Franca (2011) observe that the establishment of health and safety committees are mandatory in most countries. However in a few countries like Britain and Denmark organisations have been allowed to participate voluntarily. Despite an emphasis within the South African health and safety legislation towards employee participation in health and safety institutions, little is known about the effectiveness of these committees in the field of OHS management.

The mandatory committees have been established as per legal OHS regulations and whether these forums are effective in achieving their purpose still needs to be investigated. The Researcher investigated whether the participation of employees within the mandatory S.H.E. committees has influenced the number of injuries and accidents at the organisational front (Akpan, 2011; Cole, 2006; Iqbal, Iqbal, Taufiq and Ahmed, 2010; Nag and Nag, 2004; Perry, 2010).

Carrillo (2010), Clarke (2000), Raines (2011) and Strauss (2006) remark that when employees are turned from simple followers into active participants, this can strengthen the level of employee participation which benefits both the organisation and the employees. In this research the employee participation takes the form of being directed on the one extreme, while being encouraged to take complete ownership of the decision making process on the other. To this end the study aims to understand the relationship between employee participation and the influence these employees have in creating a safer work environment.

Raines (2011) and Lockwood (1997) remark that employee participation is directly correlated to the amount of involvement employees have in their work processes and activities. In organisations with health corporate cultures, employees are aware that management is genuinely interested in their well-being. In such settings, employees will respond with innovative thinking, suggestions and decision making that can benefit the organisation. This has the potential to swing the power balance closer to employees, allowing employees to make influential decisions within the workplace.

Mylett and Markey (2007) elaborate that legislation provides statutory rights for employees on the expectations that such participation will improve OHS in organisations, which will have a positive contribution to higher performing employees, higher productivity, improved well-being to minimise waste and lead to cohesive societies. This participation comes at a cost in the form of time and money and this expenditure gives the perception to employees that Management cares about their safety. The positive relationship created by employee participation instils a perception

of a safe work environment. The Researcher aims to explore the relationship between the levels of employee participation by internal stakeholders and the perception of a safe work environment.

1.7. SCOPE OF THE STUDY:

This study is concerned with establishing the levels of participation that groups of employees utilise when making decisions in the management of occupational health and safety aspects at the operational level at NPC-Cimpor's manufacturing operations. The company operates in KwaZulu-Natal with cement related manufacturing operations in Durban, the mining operations in Port Shepstone and cement extender processing in Newcastle. With the market share being predominantly located in Durban, the raw materials are railed from Newcastle and Port Shepstone. The raw materials are milled at the Durban plant and blended into cement for local sale.

In conjunction with the research aims, the researcher intends to investigate the engagement process within the decision making process undertaken in various OHS management processes. This engagement process entails the participation of employees in health and safety activities pertaining to the decision making processes utilised by employees in the daily physical asset maintenance programs. More specifically in the hazard identification and risk assessment analysis, the weekly participation in injury and damage prevention investigations, and in the continuous improvement forums. This also includes the monthly involvement within the S.H.E. Committees, in the annual management reviews, and the action plans and objectives review (Ball, Wilcock and Aung, 2009; Bellamy, Geyer, TAW and Wilkinson, 2008; Goetzel, Ozminkowski, Bowen and Tabrizi, 2008; Hansen, 2006; Hohnen *et al.*, 2011; Kaila, 2012; Rocha, 2010; Weibert and Plunkett, 2006; Zanko and Dawson, 2011).

As captured by Raines (2011), this study recommends that the participation process should encourage employees to participate in OHS Committees, where employees

meet regularly and are free to express their ideas and suggestions. This should involve employees jointly working with management in formal safety incident investigations, including the development and implementation of corrective actions to prevent the recurrence of the incident. Moreover, undertaking brainstorming sessions with employees to develop solutions to identify safety issues or hazards, or soliciting employee ideas and opinions when performing hazard identification and risk assessments, will improve employee participation and goal setting.

Accordingly, the study focuses on the decision making process as undertaken by the internal stakeholders at the operational front. The internal stakeholders will comprise blue collar workers, first line supervisors, S.H.E. practitioners as well as engineers, technicians and managers. In addition, as captured by Abrams (2006), Daud, Ismail and Omar (2010), Dunlap (2012), English, Haupt and Smallwood (2006), Geller (2008), Groover (2008), Jirjahn and Smith (2006), Sheehan (2006) and Steinbrunn (1988) further differentiation will be made between the effectiveness of blue collar workers and management, which is constituted by the latter three employee groups.

The respondents shall comprise of employees that are directly employed and paid via the NPC-Cimpor salary payroll. All other employees involved in the cement manufacturing process, where such services are contracted to NPC-Cimpor will be excluded from the survey. This will allow for the respondents to be timeously released from duties to answer the questionnaire.

The survey will comprise of a questionnaire which will be emailed to the OHS survey co-ordinators. The OHS survey co-ordinator should also receive instructions regarding the overall objective pertaining to the survey. The questionnaire will be printed and the hard copies made available to the respondents.

The researcher combines the aims of this study, and the decision making processes that are utilised by employees in the managing of occupational health and safety

activities within the NPC-Cimpor cement manufacturing organisation, that operates within the South African borders.

1.8. DEFINITION OF CONCEPTS USED IN THIS RESEARCH

Budd, Gollan and Wilkinson (2010) and Cabrera (2007) argue that employee participation has taken various forms, including task teams, participative management teams, quality circles, self-managed teams, unionisation, profit sharing and stock ownership. It is expected that in the future, organisations will increase employee participation internationally (Bryne, 2012; Busck *et al.*, 2010; Dell' Aringa, 2011; Jeung, 2011; Juniper, 2012; Kaufman, 2011; Markey *et al.*, 2011; Muthuveloo *et al.*, 2012; Mylett *et al.*, 2007; Olson, 2009; Raines, 2011; Tsuyoshi *et al.*, 2011).

It is apparent when analysing the contribution of Carrillo (2010), Eaton and Nocerino (2000), Milgate, Innes and O'Loughlin (2002), O' Grady (2000), Shearn (2005), Spath (2005), Mylett and Markey (2007) and Raines (2011) that the field of employee participation has been extended into the health and safety discipline, with the intention that such an intervention will have a positive contribution to the prevention of accidents, injuries and fatalities in the work environment.

This study differentiates between the approaches of employee participation which will be based on the degree of control over the decision making process when employees are undertaking occupational health and safety activities. The different types of participation are: employee directed participation, employee involvement, employee proactive participation and employee ownership.

In this research employee directed participation is defined as the process of employee engagement where an employee is directed to perform his or her task, with minimum employee input occurring prior to the activity being undertaken. Hall, Forrest, Sears and Carlan (2006), and Marchington and Wilkinson (2005) point out

that during these engagement process employees normally follow set procedures, defining what, how, when and where to perform set tasks.

The researcher defines a more advanced stage of employee directed participation, known as employee involvement. Employee Involvement is the process of sharing information with employees. However, critical decisions are often made outside the employee domain with very little participation encouraged. Management normally reserves the right to make the final decisions. Hall, Forrest, Sears and Carlan (2006), Cabrera (2007) and Raines (2011) observe that normally the process is a one way communication process with the employee being involved, due to the process being mandatory for all employees, by legislation.

Keeping in line with Eaton and Nocerino (2000), Milgate, Innes and O'Loughlin (2002), O' Grady (2000), Raines (2011), Shearn (2004), and Walters (1996a, 1996b), this research also defines employee proactive participation as a process of sharing with employees, consulting with employees, and the joint decision making on issues related to occupational health and safety matters.

This study proposes that the ideal process of engaging employees is employee ownership, where this engagement process ensures and sustains long term benefits in the management of occupational health and safety. As captured by Budd, Gollan and Wilkinson (2011), Dietz, Redman and Wilkinson (2009), Kaufman (2004) and Strauss (2006), this research also alludes to the fact that Employee Ownership **is** defined as a process that encourages employees to assume full responsibility and to champion the health and safety activities at work. Consequently this research uses biographical concepts such as gender, roughly corresponding to the two sexes, male and female; position, implying the title (rank or status) that an employee holds within the organisation; worker category, corresponding to the two employee groups, workers and management; age, depicting the length of time in years that an employee or person has been alive; experience, representing the practical acquaintance with the facts or events that results from the relationship between an

employee and an organisation; union affiliation, depicting an employee being a paid in full member of a worker trade union organisation or employee representative body.

In addition the research utilises lagging occupational health and safety performance indicators, particularly the fatality frequency rate, which is described as the ratio between the product of the number of fatalities occurring in a calendar year, from the 1st January until the 31st December, and one million; divided by the total man-hours worked by the employees. The severity rate can be defined as the quotient between the product of the number of days lost due to loss time injuries occurring in a calendar year, namely from the 1st January until 31st December, and one million; and the total man-hours worked by the employees.

1.9. ASSUMPTIONS OF THE STUDY

The implicit assumption of the research is that the establishment of the types of participations within the occupational health and safety discipline, and the development of a model to improve the participation will have the potential of reducing or eliminating accidents or incidents (Mylett and Markey, 2007). It is assumed that protecting an individual from the potential harm is the best way forward. Furthermore the current research is based on the following assumptions:

1.9.1. It is assumed that all internal stakeholders have the same goal of zero harm to all (Tristan, 2014). The question regarding balance of power, whether or not the Workers through the Trade Unions or the Management of the organisation possesses the greater power in negotiations, pertaining to health and safety issues. Management controls the means of production and the financial justification processes, thus creating an imbalance. In the study Workers and Management are assumed to act maturely to ensure that the health and safety of all internal stakeholders is a priority for all persons involved in cement manufacturing.

- 1.9.2.** The internal stakeholders, within the cement manufacturing operations are the employees directly involved in cement making. This assumption follows the logic that most of the support services functions such as the Human Resources, Information Systems, Finance, Administration, Marketing, Sales and Distribution are centralized and are physically located remotely from the manufacturing sites. This being the case, the minimum organisational resource structures that are common across all operational sites are restricted, conforming to Figure 3.1., namely “A common cement manufacturing facility organisational chart”.
- 1.9.3.** Most organisations are driven by the economic objective (Marini, 2013; Tristan, 2014). The management processes within the cement manufacturing sector drives employees and management in achieving maximum profits at minimum costs. The monetary incentive scheme within these organisations largely reinforces the economic objectives. The assumption is made that this economic objective does not compromise the health and safety of employees.
- 1.9.4.** Internal stakeholders possess the relevant knowledge, skills and experience; allowing them to avoid the occurrences of any harm to oneself and others in the workplace. In addition it is assumed that the knowledge and skills acquired in any manufacturing concern within the Manufacturing Industry are standardized and maintained at a consistent level of acceptable performance. The experience afforded in this manufacturing sector via the cement manufacturing processes is somewhat standardised, due to the fact that a limited number of suppliers of cement manufacturing capital equipment.
- 1.9.5.** Traditionally the drive to improve the health and safety in the workplace is addressed via the health and safety legislation. The South African Legislation aims to provide guidance and protection to ensure the wellbeing of all stakeholders working together. The legislation affords employees with the statutory right to the participation in occupational health and safety activities. This participation will evidently improve the health and safety in the workplace,

which will increase productivity, and lead to highly motivated employees, with an improved sense of well-being translating to a less wasteful society (Mylett and Markey, 2007). As is the case in South Africa, the enforcement of the health and safety legislation, assists in forcing organisations to conform to health and safety benchmarks and standards. This enforcement by the Inspectorates is assumed to be applied with equal impetus across organisations in the country, in reality that is not the case, resulting in different levels in the maintenance of safety standards in the workplace environment.

1.9.6. Globally legislation is leaning towards influencing the health and safety of all stakeholders in the workplace. This has led to legislated employee rights being included in the participation of occupational health and safety programs (Parsons, 2001). Organisations are obliged to introduce means for communication that enhance the liaison between the employer and employees in occupational health and safety matters. Within the cement manufacturing operations, these are some of the communication channels that are implemented: monthly OHS meetings, quarterly local OHS meetings, Bi-annual Regional Management OHS Review meetings, OHS accident investigation forums, daily morning site specific meetings, OHS suggestion and improvement forums, OHS near-miss incident investigations. Additional communication can take the form of an annual review of the past year's OHS performance or planning for the next three years OHS objectives and action plans, OHS audits, OHS inspections and ad-hoc OHS meetings. The assumption is made that there is at least one or more of these communication channels existing at each of the cement manufacturing sites.

1.9.7. The culture of an organisation can be defined as “the way we do things around here” (Cooper, 2001; Montana, 2014). The culture is influenced by the OHS Management Systems, OHS Management Processes (George, 2013), Leadership commitment towards OHS matters (Rivkin, Diestel and Schmidt, 2014), the enforcement of legislation and the impact of corporate governance.

The cultures, inter and intra organisational sites, differ substantially across South Africa and the researcher assumes that these differences may only have a subtle impact on the research topic at hand.

- 1.9.8.** The research focuses on health and safety of the internal stakeholders at the manufacturing work-front. The assumption is made that the influence of the external OHS environment on the employee's well-being will be incorporated into the response of the survey questionnaire. Although there will be cases when the external influence, such as HIV and Silicosis, will influence the health and safety of employees in the workplace. The researcher assumes that this externality will only have a minimum influence on the survey results.
- 1.9.9.** The researcher attempts to link the type of participation of the internal stakeholders in occupational health and safety activities with the overall OHS performance of the organisation. The secondary data, which is the overall OHS performance is aggregated over many manufacturing operations and will be displayed as averaged statistics. These aggregate indicators may distort the OHS performance of each site, and may leave out factors such as the economic budgetary constraints that the particular manufacturing concern is experiencing in its local markets, or the productivity of the workforce and the OHS performance of a particular manufacturing site.
- 1.9.10.** The timing of the surveys is crucial. During periods of economic recession, periods of wage negotiations, internal culture surveys or a major shutdown, respondents may have difficulty making themselves available for these surveys, as other demands are made on them with the survey being last on their list of priorities. The Researcher assumes that this eventuality will even out as the sample size will be adequate.

1.10. SUMMARY

In this chapter the problem statement, the context in which the investigation would be conducted and the aim of the study were introduced against an overview of international and South African OHS performance. The rationale of choosing this study, lies in the significance of the study and the aim of the study that was undertaken with the purpose of enhancing employee participation within the South African Cement Manufacturing Industry. The chapter concludes with a summarised view of the definitions, and the assumptions that this research will be exposed to.

The following chapter deals with a theoretical foundation and the literature review of the study. It entails the critical review of the various studies and empirical evidence undertaken in the field of occupational health and safety participation. The gaps in the study of the employee participative process are identified and related to the problem as identified. The hypotheses and the research questions are stated broadly. It includes a detailed literature review, the shortcomings of the other studies, the need for further research, definitions as per other studies, the gaps in the measurement of occupational health and safety performance, the driving forces to curb the problem of loss of lives within the manufacturing industry, government legislation, the enforcement of OHS legislation, the employee representation, OHS committees, OHS culture, training and employee commitment.

Chapter Three describes in detail the history and organisational structure of NPC-Cimpor cement manufacturing organisation, emphasizing the organisational structures that are exposed to the hazards and risks associated with the manufacturing process, the impact of occupational health and safety legislation at the working front, the processes to mitigate these risks such as the OHS management processes and employee participation, which is expected to influence the OHS performance of NPC-Cimpor.

In Chapter Four the Research Design is outlined. It comprises of the measured concepts, definition of variables, scientific measurements, the assumptions of the study, data collection, data analysis, quantitative versus qualitative methods, target population, the units of analysis, sample size, the quantitative research design, the questionnaire design, the questionnaire layout, pre-testing, survey challenges, validity and reliability, limitations of the study, ethical matters, coding, data analysis methods and the summary of the chapter.

Following on from this chapter, Chapter Five deals with the results arising from the statistical computation of the data that was captured and analysed using statistical software program SPSS version 15.0 respondent's feedback. The findings chapter starts with an introduction analysing the response rates, analysing the profile of the samples, using descriptive statistics in analysing the types of the participation and performance rates, the inter-correlation among the study variables, the advantages and benefits of the research, an evaluation of the research design, the generalisation of the research and summary.

In Chapter Six, the outcome of the study is discussed in full, the general conclusions, the limitations of the study, the future research to be conducted and recommendations based on the results are outlined.

CHAPTER 2: THEORETICAL FOUNDATION AND LITERATURE REVIEW

2.1. INTRODUCTION

In the previous chapter the problem statement and the aim of the study were contextualised. Thereafter, the rationale of choosing this study, the delineation of the field, the scope of the study and the significance of the study were described briefly. The study environment and the constructs portray the setting of the study.

This chapter deals with the theoretical foundation followed by a literature review. As captured by Mouton (2008), this chapter deals with the most recent and authoritative theories surrounding employee participation in Occupational Health and Safety (OHS) activities across the globe, describing the most widely accepted empirical findings in employee participation within the OHS discipline, and relating the most accepted definitions of key concepts in addressing the research problem of the study and identifying the research gaps and hypotheses driving the thesis.

2.2. THEORETICAL FRAMEWORK IN PARTICIPATION

In the past century organisational Scholars, such as Arrigo and Casale (2010), Bryne (2011), Cabrera (2007), Joensson (2008) and Salaman (1992) have pondered over the topic of employee participation. This has taken various forms of participation, specifically participative management, total quality management, unionised affiliations, profit sharing, self-directed teams, task teams, gain-sharing and employee stock ownership. The theory that underpins the research problem constitutes a brief description of participative management, a conceptual overview of employee participation and the employee participation in the management of occupational health and safety globally.

2.2.1. Participative Management:

Cabrera (2007) and Hall *et al.* (2006) define participative management as a process of joint decision making which affords employees an opportunity to share a significant degree of decision-making power with their immediate Superiors. Raines (2011) cites that successful organisations involve employees at all levels of the hierarchy and employees have an input in respect of the decision making process pertaining to changes to the work environment.

On the other hand Anthony, Perrewe and Kacmar (1996) cite participative management as the belief that employees seek jobs that enrich their work experience, which involves both their minds and their hands. In publications of the International Labour Office (I.L.O.), Arrigo and Casale (2010) compare terms and notions on employee participation. Globally, the I.L.O. has researched the idea and notion of employee participation, constructing a wide range of notions, rules, practices, procedures and structures. The researchers argue that it becomes impossible to reach an international consensus on the term employee participation.

2.2.2. Conceptual overview of Employee Participation:

Arrigo and Casale (2010) allude to the fact that at the end of the 19th century, the notions of “employee participation” have synonymously been used to describe “economic democracy” and “industrial democracy” as was the case in several industrialised countries. The objective of involving employees in the decision-making process of the organisation arose after the First World War in the form of collective bargaining and cooperative forms of work organisations that established legislative and collective agreements affording work councils and committees an avenue of communication for both employees and employers. The early employee participation focused on employee rights within the organisational environment.

In the International Encyclopaedia of Organisational studies, Cabrera (2007) defines employee participation as utilising four dimensions, being participation at the organisational level, the degree of control, the range of issues and ownership.

At the organisational level, employee participation ranges from a process of directed participation to a process of indirect participation. Directed participation, or as Pateman (1970) defines it pseudo participation, is associated with techniques that persuade employees to acknowledge or accept decisions that have been made by senior management. Maller (1994) cites a South African example, which is known as the briefing sessions. Groups of employees are communicated with via briefs and the contents discussed, however the decisions pertaining to the briefs have already been made by Senior Management. Pateman (1970) further distinguishes between partial and full participation, in partial participation employees can influence decisions based on their position, with management having the final prerogative; whilst full participation is a process where each member in a decision making body has equal power to determine the outcome.

Salaman (1992) goes further to elaborate on participation which is based on the performance at the operational work environment, termed “task centred participation”. Task centred participation is a process where employees are afforded limited authority, with the management structures determining all major decisions. It however involves some worker control over the immediate work environment.

According to Cabrera (2007), Dixon (2009), Eaton and Nocerino (2000), Franca (2011), Mylett and Stubbs (2006), Scheuer (2007), and Sorenco and Kleiner (2009), the other forms of participation are that of Work Councils, Trade Union representation, Quality Circles, task teams and small groups of employees participating in organisational decision making. The objective of these employees is to improve their well-being, physical work environment and organisational performance.

The second dimension, is the degree of control which focuses on how much employees are consulted in the decision making process at the workplace. On the one extreme, as highlighted by Salaman (1992), task centre participation allows a significant amount of control over the “job” environment where employees can make decisions on the task method, work pace, the staffing requirements and duration of the tasks. On the other hand, Cabrera (2007) and Hall *et al.* (2006) define the process of consultation as a process in which management encourages employees to share their opinions with respect to work related matters, however management reserves the right to make the final decisions, not engaging with employees in making the decisions or affording employees the responsibility to organise and perform work related tasks as they deem fit. Salaman (1992) points out that “power centred” participation, which focuses on the balance of power between management and employees, and management’s prerogative to make company-wide decisions.

The next dimension in categorising participation is the range of issues involving the decision making process. As pointed by Cabrera (2007), Eaton and Nocerino (2000), Ellis (2011), Haynes, Boxall and Macky (2005), Maller (1994), Milgate, Innes and O’Loughlin (2002), O’ Grady (2000), Sass (1996), Shearn (2005) and Storey and Tucker (2006), the greater the range of issues, the greater the participation of employees will be in the decision making process. Typical examples of issues are health and safety issues at the workplace, quality circles, and employee committees involved with worker rights, gain sharing and operational efficiencies. Pateman (1970) cites that some of these issues, notably quality circles, where employees identify productivity and quality problems have achieved partial participation. This can be attributed to the fact that the employees need to justify a financial gain for the company, and that implementation of the suggested solutions is granted by management based on financial considerations.

The final dimension, ownership, refers to the participation process of employees who are involved in the financial or economic decision making at the workplace. Cabrera (2007), McGarity and Ruttenberg (2002) and Uegaki, Beek, Bruijne, Mechelen and

Tulder (2010), define this process by determining how much of the company is owned by the employees. This process has always been difficult to implement as the owners of the capital, management, exert more influence over the financial decision making. Maller (1994) cites an example in Germany, where the representatives from labour are represented at board level. This allows employees the opportunity to influence the corporate decision making process. A more accepted form of financial participation has been profit sharing or gain sharing. This process entails employees achieving agreed company-wide and individual productivity performance, thereby making them eligible to share the profits accordingly. The difficulty with this process has been achieving a balance with regards to the agreed performance criteria, the scoring thereof and weighting of such criteria. Inconsistency in the evaluation of the performance can be attributed to the lack of established objective scoring methods throughout the company.

2.2.3. OHS Participation:

Raines (2011) cites employee participation as a powerful tool that can be utilised to improve business measures, including the health, safety and environmental performances. The process of participation calls for management to engage with employees in decisions that could affect their health and safety at the workplace. It is perceived that an increase in employee involvement and engagement will positively affect the organisation's safety, health and environmental performance.

Most scholars of employee participation in occupational health and safety, agree that employee participation has impacted positively on the workplace productivity. Due and Madsen (2008) and Walters, Nicols, Connor, Tasiran and Cam (2005) justify that even though some countries such as Britain and Denmark, have encouraged employee participation to occur voluntarily, the participation in most of the other countries has taken the route of Legislation. Numerous forms of study have been undertaken to understand the effectiveness of worker participation in health and safety decision-making. Dell 'Aringa (2011), Eaton and Nocerino (2000), Milgate,

Innes and O'Loughlin (2002), O' Grady (2000), Raines (2011) and Shearn (2005) have pointed to various structural determinants that have promoted the ability of the Safety Representatives and Health and Safety committees, in the form of enforcement inspectorates, workplace standards and procedures, and joint committees of Unions, Employees and Management.

On the other hand, these structural determinants have been identified as being unreliable in promoting worker participation. It is apparent when analysing the contributions of Haynes, Boxall and Macky (2005), O' Grady (2000), Sass (1996) and Storey and Tucker (2006), the poor workplace standards and procedures, the non-enforcement of the Occupational Health and Safety Act, the declining number of Union members, the reduction of employee power base and the limited worker training has impacted negatively on employee participation.

Some study in the field of employee participation has found that many employees, particularly "Blue Collar" hourly paid employees, are choosing not to partake in employee wellness services (Busbin and Campbell, 1999). Eaton and Nocerino (2000), Milgate, Innes and O' Loughlin (2002), O'Grady (2000) and Shearn (2004) have lacked consensus in establishing the effectiveness of worker participation in health and safety decision-making. Although the overall results on firm characteristics have been inconclusive, a number of researchers have pointed to the knowledge and militancy of frontline workers, the quality of union representation, Management's positive attitude and knowledge, government intervention and Legislation as contributing factors to effective employee participation (Eaton and Voss, 1994; Hall, 1999; Kochan, Dyer and Lipsky, 1977; Lewchuk, Robb and Walters, 1996; Milgate, Innes and O' Loughlin, 2002; Shearn, 2004).

Cates (2010), Epstein (2012), Eweje (2005), Jamieson and Westcott (2001), Mei (2002) and Sieberhagen *et al.* (2009) have debated that the primary assumption in most Legislation is that employees share the same amount of interest and responsibility in respect of health and safety matters at work. Eweje (2005) points out

that the occupational health and safety legislation tends to place the entire process and accountability on the employer and line management. This means that the employer has to provide a safe and healthy environment, a management system to address the identification of hazards and the assessments of risks, the enforcement of inspections, the surveillance and health and safety programs. In the opinion of Innes, Milgate and O' Loughlin (2002), as the balance of power swings more towards the Employer or Manager, or to the entities that possess the purse and production facilities, the more likely Workers will not show the same level of responsibility or respect towards occupational health and safety.

Biggins (1987), Brooks (1987), Creighton (1982), Glennon (1987), and Johnson (1999) describe the legislative participative process that entails the democratic election of Employee Representative (Safety Representative), who will put forward the suggestions, safety inspections, unsafe conditions or acts and the participation of Safety Committees. Despite the drive within occupational health and safety legislation towards employee participation, little is known about the effectiveness of strategies used to involve workers in health and safety issues in the South African workplace. The Employee Representative (Safety Representative as per the Mines Health and Safety Act of South Africa) is expected to put forward the democratic needs of the workforce rather than their own individual needs. This process attempts to ensure that the safety representatives are autonomous as this is an effective and independent channel for workers' voice (Mylett and Markey, 2007; Hall *et al.*, 2006).

Eaton and Voss (1994), Gevers (1988), Hall *et al.* (2006), Kochan *et al.* (1977), Lewchuk, Robb and Walters (1996), Milgate, Innes and O' Loughlin (2002), Raines (2011) and Shearn (2004) have justified employee participation in the management of health and safety at the workplace as follows:

- Workers are close to the potential hazards and can identify the risks that are related to these hazards and institute mitigating action, thereby contributing positively to the prevention of injuries and incidents. This debate has been

the guiding principle in the oldest regulations in most countries (Akpan, 2011; Gevers, 1988).

- Workers involvement would promote the co-operation of workers into finding solutions into health and safety issues. In addition the involvement makes workers more aware of the hazards around the workplace and ensures the compliance to health and safety rules at the workplace.
- Workers have the knowledge and experience which can be utilised to contribute to higher productivity and to improving the OHS performance at the workplace.
- The process entails transparency as Workers are directly involved with matters that affect them. This is in line with most industrial democracy that entails the right of workers to be involved in matters that affect them.

Although there are cases where employee participation has not proved to have brought about any improvement in health and safety problems, participation is still desirable as workers have a voice in OHS matters that concern them (Eweje, 2005).

It is apparent when analysing the contribution of Arrigo and Casale (2010), within the International Labour Office (I.L.O.), Labour Administration and Inspection Programme, that the I.L.O. Convention Number 155(1981) provides employees or employee representative bodies with the right to be consulted by employers on all aspects of health and safety at the workplace, within health and safety institutions and joint OHS committees. This I.L.O. standard strives to enable employees to contribute in the decision-making process at the operational front on OHS matters.

Furthermore Arrigo and Casale (2010), argue that the participative rights as prescribed by the I.L.O. go beyond just being heard, but rather to be afforded adequate access to information as mentioned in I.L.O. Convention Number 156(1997), that prescribes that employees should be given information and to be consulted on major decisions taken by management on OHS risks, preventative and protective measures. As cited by Arrigo and Casale (2010), under Directive 2001/86

and 2002/72, employee involvement is defined as a mechanism that combines information, consultation and participation, through which employees exercise their influence on decisions taken on OHS by the organisation.

2.3. EMPIRICAL STUDIES WORLD-WIDE

2.3.1. Employee Participation in managing occupational health and safety United States of America

In the United States of America (USA), Alverson (2011) points out that employees have legal rights that influence their working conditions through their affiliation with recognised trade unions. In line with the work by Bedford (2009), this process promotes the collective bargaining of employment conditions, where the representative trade union can form partnerships with Line Management concerning matters pertaining to health and safety. At the operational front, employee representative committees comprising of both the trade union representatives and line management are utilised to address health and safety issues. The legislation prescribes for the negotiation and consultation process between Registered Unions or a Bargaining Council and the Employer, thereby acknowledging by a signed agreement the collective functioning of the management process of occupational safety. These committees tend to focus on the firm's liability under state and federal occupational health and safety laws (Alverson, 2011; Gollan, 2006). In recent times, Kaufman (2011) points out that employers are promoting the use of the work committees that focus on increasing operational efficiency and improving the quality of the products and services, with the result health and safety issues have taken a back seat.

In the contribution by Bryne (2011), employee participation is semi voluntary as it seeks to encourage the development of occupational health and safety programs. The enforcement by the inspectorate tends to treat employers that implement aggressive OHS programs more favourably than those employers that lack focus on

OHS programs. These programs constitute the joint participation of employers and employees seeking to identify hazards, assessing the risks and implementing mitigating actions to eliminate or reduce these occupational risks. On the other hand, Soediono and Kleiner (2002) warn that those employers that lack the discipline to implement strong and effective OHS programs face the stringent legislative enforcement by the inspectorate.

According to Strauss (2006) and Marchington and Wilkinson (2005), employee participation constitutes direct communication and problem solving, where the participation process entails a verbal communication with employees and the first line supervisor. The representative participation process entails discussions between employees or union representatives and managers via mechanisms such as joint consultations or collective bargaining (Bedfort, 2009). Marchington (2005) and Alverson (2011) highlight that the diminishing union membership, due to global economic downturn and employee layoffs, have had a negative impact on the functioning of these worker committees. These layoffs have had a negative impact and has made employees feel insecure, with many refraining from raising health and safety issues at the workplace.

Many impressive gains in health and safety have resulted from support and aid emanating from the bargaining relationship between unions and employers. Despite the differences between Unions, Employers, Governments, Cultures, Value systems, Legislation and Economical Wealth, authors Alverson (2011), Brewster, Brookes, Croucher and Wood (2007) and Parsons (2001) acknowledge that OHS participation through joint labour-management committees have been instrumental in improving organisational safety performance.

Studies by McGarity and Ruttenberg (2002) in Texas have attempted to evaluate the cost benefit implications of health and safety accidents versus Legislation. They indicate that world-wide Governments have initiated the systematic coalition of accident and fatalities data so as to get a better understanding into the costs

associated with accidents and the benefits that the OHS regulations have had on reducing accidents and fatalities. These studies have not been able to encapsulate the costs associated with occupational health and safety as the organisations do not voluntarily share information with legislative bodies (McGarity and Ruttenberg, 2002; Perry, 2010).

Alverson (2011), Cates (2010), Dixon (2009), Franca (2011), Mei (2002) and Scheuer (2007) observe that it is no co-incidence that USA legislation endeavours to engage employers and employees, in good faith, with the objective to ensuring the occupational health and safety of all stakeholders within the workplace. The process of creating a democratic environment, allowing employees to elect a safety representative, who undertakes to bring to the employer's notice unsafe acts or conditions that pose a threat to the safety of employees.

Bedfort *et al.* (2009) further elaborates that the health and safety legislation has held the Chief Executive Officer of the company liable and responsible, by virtue of his position of authority and accountability for occupational health and safety on all aspects regarding any violations that may arise. This interpretation of responsibility comes close to the absolute liability by virtue of the position that it creates for the CEOs, thus permitting them with no defence when a violation occurs. When analysing Nielsen's (1979) work, criminal penalties have been imposed and legislated in circumstances, where top executives knew that there was a reasonable probability that injuries or fatalities could occur and did nothing to prevent such incidents, or when executives ordered corrections, but did not check to see whether their orders were carried out, or where executives permitted an information system to continue even though it did not bring "bad news" about potential injury, sickness and fatalities to management's attention.

Legislation on its own does not have the potential to reduce injury and accident rates (Bedfort, 2010; Epstein, 2012). It is not practical and impossible to expect the OHS Inspectors to supervise the complete OHS process continuously in all organisations.

Having said this, the legislation in occupational health and safety stands a better chance of improving OHS performance by working closely with workers in prevention measures at the working front.

2.3.2. Employee Participation in managing occupational health and safety in Canada

Employee participation in Canada takes the forms of Unionism, Legislation and a consultative approach. Each of the Canadian States provides for specific legislation pertaining to occupational health and safety (Ontario Occupational Health and Safety Act of 2010, the Manitoba Workplace Health and Safety Act of 2010 and the Saskatchewan Occupational Health and Safety of 1993).

Michael Parsons (2001) describes the direction of the establishment of employee participation within each of the Canadian States:

In Ontario, the legislation prescribes the mandatory establishment of health and safety committees in each workplace that has 20 or more employees. In addition, legislation describes the rights of these committees, namely: the right to obtain information, the right to take time off so as to conduct safety related matters, and the right to investigate accidents and incidents at the workplace. These committees consist of employees and management, who work jointly on health and safety issues within the working environment. The legislation however falls short, in the sense that no actions or repercussions are necessary from Management from the advice of consultative process arising from these committee meetings. The premise is that the enforcement by the Administration will take care of non-action on health and safety matters (The Ontario Occupational Health and Safety Act of 2010).

The Manitoba scenario assumes that the role of the Government is to balance the power between employers, employees and the Unions. Legislation prescribes joint health and safety committees consisting of management and employees. Any dispute

that arises during the course of the committee meetings will be decided by the enforcement Ministry. Donaldson and Dunfee (1994) observe that the statutory rights established in legislation are the rights of employees to know about the hazards and risks associated at the workplace, the right to work with management to jointly find solutions to mitigate the risks, the right to participate in the design and implementation of health and safety management programs (Manitoba Environment and Workplace Safety and Health Act). The downside of this approach is that employers seek to do the minimum, only to comply with legislation, the bargaining power of Unions is diminished and that there are practical difficulties for the Inspectorate to enforce discipline.

The Saskatchewan legislation follows the principle of joint health and safety committees comprising of employee and management, the formulation of committees where there are 10 or more employees at the workplace, the prescription of the rights for the committees, consisting of the right to participate, the right to know and the right to refuse (Beauchamp and Bowie, 1997). The idea was that the safety committees, with government backing, will act responsibly to undertake workplace inspections and enforce where appropriate, resulting in the health and safety matters being integrated into the workplace activities and the collective bargaining process (Saskatchewan Occupational Health and Safety Act of 1993). The disadvantage of collective bargaining process is that during periods of economic recession, the Unions are left in a weak bargaining position with the result OHS takes the back seat.

Generally Canadian Legislation prescribes and attempts to encourage joint management and labour participation in managing occupational health and safety (Hall *et al.*, 2006). This has led to Eaton and Nocerino (2000), Innes and Loughlin (2002) and Shearn (2004) studying the effectiveness of worker participation in health and safety decision making. The results have shown that certain structural determinants such as the active enforcement by the workplace Inspectorate, the workplace standards and the joint decision making by labour and management on occupational health and safety matters have impacted positively on the OHS

performance of many organisations. Other research undertaken in Canada by Haynes, Boxall and Macky (2005) and Storey and Tucker (2006) have concluded that the failure in worker participation can be attributed to the declining union numbers, the lack of legislative standards, weak enforcement systems, and the lack of training.

It is apparent when analysing the work of Eaton (1994), Hall (1993), Milgate, Innes and O'Loughlin (2002), Shearn (2004) and Walters (1996a, 1996b), that the lack of forceful union representation that is unafraid to bring health and safety non-conformance at the workplace to Management's attention affects employee participation. In addition, the knowledge of frontline employees, the militancy of employees, the inappropriate attitude of management towards health and safety matters, and the enforcement of legislation in relation to the functioning of health and safety committees has negatively impacted the employee participation process. Walters (1995) and Storey and Tucker (2006) found that employee participation was hindered due to the pressures of production, the lack of control by employees over the task process and management's reliance on cost related arguments to justify the funding of health and safety initiatives.

Guadalupe (2003) cites how the current economic downturn poses challenges in the case of employee participation in health and safety activities as employees and Unions are pre-occupied with job security, management's drive to outsource, the implementation of rapid technological changes and the inter-reliance of countries globally.

2.3.3. Employee Participation in managing occupational health and safety in Europe

In research undertaken by Saksvik and Quinlan (2003), it was found that although countries such as Norway, Germany, Finland and Denmark were highly unionised and had strong traditions of employee participation within the workplace, in practice employee participation in OHS is less than what is stipulated for by legislation. The

researchers suggested that this difference was due to employees seeing OHS as a separate matter to industrial relations. Haynes, Boxall and Macky (2005), O' Grady (2000), Sass (1996) and Storey and Tucker (2006) suggest that collective bargaining of OHS rights was more effective at a group level than at an individual level with safety representatives working within safety committees. The irony of this is that organised labour will utilise OHS as a bargaining tool rather than embark on a jointly coordinated effort to improve OHS.

Comparative studies were undertaken by Walters *et al.* (2005) between 1989 and 1992 in seven European countries, France, Germany, Greece, Ireland, Italy, Spain and Sweden, into understanding the legal frameworks that provide for worker participation in OHS and factors influencing the implementation and operation of the legislation. These studies demonstrated that the effectiveness of the worker participation is strongly dependent on the establishing trade unions and their support structures as a powerful influence within the work environment, the initiation of training programs covering occupational health and safety matters, the overwhelming significance of management's commitment, the need to improve safety at the workplace, the consultative approach that exists between safety representatives, and the workers and line management.

Legislation in Europe does not restrict the appointment of safety representatives to trade unions. Walters *et al.* (2005) further elaborates that the most effective health and safety environment is when the institution of the workplace representation involves trade unions and where the trade unions have a strong presence (Walters *et al.*, 2005). The factors that influence workplace representation negatively are associated with the economic downturn, the declining power of trade unions and decreasing membership of trade unions.

Brewster *et al.* (2007), Cates (2010) and Walters *et al.* (2005) point out that with the exception of the Scandinavian countries, the degree of legislative coverage in small workplaces was lacking. The Scandinavian approach with regard to small businesses

is to appoint regional safety delegates who cover more than one workplace. This process has provided for the sharing and the extension of knowledge and experience between workplaces that go beyond the traditional training venues. This innovative approach has been beneficial in creating a supportive mechanism for health and safety representation within the small businesses, as the number of small workplaces is on the upward trend.

In line with the contribution of Brewster *et al.* (2007), Epstein (2012), Franca (2011), Hovden, Lie, Karlsen and Alteren (2008), Scheuer (2007) and Walters *et al.* (2007), employee participation in OHS has been encouraged through the following:

- Work Councils which are established as per stipulations by the local legislation. This is the case in Germany, Netherlands and Luxembourg, as safety representatives or safety committees have limited powers. The establishment of the safety human resource structures and functioning thereof are left entirely to the Work Council so as to create a supportive mechanism for health and safety representation. Jirjahn and Smith (2008) cite that these councils may constitute employers, worker representative bodies, health and safety experts, and any expert deemed necessary by the Work Council.
- In countries such as France and Belgium, the health and safety function is predominantly left to the safety committees, although the creation of Work Councils is prescribed by legislation and national collective agreements between employer representation at an industry level and employee representative bodies. The Work Councils are informed and consulted on matters of health and safety by the safety committees. The main channel of employee participation in the OHS prevention programs is via safety committees.
- In countries such as Italy and Greece, safety participation is undertaken via collective agreements. It may arise from a particular trade representation or the different manufacturing sectors and the employer. The agreements allow for the appointment of a safety representative, establishing safety committees and the

joint agreement on the functioning of the safety committees on matters related to workplace health and safety matters .

- Other countries in Europe appoint safety representatives and the formulation of safety committees provided for by legislation. The process allows employees to elect a safety representative to represent a group of employees. A strong trade Union presence assists this process as the appointment of safety representatives emanates from within the Union ranks.

Frost (2000) and Gevertz (1983) argue that theoretically work councils are in a better position and have the advantage in negotiating health and safety matters, bringing to the fore the concerns relating to health and safety in the working environment. It allows employees the right to consult and still remain anonymous to avoid any victimization at the workplace. In addition the process allows for health and safety issues to be discussed and brought up as outstanding issues at the workplace discussions jointly with management and the elected safety representative body.

Hovden *et al.* (2008), Nichols Tasiran and Walters (2007) and Walters *et al.* (2006) note that within the European Council, two countries that have implemented employee participation that deviates from the work councils principle is Britain and Denmark. The voluntary approach to managing OHS is used in Britain and the combined legal-voluntary approach in Denmark, as observed by Sorensen *et al.* (2009), have been successful in encouraging employee participation improving OHS outcomes. The employee participation within these two countries is discussed in more detail, as the subtle differences have enhanced occupational health and safety at the workplace within their respective countries.

2.3.3.1. Employee Participation in managing occupational health and safety in Britain

In 1972, the British Committee on Safety and Health at Work, chaired by Alfred Lord Robens – (Robens Report) influenced the Voluntary Protection Program, which bridged itself out to other countries. It had an enormous impact on the English Occupational Health and Safety Legislation and the philosophy of employee participation and consultation between Employees and Employers. The two primary objectives that were introduced by the Robens Report were that:

- All parties, specifically Employers, Contractors and Employees have a duty of care for health and safety at work.
- A self-regulating system, which promotes employee participation, is adopted. It requires employers to consult with employees at the workplace about health and safety matters.

The tenet in the Robens' Report is that occupational health and safety at the workplace can only be achieved with “full co-operation and commitment from employees.” These objectives have reshaped much Legislation globally.

Research by Kaufman (2011), Nichols *et al.* (2007) and Walter *et al.* (2005) found that in the UK worker representation and consultation produced better outcomes than management acting alone. Trade Unions improved OHS outcomes (Fairbrother, 1996). The role of trade unions is reinforced as the study by Fairbrother (1996) and Alverson (2011), who conclude that trade unions improve OHS outcomes as is the case in the United Kingdom in three ways:

- As the Government and its Agencies did not invest sufficient resources for inspection and regulation, Trade unions played a vital role in legal enforcement. In addition, resolution of OHS challenges requires negotiations and interpretations of specific workplace circumstances, rather than a simplistic “black and white” legal approach,

- Providing employees with a collective voice, that allows employees who are otherwise unable to express their needs to contribute to the OHS agenda and
- Establishing a counterbalancing stance that expresses the needs of employees relative to the competing concerns of management around profit, output and productivity (especially in the short term to focus on the levels of line and operation management rather than the strategic level). The provision of training and information form part of the changing power between employees and management.

Fairbrother (1996) further argues that the legislation based on the Robens' model provides for managers and employees to jointly regulate OHS with the assumption that both managers and employees have a mutual interest concerning OHS. Spath (2004) points out that a system that relies on voluntary involvement by Worker and Manager requires a mature and socially responsible organisation.

In the opinion of Epstein (2012), the UK Health and Safety Legislation in the field of occupational health and safety is based on three pillars, the enforcement body, the employee involvement and self-regulation by employers.

The enforcement process empowers Inspectors to conduct and inspect work premises, to perform investigations, to seize documents and hazardous substances involved with a particular deviation from expected standards and to issue notices to employers in order to rectify a deviation or institute whatever appropriate action is necessary to reduce or eliminate the impending dangerous risk (Health and Safety at Work Act 1974). Edwards (2000) argues that the enforcement has been ineffective because of the lack of insufficient inspections. According to study undertaken by the Centre of Corporate Accountability, in 1999 the UK OHS inspectorate investigated only 11% of the serious injuries and only 10% of those investigated cases had resulted in prosecution.

In Britain Legislation has recommended certain steps in respect of the voluntary approach concerning participation between employee and employer (The Health and Safety Work Act of 1974). These recommendations include:

- To establish Hazard Identification and Risk Assessment Systems that involves employee participation.
- To be transparent with Occupational Health and Safety statistics,
- To enhance communication systems that encourage occupational health and safety issues,
- To institute a system that employees can use to report, make recommendations and mitigate risks associated with fatalities, accidents, incidents, near misses and hazards.

The functioning and establishing a safety representative and safety committees are left entirely up to employer and employees. In Britain, Epstein (2012) and Waters *et al.* (2007), note that the trade unions have the exclusive right to appoint safety representatives at the workplace. Haynes, Boxall and Macky (2005) argue that this process is insufficient observing how those employees that are not members of the Trade Unions or similar organisations that do not have recognised agreements with any Trade Unions do not have any legal right to elect safety representatives at the workplace.

In study undertaken in Britain by the University of Wales Cardiff, employee participation varied as knowledge was the highest amongst the managerial and professional employees, while being the lowest for the unskilled and temporarily employed. Furthermore women showed a lower knowledge when compared to men and older men were seen to have shown greater knowledge when compared to younger men (Epstein, 2012; Frick, 2010).

It is apparent when analysing the work of Alverson (2011), Bedford (2009), Cates (2010) and Epstein (2011), the voluntary process of the legislation pre-supposes that

all employers will perform risk assessments and implement mitigating actions to reduce or eliminate these risks. The process encourages employers to use employees as being the ears and eyes of the employer in the health and safety prevention programs. Epstein (2012) cites that this is instrumental in the management of health and safety as it is not practical to have an inspector at each work site. He cites a more effective method in the drive to reduce injuries is the greater participation of employees and the implementation of management programs.

Cates (2010), Gevers (1998) and Walters (2005) have observed that employee participation has been extended from the prevention of accidents and occupational disease to the protection of the health of workers and even promoting the workers' wellbeing. This has incorporated the duties of employers to act reasonably and provide a safe and health work environment to all persons that are directly linked to the operations of the workplace.

Beirne (2008), Brewster *et al.* (2007), Dunlap (2012), Frick (2010), Geller (2000), Hohnen *et al.* (2011) and Walters *et al.* (2005) point out that even in countries such as Britain, Demark and Ireland, that attempt to promote a "voluntaristic" approach to industrial relations and OHS participation, it is always difficult to have a system that is totally voluntary. The voluntary participation approach as used in United Kingdom, Denmark and Ireland aims to make all parties, namely Employers, Suppliers, Contractors and Employees responsible for health and safety at work and a self-regulating system, that requires employers to consult with employees at the workplace about health and safety matters. Gevers (1983) argues that although countries have predominantly a "voluntaristic" approach, statutory regulations enacting employee participation have been adopted. The definite disadvantage is that employees may suggest safety improvements; however they cannot insist on these improvements to be implemented. The process to assist employees in these matters is through the safety committees, which may access an Inspectorate who may act on their behalf. Furthermore the employers may appoint safety representatives that form

part of the safety committees. This could allow for the manipulation of the agenda by management to ensure that their objectives are driven at these forums.

2.3.3.2. Employee Participation in managing occupational health and safety in Denmark

In most countries, as cited by Frick and Wren (2000), OHS legislation concentrates on the employer's duties to provide employees with a healthy and safe working environment with an appropriate organisational structure and a means of employee engagement. Dyreborg (2012), Gunningham and Johnson (2000), Hohnen and Hasle (2011) and Sorengo *et al.* (2009) point out that legislation has moved from a command and control model towards models that encourage self-regulation (Walters, 2002; Walters *et al.*, 2006). This included formal employee participation in occupational health and safety matters, such as the election of safety representatives and safety committees, so as to improve effectiveness of OHS and influence OHS performance positively (Cabrera, 2007; Eaton and Nocerino, 2000; Hall *et al.*, 2006; Hasle and Jensen, 2006; Kristensen, 2011; Raines, 2011; Waters and Frick, 2006).

Other solutions as Frost (2000) and Walters (2006) have highlighted are trade union interventions that have impacted positively on OHS performance. James and Walters (2002) point out that the legislative processes that depend heavily on trade union interventions pose problems when such legislation is applied in non-unionised workplaces.

In the study undertaken by Sorengo *et al.* (2009) and Hohnen *et al.* (2011), Denmark has been able to mix legislation with social partnering between employers and employees. The process entails the employee representation, the OHS management systems and the OHS organisation. Hasle and Petersen (2004) cite that the employer associations and trade unions negotiate a framework at the central level and the shop stewards and employers negotiate local agreements at the workplace. The study

found that improved employee participation in OHS and the collaboration between management and employees increases OHS performance (Sorensen *et al.*, 2009).

Other studies by Due and Madsen (2008) and Scheuer (2007) have shown that most workplaces in Denmark have collective agreements at the work front. The agreements approach the joint discussions between management and employees on wages and working conditions. The advantage is that workplaces have had the flexibility to tailor make their individual work environment requirements in line with local collective agreements. Sorencio *et al.* (2011) cite that the level of employee participation in terms of co-determination and day to day cooperation is governed by the collective agreement. Although management is not required by legislation to strive to agree with employees on matters at the workplace, employees and employers have worked on establishing joint agreements. Hasle and Petersen (2004) point out that legislation still requires employee participation when changes occur in the work design, new building modifications and new technology that impacts on health and safety at the workplace.

The Denmark Work Environment Act 1977 has stipulated that in workplaces with 10 or more employees, the employer shall appoint a line manager and an elected safety representative, which is based on the workplace unit rather than any union affiliation. In workplaces with 20 or more employees safety committees will be established with the top manager chairing the safety committee. A further protection by the legislation encourages safety representatives to raise OHS problems without recourse of dismissal.

Hasle and Petersen (2004) and Sorencio *et al.* (2009) indicate that these local agreements have been able to accommodate the different forms of organisational workplaces, the individual employee's day to day needs and relationships between employees and management. Legislators and social partners defined a set of mandatory pre-conditions: each sector will conclude an agreement with the employer's association or sector level. Employees and employers can then establish

local agreements, the local OHS human resources structures that shall meet and exceed the minimum legislative requirements, including all agreements that will be formally documented. Finally a review process to evaluate the OHS performance will be conducted. Brewster *et al.* (2007) and Free (2002) observe that it is no coincidence that the advantages that have emanated from these agreements relating to OHS is integrated into the other aspects of the business. The reduction in time spent at meetings, the development of common ownership, improved collaboration between employees and line management, greater involvement and commitment of top management, and the number of representatives have been reduced. Sorensen *et al.* (2009) conclude that a combination of legislation and local voluntary agreements concerning OHS matters is a strategy that can increase employee participation thereby improving OHS outcomes.

A potential problem with joint agreements is that the balance of power favours the group that owns or controls the financial resources. This affords the management an upper hand in reaching consensus. Furthermore the consultative approach is very time consuming and is always a long drawn out process until consensus is reached.

Frick (2010), Beriha *et al.* (2011), Dyreborg (2011) and Fam *et al.* (2012) argue that despite the differences and similarities in the underlying objectives relating to participation in health and safety at workplace, considering the variety in industrial relations between countries and the worker representative institutions, there is no one model whether mandatory, semi-voluntary or voluntary that will ensure zero accident environment.

2.3.4. Employee Participation in managing occupational health and safety in Australia and New Zealand

Currently, Australia and New Zealand have similar employment relations culture with OHS participation being prescribed by legislation, which affords employees' rights to a safe and healthy work environment and follows the Robens' Model from the United

Kingdom. Markey and Mylett (2007) observe that this legislation is expected to improve OHS at the workplace, with the expectation that participation will contribute to higher productivity, and the improved wellbeing of employees and ultimately positive contribution to the bottom-line.

Byrne (2011), Harris (2004) and Jamieson *et al.* (2001) describe that the legislation, in this case the Health and Safety Employment Amendment Act (2002) (NZ), improved the powers of the Inspectorate, making it mandatory for employers to provide for worker participation in the form of safety committees. It also identified rights that empower employees to identify hazards, including the right to training in occupational health and safety, and the right to consult with OHS Inspectors. The specific details on how to achieve these rights are explicitly described, examining how employers create opportunities for employee participation, and to encourage employers, employees and the trade unions to consult in good faith. These countries have followed the principle of joint participation by employers, employees and trade unions (Mathews, 1993; Walters, 2004). In 2004, a study undertaken by Harris (2004), states that although employers support employee participation in OHS, 60 percent of the 600 employers surveyed said that they did not have a committee or a safety representative.

Studies undertaken by Mylett and Stubbs (2005) into the role and impact of OHS committees in Australia's largest bank has shown that employees strongly indicated that they were keen to take on responsibility for OHS and expressed a strong desire to be involved in the identification of hazards and risks at the workplace. The results from the studies pose some concerns, as when asked if they agreed whether or not the safety representative has been effective in reducing OHS risks in my workplace, the majority of employees (56%) agreed, 5% strongly disagreed and 39% stating that they don't know. Haynes, Boxall and Macky (2005) argue that the Legislation does not prescribe worker participation, but rather requires employers to consult with employees about health and safety at the workplace.

Legislation in Australia and New Zealand attempts to prescribe worker participation with the possibility of improving OHS performance at the workplace. An evaluation of the worker participation legislation gives the view that the prescription lacks detail in respect of worker participation and the roles of safety representation which weakens the possibility of an OHS improvement (Walters *et al.*, 2006).

The researchers Beirne *et al.* (2008), Brogger (2010), Bryne (2011), Busck (2010) and Markey and Patmore (2011) have insisted that the employee participation process goes beyond the boundaries of the Organisations. The process of occupational health and safety at work has an impact on individuals outside the organisation including the general public. An employee may take contaminated protective clothing (asbestos) to be washed at home (Joshi and Gupta, 2004). The contamination exposes the employee's family in the process of washing work garments. The Organisation pollutes irresponsibly which causes children to become asthmatic. Thus the engagement of employees goes beyond the Organisation's parameters. Other external factors such as the employee consuming excessive alcohol and dangerous substance abuse, the addiction to gambling, poor nutrition, the lack of access to health care, being a shopaholic and other social vices, have an impact on the overall OHS performance of the employee in the workplace. Considering the views of Ball *et al.* (2009), Bolger (2004), Carrillio (2010), Cooper (2001), Detert *et al.* (2000) and Fullan (2001), management faces this dilemma daily, as it is management's responsibility to provide, as far as is reasonable, the reduction in exposure of the employee to an unhealthy and unsafe environment by creating a culture and climate that is favourable to safety at the workplace.

2.3.5. Employee Participation in managing occupational health and safety in Asia

Dorman (2000) points out that one of the most significant predictors of experiencing an occupational fatality or serious accident is poverty. It seems that workers that are worse off and powerless in the labour market have the worse OHS outcome. Chen

and Chan (2004) mention that in poor countries there is a conflict of interest that exists between workers and management over occupational health and safety matters, seeing that Management or Owners of the production processes tend to equate the prevention measures to the increase in production costs. In these scenarios, it is unlikely that Management will invest capital unless forced or pressurised by an external body.

It is apparent when analysing the contributions of Findley and Gorski (2005) and Eweje (2005) that as organisations become entities of International Corporations, greater pressure is experienced from international legislation and special interest groups. Jeung (2011) argues that the positive outcome of these acquisitions is that organisations in under developed countries have had to modify their behaviour to conform to benchmarks set by the industrialised countries. Although numerous countries have had comprehensive legislation which mirrored the occupational health and safety laws of industrialised countries, their governments often lack the political will to demand the enforcement of these regulations at the expense of slower economic growth.

2.3.5.1. Employee Participation in managing occupational health and safety in India

Agnihotram (2005), Beriha *et al.* (2011) and Beriha *et al.* (2012) argue that as India experiences industrialisation and rapid globalisation, the traditional labour markets move towards greater automation and mechanisation with a result of greater awareness about occupational health and safety. In the opinions of Nag *et al.* (2004) and Mathews *et al.* (2003), the health and safety hazards, the lack of education, the general backwardness of sanitation, poor nutrition, extreme weather conditions, chemical and fertilizer poisons and the use of child labour compound the difficulties associated with the management of injuries and diseases.

Agnihotram (2005) points out that the experience of major accidents such as the Bhopal gas tragedy has created safety awareness resulting in legislation and the implementation of safety measures. He argues that the Indian laws are only on paper and never seen to be implemented in reality. In line with the study by Agnihotram (2005), Kaila (2006), Mahadevan (2009) and Vinodkumar and Bhasi, (2010), they attribute the poor OHS performance to the facts that the labour is seen to be cheap and easily replaceable, coupled with the lack of capital investments in the mitigation of health and safety actions, the lack of power base of trade unions, the lack of top management commitment and the lack of legislation enforcement. In addition the researchers attribute the lack of legislation enforcement to the shortage of Inspectors within the Inspectorate. In the case of India there are 300 Inspectors in comparison to 3000 factory inspectors in Japan (Joshi *et al.*, 2004).

Mahadevan (2009) argues that the lack of financial planning to ensure budgets are available to ensure the mitigation of health and safety hazards as a hindrance in the prevention of injury and disease program at the workplace. Agnihotram (2005) reveals that in some cases worker groups approached occupational health and safety equipment with a negative attitude, and working without these safety measures was seen as heroism among the illiterate workforce. Other problems cited were the lack of safety equipment such as that used in emergency situations, improper inspections and testing of safety equipment, the lack of training and alcoholism.

Furthermore Agnihotram (2005), Beriha *et al.* (2012), Kaila (2006), Joshi (2004), Mahadevan (2009), Vinodkumar and Bhasi (2010) have blamed the poor OHS performance in India to the lack of OHS enforcement at the workplace, the inadequate regulation of modern legislation, the lack of joint trade union and management participation in OHS matters and the shortage of skills training especially in the agricultural sector. Amongst the work of Mathews *et al.* (2003), the use of child labour is on the increase and the growth of the informal sector poses a further health and safety problem for India. Beriha *et al.* (2011) and Mahadevan (2009) recommend that some strategies to address these concerns will be to increase

employee participation and to ensure that health and safety becomes a fundamental right of all workers, thus contributing positively to the OHS performance. The researchers are of the opinion that employee participation will evolve in India as global corporations continue with their inflow into the local economy influencing local organisations to conform to health and safety practices accepted by Western countries.

2.3.5.2. Employee Participation in managing occupational health and safety in China

Chan (2001(a) and 2001(b)) observes that it is no-co-incidence that China has been experiencing significant growth as it moves from a social command system to a free market economy. This, in turn has restructured the industrial sectors as rural enterprises, foreign funded enterprises and private enterprises have been established (Howell, 2002). These enterprises have had to work with State owned organisations, which previously were exposed to communist principles. Chen and Chad (2004) comment that these State owned enterprises had to migrate from a very highly State controlled and planned economic environment to a decentralised self-regulating one.

Christiani (1984), Chan (2001(a), Jeung (2011) and Liu (2011) argue that the economic boom brings challenges for China, namely:

There is no Government Institution that is solely responsible for the legislation, regulations and enforcement of OHS. Instead the matters pertaining to OHS have been entrusted to the State Economic and Trade Commission (Mei, 2002). This State entity is in charge of economic development in China. As captured by Liu (2011), with fatalities on the increase and pressure from the general public, the State Economic and Trade Commission introduced the National Safe Production Supervision Management Bureau so as to improve the country's OHS performance. The National Safe Production Supervision Management Bureau is still to become effective (Chen Chan, 2004; Tiemen, 2002).

In the work of Christiani (1984) and Jin and Courtney (2009), the rapid economic growth has introduced hazardous Industries thereby creating unsafe workplaces. In an article in the China Womens News (1996) it was estimated that almost 34 million people were connected to hazardous occupations. According to Howell (2000) and Gelb and Hulme (2002), new entrepreneurs emerging from the rural communities lack knowledge of the dangers associated with chemicals and the experience of the use of safe guarding of machinery against injuries.

Chen and Chan (2004) argue that in addition foreign investments from Hong Kong, Taiwan and Korea have lacked concern for worker occupational health and safety practices in China. The Chinese government has had to allow occupational deviations in return for investment. Chan (2001(a)), Chen and Chan (2004) and Jin and Courtney (2009) note that the occupational health and safety at the workplace is expected to be a combined effort from the Trade Unions and Management. The Trade Unions are quasi-government institution and officials are appointed by the government. This body is charged with serving in a consultative role in the form of assisting with collective bargaining for the employers. The trade unions have been empowered to monitor OHS matters and put forward proposals to remedy unsafe acts and conditions. Liu (2011) warns that the challenge is that smaller enterprises, especially rural collectives and private enterprises do not have trade unions that will put forth employee concerns related to OHS.

In Howell's (2000) and Liu's (2011) opinions, there is a lack of the enforcement of occupational health and safety at the workplace. The enforcement is expected to arise from employees within the organisational level of the trade union, if a trade union exists. Cates (2010) notes that the conflict arises when employees at the shop floor are expected to perform this function and report to management who are expected to address employee concerns with OHS concerns.

There is a lack of formal legislation and regulations pertaining to occupational health and safety. Mei (2002) and Jin and Courtney (2009) observe that it is no co-incidence

that workers are not afforded the right to a healthy and safe work environment and recourse to charging employers with health and safety non-conformances.

Chen and Chan (2004), Liu (2011) and Xiaorong *et al.* (2011) have observed that within various types of enterprises, the larger enterprises that are State owned, and foreign owned have upgraded their facilities and the OHS conditions have improved their OHS performance in tandem. Furthermore Liu (2011) and Mei (2002) note that the trade unions have played a partially active role in health and safety prevention programs.

2.3.5.3. Employee Participation in managing occupational health and safety in Korea

Kato *et al.* (2005) cite that innovative employment practices are on the increase in Korea, including practices that engage employees in different participative schemes. The emergence of Work Councils, which are legislated, consist of equal number of representatives from management and labour (Kleiner *et al.*, 1997). In the presence of a majority union at the workplace, the occupational health and safety representatives will also be members of the majority union. In workplaces that are not unionised, the safety representatives are elected via a democratically voted process. Brewster *et al.* (2007) and Walters and Nichols (2007) also allude to the fact that at least the democratically elected representatives legitimately represent the interest of the workforce.

In line with study by Kato, Lee, Lee and Ryu (2005) and Sorenco *et al.* (2009), the Work Councils were more likely to use these meetings to collectively bargain on wages and employment conditions than to use them as a mechanism to share organisation information such as restructuring or health and safety matters. The work councils on the shop floor have been noted to voluntarily set plans and goals concerning the health and safety concerns and work outside their regular work cycles to solve problems and institute mitigating actions to prevent the recurrence of the root

causes. In addition, self-directed teams, as captured by Kobayashi *et al.* (2009), such as “cell production” and “modular production” undertake health and safety tasks during their regular daily work.

In other studies undertaken by Kato *et al.* (2005), that on the shop floor of some workplaces, work councils, possibly replacing unions, have been successful in the management and sharing of confidential information with labour during the work council meetings. Brewster, Brookes, Croucher and Wood (2007) observe that there still is a gap in ensuring that this process is acknowledged as an economic advantage in engaging employees on health and safety matters.

Dixon, Theberge and Cole (2009) and Eaton and Nocerino (2000) believe however that there are still concerns as these work council committee meetings only need to be scheduled on quarterly basis as specified by legislation. It was found from the extensive study by Kato *et al.* (2002) that non-functioning workplaces meet at an average of 3.9 times annually, whilst better functioning work councils meet 5.8 times a year. The Japanese work councils, being seen as effective, meet 12 times annually. The frequency of these meetings in Korea is considerably less frequent than those occurring in Japan.

2.3.5.4. Employee Participation in managing occupational health and safety in Japan

In Japan, the legislation on the topic of health and safety (The Industrial Safety and Health Law of 1972) prescribes minimum standards in the prevention of industrial injuries and the participatory relationship between joint labour and management responsibilities. This collective responsibility in preventative measures has proved successful in managing health and safety at the workplace (Aoyama, 1982).

Kobayashi, Kaneyoshi, Yokota and Kawakami (2008) highlights that the Japanese legislation prescribes the use of work councils that act as a means to ensuring the

management of health and safety at the workplace where workers and management jointly work together. These work councils constitute an equal number of representatives from the majority trade union and the management. Further, workplaces functioning without unions may elect safety representatives democratically. The relationship between labour and management dictates the functioning of the work councils and as entirely set up by each workplace (Kleiner *et al.*, 1997).

Kato and Maritime (2002) cite the success factors of the Japanese work councils is based on the frequent joint meetings of the health and safety committees, almost 12 times year, and the Japanese employee attitude towards management of health and safety. Aoyama (1983) further elaborates that the success can be attributed to the strong loyalty which Japanese workers feel towards their companies as they identify themselves with the success and are reluctant to appear to be contentious or dissatisfied. Jeung (2011) also alludes to the fact that the joint attitude and behaviour of employee and management to problem solve health and safety matters amicably, increase awareness of the matters at hand and assist as a preventative measure in health and safety management, when all contribute positively towards achieving favourable OHS performances. In the three studies undertaken by Aoyama, the trade union representatives functioning within the work councils have recognised the need to find solutions to workplace health and safety non-conformances. The labour representatives presented the results to management at the joint health and safety committee meeting. In response the management initiated a series of investments to rectify the health and safety non-conformances.

Japan excels in the high technology sectors and has become a world class industrial power and capital risk society, still being able to ensure the health and safety of all stakeholders (Reich and Frumkin, 1988). Indeed the Japanese industrial and management systems are now regarded as a progressive model for economic and productivity improvements (Kato *et al.*, 2005).

2.3.6. Employee Participation in managing occupational health and safety in Africa

In developing countries, Agnihotram (2005), Beriha *et al.* (2012), Mahon *et al.* (1992) and Nasi *et al.* (1997), identified four stages of evolution that exist in managing social issues, namely that organisations go through a period when the social issue was unthought of, to a period of an increase in awareness, then to a period of the expectations for action, and to a period where new standards and guidelines when dealing with the social issue become integrated into the daily normal activities of the company. Eweje (2005) suggests that the social issue of health and safety of employees at the workplace is at different stages of evolution within countries in the continent of Africa.

Akpan (2011) observes that as is the case in Nigeria and in almost all other African countries, there is a lack of an organised regulatory agency charged with the responsibility of conducting regular monitoring to ensure compliance to occupational health and safety legislation (Iman and Nuwayhid, 2004; Nuwayhid, 2002; Sieberhagen *et al.*, 2009). He further recommends that African Governments should be pressurised by International Labour Law and the International Labour Organisation (ILO) to adopt and institute comprehensive occupational health and safety legislation into their current organisational management systems.

2.3.6.1. Employee Participation in managing occupational health and safety in South Africa

Sutton (2004) comments that every day, South Africa experiences fatalities in all facets of society. These have social, emotional and personal costs (Zwetsloot, 2004). Traditionally organisations aim to maximise profits, within the rules of the game laid down by legislation. Du Plessis (2001), Shell (2009) and Sieberhagen *et al.*, (2011) argue that the decision-making focused on short time spans, and was predominantly economic with very little concern for social matters. Over the years, Donaldson *et al.*

(1997) suggest that society has been granting organisations various rights and expecting organisations to assume social responsibility well beyond mere efficiencies. Eweje (2005), Hansen (2006), Gunningham (2008), Sieberhagen *et al.* (2009) and Sutton (2004) also point out the fact that the current social political forces emanating from Governments, Labour, Employers and Society in general have attempted to address the poor safety performance levels and to even drive Organisations into achieving safety performances that benchmark against current international standards.

South African Legislation that provides guidance and protection of the wellbeing of employees is provided by the Mines Health and Safety Act, Act 29 of 1996, Compensation for Injuries and Diseases Act and the Occupational Health and Safety Act, Act 85 of 1993 (Smallwood, 1998). These Acts prescribe the legal compliance with respect to employee participation in occupational health and safety (Eweje, 2005; Sieberhagen *et al.* 2009). In the studies by Parsons (2001) and Zimmerman (2005), they concur that the drive of legislation is to give employees legislated rights to conduct inspections, investigate accidents, participate in educational programs paid for by the Employer, approve all aspects of employer's occupational health and safety programs and stop work because of unsafe or unhealthy conditions.

In the opinion of George *et al.* (2009), Leger (1994), Gunningham (2008), Wood (2008) and Zungu *et al.* (2007), the organisations in South Africa have been challenged to adapt and adopt policies that reduce workplace hazards. Donaldson *et al.* (1997) and Iman *et al.* (2004) have observed that in developing countries, as is the case in the mining sector, the governments have been requested to adopt stringent legislations and regulations to protect the rights of workers. Despite the level of comprehensive legislation, studies undertaken by Eweje (2005) and Sutton (2004) in the South African Mining Industry confirm that the success of any health and safety program is dependent on a number of factors: management's approach, the response of workers to safety measure, the discipline and the strategies employed by government agencies in the enforcement of legislation. The National Union of

Mineworkers (2005) have argued that legislation is failing in the prevention of accidents due to the lack of adequate funding for inspectors to carry out their duties, the lack of training and experience of inspectors.

George *et al.* (2009), Gunningham (2008), Sieberhagen *et al.* (2009), Zimmerman (2005) and Zungu *et al.* (2007) have summed the objectives of the South African Health and Safety legislations as follows:

- To promote a culture of health and safety,
- To provide systems for the participation in health and safety issues by Employees, Employers and the State,
- To provide for the monitoring and inspections, investigations and enquiries so as to improve health and safety,
- To enhance training and development of employees,
- To regulate employee and employer duties to identify hazards and eliminate, control and minimise the risk to health and safety,
- To provide for the enforcement of health and safety,
- To entrench the right to refuse to work in dangerous conditions, and
- To provide for the enforcement of the Health and Safety Acts.

In the studies undertaken by Eweje (2005), Shahieda, Morar, Alexander, Jeebhay and Mohamed (2007) and Zungu *et al.* (2007), they concluded that the reduction of accidents at the workplace requires a combination of measures such as the deliberate efforts by all parties to improve personal relationships, an improvement in the level of literacy by training and education, worker participation in the safety decision making process, an improvement in the level of technology and mechanism at the workplace, and greater enforcement of legislation. In the South African case, Zwetsloot (2004) and Mohamed (2002) observe that the dilemma that the country experiences is that these measures are a necessity that amount to financial costs but, on the other hand the country needs to attract more foreign investments.

The economic objective always comes up in discussions when occupational health and safety issues are debated. Abrams (2006), Daud *et al.* (2010), Ellis (2001), Hall *et al.* (2006), Krausse *et al.* (2005) and Luria and Morag (2012) suggest that it would be fiction to believe that the relationship between management and employees is that of “one big happy family.” The short range views and interests of management and that of employees are not always coinciding. During periods of recession organisations need to focus on cost cutting exercises to survive the economic downturn, thus the expenditure related to occupational health and safety bears the brunt of this exercise. This has been evident in the South African Mining Industry, which has experienced viability problems, thus financial resources allocated to the enhancement of safety issues are scarce (Eweje, 2005).

Zimmerman (2005) suggests that the protection of Public Safety and Health is influenced by legislation that is supported by the current government in power. Expectations from the society are heightened with the result that the ruling party has an obligation to portray a proactive attitude towards the enhancement of safety and health of its voter stakeholders.

2.4. FACTORS INFLUENCING OCCUPATIONAL HEALTH AND SAFETY PARTICIPATION

World-wide studies found that the factors that have influenced the decision making process in the management of occupational health and safety are Legislation, the Enforcement of Legislation, the Employee Representation, the Health and Safety Committees, the Management Systems, the Training and Education, the Employee commitment and competence, the Organisational culture and the Occupational Health and Safety Performance.

2.4.1. Legislation

In the majority of countries, Bedford and Budd (2009), Mylett and Markey (2007), Newcom (1999), Raines (2011), Sieberhagen *et al.* (2009), Tooma (2001) and Zimmerman (2005) note that a key feature of health and safety legislation is that it allows for statutory rights for employee participation in health and safety at the workplace, with the objective that such participation will improve OHS performance at the workplace, contributing positively to the incident prevention program.

Most occupational health and safety legislation requires that organisations undertake a “risk management” approach that identifies training and supervision that is suitable to enable managers to comply with the general duties pertaining to health and safety (Conchie *et al.*, 2006; Due and Madsen, 2008; Epstein, 2012; Eweje, 2005; Jamieson and Westcott, 2001; Mei, 2002; Sieberhagen *et al.*, 2009; Soediono and Kleiner, 2002; Tooma, 2001; Zimmerman, 2005). Amongst these duties is the duty to induct and train employees. The induction process requires that new employees receive training concerning the general arrangement of the workplace such as the location of the clinic, ablution, security procedures, human resources procedures, and other facilities within the organisation. Employees should also be inducted on arrangements for reporting hazards to management. Plant specific induction, that identifies workplace hazards, assessing the risks, associated with these hazards, prioritising and ranking the actions that mitigate these risks, implementing control measures and associated procedures to control, eliminate or minimise the risks is expected to be conducted for the employees.

At this stage of the induction process, the hazards discussed are that of a general plant such as the electrical lockout of machines, machine protective guarding, emergency procedures, working at heights, use of personal protective equipment, evacuation procedures, incident and accident procedure, the general workshop procedures and so forth, finally a task specific induction that entails the daily communication process of highlighting the potential hazards and risks that emanate

from tasks that an employee is going to undertake. This safety awareness and knowledge drive attempts to make the employee observant to the slight changes in the planned control measures due to the work environment that changes daily. In addition the “recap” process forms part of a broader training process that ensures that employees are up to date with any changes in the procedures themselves.

In Epstein’s (2012) and Tooma’s (2001) opinions however, the difficulties faced by legislation is that it has to be broad, as it is difficult to have one set of health and safety legislation that is specific in its application to all organisations with differing organisational structures, manufacturing processes and technology. This weakness is capitalised by employers whose duty is to ensure the safety, health and welfare of employees, as employers manipulate the meaning of legislation so as to ensure minimum compliance. Cates and Anderson (2010) have argued that OHS legislation will not affect the organisational structure and procedural methods; rather it will affect employee training and development, monitoring and controlling effects.

Burkes *et al.*, (2006), Fam *et al.* (2012), and Mylett and Stubbs (2006) have established that in general employees lack the knowledge and training in understanding their rights and obligations as per the health and safety legislation. The results from the survey data depict that the legislation’s objective is the promotion of health and safety at the workplace, the majority of employees are not aware of their role and their responsibilities in ensuring the successful implementation of OHS legislation.

In line with study by Bedford (2011), Cates (2010) and Dunlap (2011) and Jamieson (2001), society expects organisations to assume responsibilities, with Governments being obliged and even pressurised to implement more measures that govern occupational health and safety. This attempt is marred by the continuous loss of lives within the industry, rail, road, water and airways. The constant enactment of new laws still does not bring about the reduction of fatalities and accidents, as this legislation provides the minimum framework for the effective conduct and efficient operations,

where the management ensures the adherence by employees of the internal working procedures, safety standards and policies.

Even though this is the case, studies by Bellamy *et al.* (2008), Eweje (2005) and George *et al.* (2008), have shown that although regulations are comprehensive, the success of any health and safety programme is dependent on a number of other factors such as the management's approach, the employee's attitude to safety measures, the discipline regarding safety and the strategies employed by government agencies in enforcing legislation. The enforcement supposes that organisations do not voluntarily adhere to all of the legislation. This comes at a social, economic and political cost which undeveloped countries cannot afford. Beriha *et al.* (2012), Chen and Chan (2004) and Jin and Courtney (2009) note that fatalities and accidents are tolerated as expendables with the economic motive for survival being the primary objective.

2.4.2. Enforcement of Legislation

The enforcement of legislation is undertaken and the reason is twofold, one by the employees at the work front and the other by the Inspectorate. Researchers Bedford and Budd (2009), Cates and Anderson (2010), Epstein (2012) and Joshi and Gupta (2004) capture that internationally legislation affords employees, from a Unionised Workforce, an opportunity to actively seek change by using the compliance system that is in place, by filing a complaint to the Ministry that has jurisdiction over health and safety issues or similarly pressurising management by mobilising the workforce.

Edwards (2000), Epstein (2012), Eweje (2005) and Gunningham (2008) observe that it is no co-incidence that an Industry such as the Mining Industry is exposed to high levels of Inspectorate enforcements as this industry continues to experience unacceptable levels of fatalities. Bedford *et al.* (2009) perceived that a more focussed enforcement agency, driving enforcements through substantial higher fines, will act as a deterrent to accident prone organisations. This type of participation, is achieved by

enforcing organisations to conform, and tends to be a short term solution as organisations tend to do the basic minimum to comply with legislation. The process tends to be driven by legislation and does not allow organisations to take responsibility for their social obligation by ensuring the wellbeing of all stakeholders within the workplace (Sieberhagen *et al.*, 2009). Eweje (2005) states that the prescriptive Health and Safety Acts are manipulated by organisations in board rooms as conformance becomes the ultimate objective, with the prevention of injuries, accidents and fatalities at workplace taking a back seat.

Furthermore the enforcement of such legislation is made difficult as it is not possible to continuously have an inspectorate representative at every workplace. It is more feasible and practical to involve employees in the health and safety matters at the workplace (Gevers, 1983; Epstein, 2012).

2.4.3. Employee Representation

Cabrera (2007) defines indirect participation, as a process in which small groups of employees participate in organisational decision making, examples being the Trade Union Representation and Work Councils, and direct participation, being the extent to which management consults and shares information. Researchers Chen and Chan (2004), Dundon and Gollan (2007) and Frost (2000) highlight that the participation processes at the workplace affords a significant degree of decision making power to employees when they deal with their managers.

Buske *et al.* (2010), Dell' Aringa (2011), Jeung (2011), Juniper (2011), Kaufman (2011), Muthuveloo *et al.* (2012), Raines (2011) and Tsuyoshi *et al.* (2011) refer to the process of employee participation as a process that allows Trade Unions and Work Councils to exert influence over the decisions that affect the work and the work environment.

The role of Trade Unions is further reinforced as the studies by Fairbrother (1996), Chen and Chan (2004) and Frost (2000) conclude that trade unions improve OHS by enforcing the legislation within the operational front, as the government and its agencies did not invest sufficient resources for inspection and auditing for legal compliance. In addition, resolution of OHS challenges requires negotiations and interpretations of specific workplace circumstances rather than a “black and white” legal approach. Trade unions also provide employees with a collective voice that allows employees who are otherwise unable to express their needs to contribute to the OHS agenda. Moreover, they provide a counterbalancing voice that expresses the needs of employees relative to the competing concerns of management around profit, output and productivity (especially at the short term levels of line and operational management rather than at the strategic level). The provision of training and information forms part of the changing power balance between employees and management.

Gollan (2006), Hasle *et al.* (2006) Haynes *et al.* (2006), Kaufman (2011), Muthuveloo *et al.* (2012), warn that the pressure of a unionised workforce on the employer cannot be ignored. The relationship between Labour by way of Unions and the Government has introduced new dynamics on how organisations maintain their relationship with their workforce. The drive of the human resources legislature is to ensure that a formal contract, depicting the relationship and conduct between the parties, in this instance between the employer and union representation, is jointly agreed upon and acknowledged by the signing of such agreements. These contracts normally stipulate the detail required by S.H.E. institutions, the implementation of management systems and the management of the working relationship between the management and employee representatives. Liu (2011), Mylett and Stubbs (2006), Nichols *et al.* (2007) and Scheuer (2007) have highlighted that these safety agreements have become legally binding and force organisations to communicate about occupational health and safety performance.

2.4.4. Safety Committees

Legislation worldwide is very prescriptive as to the establishment of health and safety committees or work councils in the workplace and the roles, duties and responsibilities of the health and safety representatives. Most OHS legislation promotes the democratic election of health and safety representatives by the workforce. Normally these elected employees are responsible to raise the health and safety concerns. Studies by Creighton (1982), Eaton and Nocerino (2000), Franca (2011) and Reilly, Paci and Holl (1995), have reported that joint health and safety committees, with employee representatives appointed by unions, including joint committees in which unions did not participate in the selection of employee representatives, has led to the reduction of workplace injuries relative to those achieved in workplaces in which management alone determines the health and safety policy.

The arguments of Brewster (2007), Dixon *et al.* (2009), Eaton and Nocerino (2000), Franca (2011), Hovden *et al.* (2008), O'Grady (2000), Sorenco *et al.* (2009) and Walters *et al.* (2005) highlight that the global trend in employee participation is enhanced by utilising Health and Safety Representatives. Some of the functions of these participants are:

- To review the health and safety measures,
- To identify potential hazards and potential major incidents at the workplace,
- In collaboration with the Employer, to examine the causes of the incidents at the workplace,
- To investigate complaints by any employee relating to the health or safety of that employee,
- To make representations to the employer or a health and safety committee on all matters of health and safety at a workplace or where such representations are unsuccessful, to an Inspector,
- To inspect the workplace, including any article, substance, plant machinery or equipment at the workplace with a view to the health and safety of employees,

- To participate in consultations with Inspectors at the workplace and accompany inspectors during their inspections,
- In the capacity as a Health and Safety Representative, attend meetings of the Health and Safety Committee of which he/she is a member, in connection with health and safety matters,
- To visit the site of an incident at all reasonable times and attend any inspection in loco,
- To attend to any investigation or formal inquiry held in terms of the countries legislature,
- In so far as reasonably necessary for performing his/her functions, to inspect any document which the Employer has to keep as per the OHS Legislation,
- With the approval of the Employer to be accompanied by a Technical Adviser on an inspection, and
- To participate in internal health and safety audits.

2.4.5. Management Systems

Ball, Willcock and Aung (2009), Goetzel, Ozminkowski, Bowen and Tabrizi (2008), Hohnen and Hasle (2011), Kaila (2012), Keating, Fernandez, Jacobs and Kauffmann (2001), Kristensen (2011), Machles *et al.* (2010), Rocha (2010) and Zanko and Dawson (2011) have noted that an effective occupational health and safety management system forms the basis of Worker and Management participation to guide organisational performance, by allowing transparency of information, translating transgressions into concrete actions, allowing employees to think and behave differently, and allow management to track progress of safety initiatives.

Globally and within South Africa, the management systems such as Du Pont, NOSA (National Occupational Safety Association), ASPASA (Association for the Stone Products and Aggregates of South Africa), SARMA (South African Ready-Mix Association of South Africa), OHSAS 18001, OHSA's Voluntary Protection Programs (VPP), American Institute of Chemical Engineer's Centre for Chemical Process

Safety, ISO 9000- and ISO 14000 series, form the basis of the tools to manage safety. These systems have assisted organisations in the reporting to all stakeholders of the overall OHS performance within the overall business strategy. In addition these management systems have the potential of reducing costs and increasing profit margins, measuring occupational health and safety performance, increasing competitiveness, facilitating the return to work of injured person, improving employee and public relations, increasing regulatory compliance, reducing incident and injury frequency rates and reducing damage to equipment, inventory, or product losses and the generation of unwanted hazardous waste (Bellamy, 2008; Hansen, 2006; Hohnen and Hasle, 2011; Kaila, 2006).

In the end, the philosophy of garbage in and garbage out, should be avoided at all costs as the important thing is to ensure that the output from the management system shows that the organisation is performing extremely well, yet incidents and injuries are sustained by employees. Ideally organisations should endeavour to have one management system that integrates the safety, health, environmental and quality functions of the business (Hansen, 1994a, 1994b; Hohnen and Hasle, 2006).

Too often organisations have a multitude of systems managing each of the functions of safety, health, environment and quality in their own silos respectively. Organisations need to abandon the separate systems as these functions are integrated and as such the management systems must accommodate this feature. The danger of the “silo” culture lies in the duplication of processes caused by managing separate management systems to accommodate the various aspects of health, safety, quality and the environment. The implementation and improvements in a safety and health management system may have a significant payoff in the form of fewer accidents, the reduction in injury and fewer illness related losses (Hansen, 2006).

Researchers Dyreborg (2011), Fullan (2001), Geller (2008) and Kellowat *et al.* (2006) suggest that the manager will require an effective understanding of the management

systems in places such control hazards and reduce exposure to employees. The workplace setting must be conducive and allow employees the freedom to report any safety concern, such as near misses, when that employees know that they are free from any punitive measures. Kristensen (2011), Rocha (2010) and Spath (2004) identify pro-active employee participation as the process of reporting and investigating near-miss incidents, allowing management the opportunity to prevent a recurrence of the incident and reduce the risk exposure of potential identifiable hazards.

2.4.6. Training

Research into the effectiveness of worker participation has resulted in mixed findings. There is however, agreement amongst a few researchers like Coyle and Leopold (1981), Eaton and Nocerino (2000), Fam, Nikoomaram and Soltanian (2012), Hall *et al.* (2006), O' Grady (2000) and Werhane *et al.* (2004), that there is a relationship between training and the safety committee representative's knowledge on injury rates and the perceived committee effectiveness. Burkes *et al.* (2006) and Mylett and Stubbs (2006) state that employee education and awareness-raising in respect of occupational health and safety matters are key to managing safety, health and the welfare at the workplace.

In Tucker's (1995) opinion, having knowledge is one thing; but acting on the knowledge to improve health and safety is more significant. Reviews into OHS training and other study has pointed to several other strategies that are more effective. These include a range of structured and less structured training programs, with the opportunity of regular reinforcement in areas relevant to the daily work and experiences of employees. Researchers Burkes *et al.* 2006; Mylett and Stubbs (2006), Fam, Nikoomaram and Soltanian (2012) and Werhane, Radon and Bowie (2004) observe that these methods necessitate additional resources, the time and commitment from all levels of management, and the understanding by employees of

their rights and obligations in receiving such training in occupational health and safety.

Burkes, Sarpy, Smith-Crowe, Chan-Serafin, O' Salvador and Islam (2006) concluded from several narrative reviews that most training interventions lead to positive effects on safety knowledge, the adoption of safe behaviours , practices, most importantly safe and healthy outcomes. They mention that the lectures as a form of training, is the least engaging method of health and safety training is usually a common method of training at most workplaces. In addition other passive techniques are videos, pamphlets, and other forms of written communication (Ford and Fisher, 1994). The researchers recommend that the most engaging method of health and safety training is training that is focussed on the development of knowledge in stages and behavioural modelling, which entails observing a role model or practice, hands on demonstration and feedback designed to modify employee behaviour.

Kurtz *et al.* (1997) and Burkes *et al.* (2006) have captured that the effectiveness of OHS training is enhanced by two cognitive approaches that highlight the concept that the learning process is more than knowledge transfer. These approaches are based on the belief that the trainee is capable of performing the exercises that he or she is learning, namely the trainee's belief in self-efficacy and the belief that the behaviour will lead to a particular desired outcome. In addition the knowledge gained from other interventions such as the collective participation of unions in assisting employees in health and safety matters, the involvement of all stakeholders in identifying hazards and performing risk assessments, the participation of unions in accident and incident investigations, the joint inspections and audits that assess the compliance of the mitigating actions emanating from the risk assessments, enhance the training initiatives. Moreover the compliance of the employees to such systems and the effectiveness of such mitigating actions lead to positive OHS outcomes.

Fam *et al.* (2012) warns that this participation process of training and gaining knowledge, so as to acquire the ability to identify hazards and to undertake risk

analysis in joint committees, requires more resources such as time, trainers and capital. These are limited resources and the process of gaining a joint decision on a health and safety matters expends these resources to the detriment of the good faith consultative approach. Normally these strategies are unlikely to be achieved without the allocation of additional resources (Walters, 1998). The solution for overcoming the expenditure of valuable resources is by establishing a safety representative and having these representatives participate in joint management and union health and safety committees.

2.4.7. Employee commitment and competence

Furthermore Cooper (2001), De Santis (2008), Milgate *et al.*, (2002) and Raines (2011) argue that improvements at the workplace can only be achieved with full cooperation and commitment from employees, whereby employees are involved and engaged in providing input into changes to activities linked to their workplace. Raines (2011) and Mutheveloo *et al.* (2012) highlighted that successful organisations involve and engage employees at all levels in the different functions to have an opportunity in having a say to the changes at the workplace.

The view of Clarke and Ward (2006) is that occupational health and safety has a direct impact on all levels of the Organisation and every person on the Organisation's site is exposed to hazards, however not at the same levels. Daud *et al.* (2011), Dunlap (2011) and Luria and Morag (2012) make a distinction between Management and Workers, however to a lesser extent as all internal stakeholders need to take ownership and show commitment to improving OHS performance.

Studies on OHS participation (Brogger, 2010; Dell' Aringa, 2011; Groover *et al.*, 2012; Krausse and Weekley, 2005; Mylett and Markey, 2007; Raines, 2011) have focussed on employee commitment as a group, whilst other studies by Abrams (2006), Brewster *et al.* (2007), Clarke and Ward (2006), Dyreborg (2011), Hall *et al.*

(2006) and Jirjahn and Smith (2009) have differentiated employees into groups of employees who participate in OHS decisions.

Hall, Forrest, Sears and Carlan (2006), have identified different approaches to Occupational Health and Safety Representation with differing degrees of effectiveness. They classified the effectiveness of the participation relative to the Union Health and Safety Representatives' ability, commitment and willingness into three categories:

The most effective group (Knowledge Activism) were individuals who collected and applied their knowledge of legal, technical and medical tools autonomously. These individuals had control over their knowledge in OHS matters that amounted to the primary reason for their success. Similar views of Brewster *et al.* (2008), Coyle and Leopold (1981), Hall *et al.* (2006) and Luria and Morag (2012) suggest that their competence was their ability to identify and document hazards, request expert assistance and study medical and scientific sources to supplement their knowledge and problem solving needs. Their ability was supplemented by their capacity to contest through persuasion and argumentation.

The middle of the range group (Political Activism) among the Unionised workforce were those employees that were prepared to actively seek change by using the compliance system in place, for example by filing a complaint to the Ministry having jurisdiction over health and safety issues or pressurising Management by mobilising the workforce. This grouping tended to identify problems that went beyond the routine and included many that contested important aspects of Management Policy or norms of the production system more generally (Creighton, 1982; Dixon *et al.*, 2009; Dunlap, 2011; Groover and Spigener, 2008; Hall *et al.*, 2006).

The least effective group (Technical Legal) was those that accepted the Company and Government standards, guidelines and assessments without contesting them. Eaton and Nocerino (2000), Franca (2011), Gollan (2006), Olson (2009), Steinbrunn

(1988) and Walters *et al.* (2005) have identified this group, “Blue Collar Workers”, as those that relied on established rules and procedures for identifying and correcting hazards.

Dunlap (2011) and Dyreborg (2011) highlight that the role of management in safety leadership is ever changing, as pressures to improve the safety performance within organisations are becoming more evident. The future will require more than just refining current procedures, practices and norms. It will mean defining a new approach to commitment in occupational health and safety that accounts for the leader’s role in reducing exposure and in creating a climate and culture which is conducive to safety (Krause and Weekley, 2005). Zohar (2002) states that the manager who is committed to safety has a greater chance of encouraging employees in the participation of safety initiatives that drive the reduction and the elimination of exposure to hazards and risks at the workplace.

2.4.8. Organisational Culture

Cooper (2001), De Santis, Chadwick-Jones, Hudson, Lawrie, Shelton and van Bergen (2008), Hudson (2001) and Kaila (2008) argue that safety culture has a dominant role in enhancing the occupational health and safety performance within organisations. A strong safety culture per se is not enough to deliver an outstanding performance, but needs to be in place to underpin the safety process, the management systems and engineering (De Santis *et al.*, 2008). Cooper (2001) highlights that no matter how robust a management system and the most up to date engineering practices are established within organisations, a weak health and safety culture can still be evident through the actions or omissions of employees. Governmental agencies, academic research and high risk Industry have all identified safety culture as one of the driving forces to improving safety performance at the workplace (Galang, 1999; Hudson, 2001; Krumwiede *et al.*, 2012; Zohar, 2002).

An example of measuring employees attitudes towards safety taking into account the safety climate, that results in a safety culture is illustrated by a practical illustration of

the electrical lockout procedure (Cooper, 2001; Zohar, 2002). This is a procedure that most workmen understand, acknowledging the significance of such a procedure that mitigates electrical risks. However, this procedure is influenced by the safety climate. During periods of unplanned plant outages there is a tendency by some employees of deviating slightly from following such a procedure. Clearly, it is important to note that it is the situation where there is pressure for production to bring the plant back into operation and that the production climate seeing as how the production line has stopped on an unplanned basis, influences the employee's behaviour in undertaking and ensuring the safety lockout. Geller (2008) further reinforces that the mix of the employee's attitude and safety climate results in the organisations safety culture.

The safety culture is a concept that has attracted much attention across many Industries (Clarke, 2000; Carrillio, 2010). In the literature review of the safety culture in Britain, Clarke (2000) suggests that the employee's perception of safety, the Managements value of safety and production, the attitude of the employee towards safety procedures, the mutual understanding and trust between Management and employees, and Management's attitude to condoning deviations are all significant ingredients of the safety culture. Furthermore Clark (2000) points out that much of the literature suggest that safety attitude and safety climate is related to employee participation which influences the organisation's health and safety performance.

Researchers highlight that in the future the challenges facing safety culture in organisations are:

Globally, the trend is to outsource the operational function, resulting in the employment of short term employees, temporary employees, or part-time workers and contractors. This move from the employment of permanent staff compliment to shorter term employees has an adverse effect on the safety culture of manufacturing organisations (Clarke, 2000). Arezes and Miguel (2003), Beriha *et al.* (2012) and Clarke (2000) recommend for further empirical studies into safety attitudes and behaviours of workers with different types of employment contracts.

There is the need for research to focus on more than one supplier operating within an industry as there is an inter-dependence between companies in an industry. Clarke (2000) mentions that within an industry, various companies with different safety value systems participate in various operational functions, thus making the management of a safety culture problematic.

Organisations are increasingly operating on a global level, with the result that the head office of a multinational company shares different cultural values in comparison with the local organisations. Eweje (2005) and Clarke (2000) have added that there exists significant differences in workers' interpretations of a corporation-wide safety policy, based on the collectivist culture such as Japan and Argentina, versus the more individualistic culture of France and USA. More research is necessary to understand the impact of health and safety culture and worker participation.

Carrillio (2010) also hypothesizes that the nature of culture is both to be stable and easily adapted. Groups of employees often want to hold on to their cultural assumptions because culture provides meaning and makes life more predictable. Any sweeping changes create ambiguity, which employees tend to avoid. Utilising existing assumptions to create change reduces resistance amongst leaders and workers. It is more difficult to encourage a participative approach in a hierarchical context, relating to command and control culture. Beriha (2012) and Eweje (2005) add that these implications take on a greater dimension in multinational environments.

Notwithstanding the views of Bogger (2010), Busck *et al.* (2010), Cabrera (2007), Dell' Aringa (2011), Gunningham (2008) and Jeung (2011), the safety culture and the employee participation process go hand in hand with the amount of resources that the organisation is willing to contribute in encouraging and sustaining worker participation. The safety culture is displayed by management by providing resources such as the availability of information and time that is dedicated and allocated for safety representatives to inspect the workplace, affording employees the opportunity

to learn methods for problem solving. Hazard identifications and risk assessments, and management processes that allow for quick feedback, and open and honest dialogue free from any victimisation, all contribute and enhance the employee participatory process. Perry (2010) highlighted that the participative process is enhanced by these factors, thus allowing employees the opportunity to assume more responsibility for health and safety issues. Other forms of innovative participative measures have been suggestion schemes and near miss reporting competitions. The successful outcome of these schemes is the heightened awareness towards health and safety issues thus having a positive impact on accident prevention and reduction programs (Akpan, 2011; Beriha, 2011; Cohen, 1997). In addition organisations have instituted positive reinforcement in the form of incentives that encourage this good behaviour in relating to safety, such as a reward to employees who have made suggestions that have contributed to improving or making the workplace healthier and safer.

2.4.9. Performance

Akpan (2011), Beriha (2011) and Milgates, Innes and O'Loughlin (2002) have pointed out that despite the drive by occupational health and safety legislation towards employee participation in managing health and safety at the workplace, little is known about the effectiveness of the strategies utilised by organisations to involve employees in health and safety issues influencing OHS performance. According to Gunningham (2008), Lockwood (1997) and Raines (2011), there exists a direct correlation between employee participation and the amount of involvement that employees are exposed to in the workplace processes and activities.

Grawitch *et al.* (2006), Arezes and Miguel (2003), Cole (2007), Dyreborg (2011) and FAM (2012) comment that employees behave in a manner that determines how they are measured. Examples of OHS performance indicators are the number of fatalities, the number of accidents causing loss in working time, the days lost due to accidents, the number of cases of occupational diseases, absenteeism rate and so forth. Iqbal

et al. (2010), Jin and Courtney (2009) and Nunez (2009) observed that all or most of the OHS performance indicators in Organisations have a negative connotation and suggest failure. This sometimes makes the understanding of these indicators by employees difficult, as most of the other functional organisational performance indicators are positive in nature. If Managers were asked how they measured their Companies' performance, they would probably mention several economic indicators which would be generally positive in nature, reflecting achievement, rather than negativity, which reflects failure (Arezes and Miguel, 2003). Even though this is the case, there are organisations that report on the number of fines, disciplines or penalties issued for non-compliance relating to safety.

Iqbal *et al.* (2010), Mohammed (2002), Nag and Nag (2004), Quellette *et al.* (2007), Spath (2004), Sutton (2004) and Xiaorong *et al.* (2011) also suggest the notion that when these negative OHS performance indicators are measured and depict that no fatalities or accidents have occurred, there is no guarantee that all hazards have been identified and risks mitigated. This could lead to other severe accidents, fatalities or even an occupational disease. This has been the case with Organisations that experienced a low probability of accidents, however major hazards are present (Arezes and Miguel, 2003; Zungu and Setswe, 2007; Zwetsloot, 2004). In these Organisations, historical trends of Occupational Health and Safety indicators can be deceptive in establishing the Organisation's OHS performance. The outcome of these statistics has the potential of leading to complacency within the workforce exposing the Organisation to major hazards, or leading to serious accidents and even fatalities.

Akpan (2011), Beriha (2011), Detert *et al.* (2009) and Dyreborg (2011) have debated as to which indicators an organisation should utilise in measuring occupational health and safety performance. It is advisable to have a variety of information, which measures the traditional lagging indicators and also positive outcomes such as the most number of suggestions received, the trends showing the commitment of employees, training hours per employee and so forth. Other positive leading measures that have been suggested are measuring the safety culture, the safety

climate, the training and competence, job security, production pressure, communication, the perceptions in employee involvement in health and safety programs, the reporting of near-misses and incidents, the merits of the OHS procedures, instructions and rules, rule breaking and workforce view of the state of safety culture (Arezes and Miguel, 2003; Davies *et al.*, 1999).

According to Byrne (2011), Busck *et al.* (2010), De Santis (2008), and Muthuveloo *et al.* (2012), a significant contributor to injuries and accidents experienced by workers within organisations results from aspects of social life that is external to the workplace environment. Mylett and Markey (2007) and Olson (2009) warn that it will be artificial to identify organisational OHS performance in isolation from the employee's life outside the workplace. The employee's social environment exposes the employee to the spread of HIV, the employment of single mothers in the workplace, the participation in sporting activities, alcoholism, the dependency on drugs, the non-availability of Public transport to and from work, the communal shelters, and the provisions of basic amenities such as water, ablution facilities, electricity and other societal vices such as gambling. These externalities are the reality in third world countries and influence the employee productivity levels. There is an inter-constitutive relation between occupational health and well-being. Mylett and Markey (2007), Olson (2009) and Perry (2010) comment that a person's wellness or illness in one sphere of life has implications for their resilience and coping in other spheres of life.

Chan (2001), Clarkes and Ward (2005), Cooper (2001), Dorman (2000), Guadalupe (2003), Heaney (2007), Jin and Courtney (2010) and Kristensen (2011) stress that the impact of the external forces of the economic environment on both the organisational and employee's OHS performance during periods of economic boom and recession cannot be over emphasised. During recessionary cycles, the rising interest rates affect the employee's ability to repay debt, also influencing the rising cost of basic needs and other direct costs such as transport and educational fees. These salient monetary features worry employees at work, resulting in a lack of concentration which has a detrimental effect on the employee's health and safety at

the workplace. On the other hand, periods of boom bring about expansions and a higher level of labour movement, resulting in new entrants into the organisation's workforce. These employees are employed on the basis that they have to perform at a satisfactory level to become permanent employees. Nag and Nag (2004) and Nunez and Villanueva (2011) warn that this pressure tends to cause unnecessary stress for these employees who lose concentration on their immediate tasks and are exposed to potential injuries.

There has been a greater need to disclose occupational health and safety performance statistics. Some scholars have argued that Corporations have an obligation to disclose relevant information on health and safety issues. The right of employees to be informed about health and safety hazards in the workplace is a major issue in Occupational Health Policy, especially in developing countries (Eweje, 2005).

Alverson (2011), Coyle (1981), Creighton (1982), Eaton and Nocerino (2000), Franca (2011), Hovden *et al.* (2008), James and Walters (2002), Lewchuk *et al.* (1996), Mylett and Markey (2002), and O' Toole (1999) describe the need to increase the involvement of employees in improving safety performance. A cost effective contribution to improving safety performance at the workplace is the use of employees as Health and Safety Representatives (Walters, 1996(b); Walters, 1999; Walters *et al.*, 2005). Some factors that are significant in determining the effectiveness of Health and Safety Representatives are:

- The election of the health and safety representative is undertaken democratically, such that the elected employee is credible in the eyes of the workforce (Mylett and Markey, 2002; Walters *et al.*, 2005).
- The support that is concerned with the appointments as a result of legislation and collective agreements between employers and the trade unions at the local, national and industry levels (Epstein, 2012; Franca, 2011; Walters, 1996).

- The availability and commitment of employees to go on training in safety inspections, incident and accident investigations, hazard identifications and risk assessments (Burkes *et al.*, 2006; Fam *et al.*, 2012).
- The commitment from the employers to support the process by affording the representatives time and other resources to ensure that the functioning is not jeopardised (Dyreborg, 2011).

Dyreborg (2011) mentions that all employees need to protect the assets of the organisation by caring for the wellbeing of the fellow workers. Although it is difficult to claim that improved safety results will lead to a better company performance and profitability, it is imminently clear that these factors above can easily be associated with world class safety performances (Beriha *et al.*, 2011).

2.4.10. The identified gaps in the literature

Akpan (2011), Beriha *et al.* (2011), Guadalupe *et al.* (2003), Iqbal *et al.* (2010), Krause and Weekley, (2005) observe that many organisations have reduced recordable injuries; yet continue to have serious injuries and even fatalities. These organisations still record low injury frequency rates. This is an issue that is being debated continuously across all levels within organisations. The authors Beriha *et al.* (2012), Brecker (2012), Cooper (2001), Eweje (2005), Geldart (2010), Glenn (2012) and Hasle (2006) note that the continuous improvement of health and safety initiatives is not just an ethically desirable activity; it is also a driver for improved organisational effectiveness and support for all stakeholders.

Globally there is a need for study into occupational health and safety (OHS), and importantly, study into employee participation that is utilised to manage OHS (Epstein, 2012; Walters, 2002). South Africa is no exception as there is the need for study into utilising employee participation in the management of health and safety within the Manufacturing and Mining Industries, as these industries continue to experience unacceptable levels of fatalities and serious injuries (Brogger, 2010;

Bryne, 2011; Budd *et al.*, 2011; English *et al.*, 2006; Eweje, 2005; Gunningham, 2008; Marin-Garcia *et al.*, 2008; Muthuveloo *et al.*, 2012; Raines, 2011).

Research and case studies by Mylett and Markey (2007), Raines (2011) and Spath (2005) into employee participation in occupational health and safety have shown that worker participation has impacted positively in the workplace productivity. In addition research undertaken by Eaton and Nocerino (2000), Milgate, Innes and O'Loughlin, (2002), O' Grady (2000) and Shearn (2005) into understanding the effectiveness of worker participation in health and safety decision-making has highlighted various structural determinants such as the ability of the Safety Representatives and Health and Safety committees, the enforcement of occupational legislation by the enforcement inspectorates, the workplace standards and procedures, and joint committees of Unions, Employees and Management that have promoted worker participation (Brewster *et al.*, 2007; Dixon *et al.*, 2009; Dundon *et al.*, 2007; Franca, 2011; Gollan, 2006; Hasle *et al.*, 2004; Haynes *et al.*, 2005; Hovden *et al.*, 2008; Liu, 2011; Nichols *et al.*, 2007; Scheuer, 2007; Sorengo *et al.*, 2009; Taska, 2010; Walters *et al.*, 2005).

On the other hand, Haynes *et al.* (2005), O' Grady (2000), Sass (1996) and Storey and Tucker (2006), have found that these structural determinants have been identified as being unreliable in promoting worker participation. The poor workplace standards and procedures, the non-enforcement of the Occupational Health and Safety Act, the declining number of Union members, the reduction of employee power base and the limited worker training has impacted negatively on employee participation.

Considering the views of Ball *et al.* (2009), Bellamy *et al.* (2008), George *et al.* (2009), Goetzel *et al.* (2008), Hansen (2006), Hohnen *et al.* (2011), Kaila (2012), Rocha (2010), Spath (2004), Weibert *et al.* (2006) and Zanko *et al.* (2011), there is a need for study to be conducted to test the effectiveness of the employee participation in the management of health and safety activities that are related to the decision making

processes within S.H.E. Committees. In injury and damage prevention investigations, in the maintenance programs in managing the physical assets, in the problem solving process in continuous improvement forums, within the plant OHS management reviews, hazard identification and risk assessment committees, and action planning and within the review forums of OHS objectives.

Despite the copious amount of research into employee participation, Budd *et al.* (2011), Cabrera (2007), Marchington *et al.* (2005) and Jeung (2011) state that confusion still exists in relation to the conceptual definition of participation. Most OHS scholars do agree that participation is a process of joint decision making, but the fact needs to be determined as to how much of employee involvement will qualify the process as employee participation. Marchington and Wilkinson (2005) categorise participation into direct participation, upward problem solving or representative participation. Budd *et al.* (2010) observes that these participative approaches involve direct or individual focus between employees and the direct Supervisors and Managers. A gap exists when defining the approaches into employee participation that are based on the degree of control over the decision making process, when employees are undertaking occupational health and safety activities.

Biaga (2002), Brogger (2010), De Santis *et al.* (2008), Franca (2011), Groover *et al.* (2008), Kato *et al.* (2005) and Muthuveloo *et al.* (2012) and Sieberhagen *et al.* (2011) have studied and investigated employee participation holistically. A gap exists in the application of an appropriate participative approach in the intervention of health and safety matters. This study aims to close this gap and proposes four forms of participation, Employee Directed Participation, Employee Involvement, Employee Proactive Participation and Employee Ownership. This necessitates the differentiation in the approaches that are applied in employee participation, when employees communicate with internal and external stakeholder groups to accomplish organisational goals, when making active attempts to influence organisational goals, when thinking laterally and involving all stakeholders, additionally when trying out new

ideas to mitigate OHS risks and when focusing on objectives that aim to maintain a zero harm culture.

Simplistically, the approaches are that on the one extreme, employees can be directed to perform occupational health and safety activities, with little or no input from employees, and on the other extreme, to assume full responsibility and to champion the health and safety activities at work. The participation type is based of how much control the employee has over the activity that is being performed; the manner in which information relating to OHS matters is shared and communicated between stakeholders, and the process that encourages employees to assume responsibility to champion the OHS activities within the operational sites (*Budd et al.*, 2011; *Cabrera*, 2007; *Dietz et al.*, 2009; *Hall et al.*, 2006; *Marchington and Wilkinson*, 2005; *Eaton and Nocerino*, 2000; *Milgate, Innes and O’Loughlin*, 2002).

According to studies undertaken by *Busbin and Campbell* (1999), some employees, particularly “Blue Collar” hourly paid employees, are choosing not to partake in employee wellness services. The studies by *Eaton and Voss* (1994), *Hall* (1999), *Kochan et al.* (1977), *Lewchuk, Robb and Walters* (1996), *Milgate, Innes and O’Loughlin* (2002) and *Shearn* (2004) have pointed to the knowledge and militancy of shop floor workers, the quality of Union Representation, the Management’s attitude and knowledge, Government intervention and Legislation as contributing factors that have affected employee participation negatively. The various employee groups within organisations may vary in their perception of health and safety performance and this gap will be addressed by differentiating between the employee groups at the operational frontline.

Few studies have addressed the impact of employee’s input into health and safety prevention programs with the view that employees working at the heart of the operations are more at risk to health and safety hazards (*Chen and Chan*, 2003). In this study the sample groups are differentiated into employee categories who are directly involved with the manufacturing operations. These employees are sampled

into groups, namely blue collar employees (Hall *et al.*, 2006), Safety Health and environmental practitioners (Abrams, 2006; Daud *et al.*, 2010; Groover *et al.*, 2008), first line supervisors, engineering technicians and engineers (Clarke, 2000; Dunlap, 2011; Geller, 2008). This differentiation allows the researcher in this study to establish the level of participation between the groups of employees and the effectiveness between these groups.

Furthermore the researcher defines the target groups, namely Safety Health and Environmental Practitioners (Daud *et al.*, 2010; Groover *et al.*, 2008), first line supervisors, engineering technicians and engineers (Clarke, 2000; Dunlap, 2011; Geller, 2008), as the group termed management, whilst blue collar employees are referred to as “Workers” (Walters, 1995). It is the opinion of Clarke *et al.* (2006), Dyreborg (2011), Geller (2008) and Jirjahn and Smith (2006) that managers and blue collar workers have a natural desire to ensure legal compliance and go beyond their normal call of duty to ensure that the objective of no harm is of primary importance at the operational front. Bohle and Quinlan (2000), Krause and Weekley, (2005) and Luria and Morag (2012) point out that this means that the management of occupational health and safety is only a technical matter. This has led to inconsistent results from studies into participation, as managers and blue collar workers are both grouped together as “employees” and the difference in their perceptions as to the responsibility and accountability for health and safety matters at the workplace.

Innes, Milgate and O’ Loughlin (2002), Mason (2007), Petrick and Rinefort (2004) and Zohar (2002) note that this is flawed as there is definitely a power imbalance as Managers have greater control over the means of production. Mylett and Markey (2007) cite that the occupational health and safety of Managers is no less significant than Blue Collar Workers. The distinction between participation between Managers and Workers may be useful, and seeing as employee participation is concerned with the degree to which workers can erode the managerial prerogative. In this management process the distinction between the groups Management and Blue

Collar Workers will enhance the understanding into the appropriate approach in engaging employees to achieve the overall objective of zero harm.

According to Coyle (1989), Creighton (1982), Dixon *et al.* (2009) and Franca (2011) there exists the presence of management hierarchical structures and the Safety Representatives of the Organisation at participative forums, such as the health and safety committee meetings. These organisational structures provide unbalanced ingredients of control, responsibility and accountability (Mylett and Markey, 2007). The higher hierarchical personnel within these meetings tend to dominate the decisions, thus causing the consultative process to malfunction. These dynamics are the reality and make the objective of employee participation difficult to enforce. In addition the employee that constantly complains about health and safety issues can be construed as being negative and pessimistic (Biggins, 1987; Brooks, 1987; Creighton, 1982; Franca, 2011; Glennon, 1987; Hovden *et al.*, 2008; James and Walters, 2002; Johnson, 1999; Kleiner and Lee, 1997; Lewchuk *et al.*, 1996; Milgate, 2002; Mylett and Stubbs, 2006; O' Grady, 2000; Sorenco *et al.*, 2009; Walters *et al.*, 2005).

Bedfort (2009), Cates (2010), Epstein (2012) and Jamieson and Westcott (2001) have argued that legislation pertaining to health and safety, whether mandatory or voluntary, on its own, cannot ensure that the objectives underlying the legislation are attained by employer adherence. Employers strive for minimum compliance. Furthermore the enforcement of such legislation is made difficult as it is not possible to have an inspectorate representative at every workplace continuously. It is more feasible to involve employees in the health and safety matters at the workplace (Gevers, 1983; Epstein, 2012). This study aims to investigate employee participation as a tool to improving safety performance, whilst adhering to legislation rather than just minimum compliance as the organisation's overall goal (Akpan, 2011; Beirne, 2008; Gunningham, 2008; Jeng, 2011; Juniper, 2012; Marchington *et al.*, 2005; Meldrum *et al.*, 2009; Soehod, 2008; Walters and Nichols, 2007).

Raines (2011) mentions that fewer studies have examined the impact of employee engagement on OHS performance. In a study by Bolger (2004), into employee involvement within the Connecticut Light and Power (CL&P) in the U.S.A. by utilizing cross functional teams to solve and address OHS issues. CL&P attained a 27% reduction in loss time injuries and a 34% reduction in vehicle accidents, due to increased involvement and improved relationship across the organisation. In another study by Arezes *et al.* (2003), organisations that involved their employees reported a 70% reduction in days lost due to injuries. These examples do not conclusively demonstrate a strict cause and effect relationship between employee engagement and OHS performance (Raines, 2011). This study will examine this gap, to understand the impact of employee engagement on occupational health and safety performance within the operational climate.

2.4.11. The Research Hypotheses

From the literature review and study gaps, the following hypotheses have been identified:

Hypothesis 1:

H0: There is no relationship between the participation types; namely Employee Directed Participation, Employee Involvement, Employee Pro-active Participation and Employee Ownership; and the decision-making process in managing occupational health and safety.

There is overwhelming evidence from study undertaken by Brewster *et al.* (2007), Coyle *et al.* (1981), Creighton (1983), Eaton *et al.* (2000), Franca (2011), Hovden *et al.* (2008), Kleiner *et al.* (1997), O' Toole (1999), Walters (1998) and Weil (1999) into employee participation that supports the view that increasing employee participation will influence the OHS performance of an organisation positively. This relationship has triggered various interventions that have on the one hand encouraged

organisations, by means of legislation, to institute mechanisms that involve employees in OHS activities, whilst on the other hand, allowing organisations to voluntarily implement OHS institutions and forums to facilitate the process of participation.

In the majority of countries, organisations have embarked on OHS participation by instituting Safety, Health and Environmental Committees (S.H.E. Committees), with the expectations that this intervention will improve their occupational health and safety performance. In line with this view the Researcher investigates the following hypothesis:

Hypothesis 2

H0: There is no relationship between the participation in S.H.E. committees and the number of injuries experienced at the workplace.

Work Councils, Trade Unions and Employee Representative Bodies have been known to have contributed positively towards the reduction of serious accidents and injuries at the workplace. The views of Akpan (2011), Ball *et al.* (2009), Dyreborg (2011), Iqbal *et al.* (2010) and Zungu *et al.* (2007) are that as most employees working at the forefront are at higher risk to the exposure of OHS hazards at the workplace, until they gain the experience and knowledge gained for injury prevention. This allows employees to participate and contribute in hazard identification and risk assessment forums. This study investigates whether the encouragement of employees in managing OHS will create a safer workplace, which leads to the following null and alternate hypothesis:

Hypothesis 3:

H0: There is no relationship between employee participation and the propensity of employees to create a safer environment.

Mylett and Markey (2007) elaborate that legislation provides statutory rights for employees on the expectations that such participation will improve OHS in organisations, which in-turn will have a positive contribution to higher performing employees, higher productivity, improved well-being and less wasteful and more cohesive societies. The positive relationship created by employee participation instils a perception of safe work environment. The Researcher seeks to establish the relationship between the levels of employee participation by internal stakeholders and the perception of a safe work environment, thus hypothesising as follows:

Hypothesis 4:

H0: There is no relationship between the levels of employee participation and the perception of a safe work environment.

In the manufacturing sector, economic and competitive pressures are a reality, with the increase in lower cost imports and the demand of goods swinging towards imports (Marini, 2013; Pouliakas, 2013). These external environmental stresses impact directly on the operational sector of the organisation as there is an urgent need to lower costs. As the focus on expenditure becomes a priority, less is spent on the health of employees and improvements related to safety of the working environment are further constrained. The study explores whether an unsafe workplace discourages employees participation in health and safety matters. Dunlop (2011), Dyreborg (2011), Halbesleben *et al.* (2013) and Tristan *et al.* (2014) also allude to the fact that a safe environment encourages employees to participate in the various occupational interventions such as the investigations of accidents, the reporting of near miss incidents and unsafe acts, the participation in alcohol testing programs and being encouraged to invite the external communities to visit the operational sites.

2.5. SUMMARY

Globally, research and case studies into employee participation in occupational health and safety have resulted in mixed findings. However Mylett and Markey (2007) and Spath (2005) have shown that worker participation in the management of OHS has impacted positively on workplace productivity and OHS performance. Raines (2011) points out that employee participation is a powerful tool that can be utilised in business measures, including safety performance. Beriha *et al.* (2011), Bolger (2004), Brogger (2010), Bryne (2011) and Raines (2011) have all highlighted that employee participation is the direct result of the level of involvement workers have in the decision making in respect of the work processes and activities. A concern is that poorer countries have lacked research into employee participation to manage OHS at the work front, whilst less developed regions of the world are not appropriately reflected in the research and case studies (Biagi, 2002; Gunningham, 2008; Howell, 2000; Courtney and Jin, 2009; Joshi and Gupta, 2004; Kaila, 2006; Kato *et al.*, 2005; Meldrum, 2009; Muthuveloo *et al.*, 2012; Zungu, 2007).

The empirical studies and cases cited in this chapter have demonstrated that in most countries, organisations have successfully utilised employee participation, thereby preventing accidents and injuries. Some governments have intervened with legislation as an enforcement tool thus affording workers the right to a healthy and safe working environment, whilst others have allowed organisations to voluntarily seek employee participation as an enhancement performance tool (Bedfort and Budd, 2009; Cates, 2010; Epstein, 2012; Mei, 2002; Kleiner and Soediono, 2002; Tooma, 2002; Zimmerman, 2005). The empirical cases highlighted in this chapter have assisted the researcher to pinpoint the major gaps in the field of employee participation in managing health and safety at the workplace.

Given the lack of study into employee participation in relation to health and safety in less developed countries and the continuous loss of lives in poorer regions in the

world, the researcher conducted this investigation to understand the level of employee participation utilised within the NPC-Cimpor Cement Manufacturing Organisation. As a result of the various empirical studies, the study is grounded on empirical studies that have been covered in this chapter. The following chapter describes the historical and organisational structure within the NPC-Cimpor operations.

CHAPTER 3: THE HISTORY AND ORGANISATIONAL STRUCTURE OF NATAL PORTLAND CEMENT MANUFACTURING ORGANISATION

3.1. INTRODUCTION

Various scholars view employee participation as a powerful tool, that can be used to involve workers in the decision making processes and activities within the manufacturing environment (Beriha *et al.*, 2011; Bolger, 2004; Brogger, 2010; Bryne, 2011; Muthuveloo *et al.*, 2012; Raines, 2011). This study is aimed at investigating the participation of employees in the decision making process, when undertaking OHS activities within the NPC-Cimpor cement manufacturing organisation.

The current chapter focuses on the health and safety perspective of the manufacturing operations within Natal Portland Cement (NPC-Cimpor), so as to align the information to the study at hand. In addition, a national overall view of the cement industry, the origin of NPC-Cimpor, the impact of occupational labour legislation on the organisation and the internal business processes and human resource organogram, are portrayed.

Natal Portland Cement, also known as NPC-Cimpor, primarily operates in the province of KwaZulu-Natal, and is part of the South African manufacturing cement Industry, which consists of AfriSam (South Africa) (Propriety) Limited (HOLCIM), Sepakhu Cement (Propriety) Limited, Lafarge Industry South Africa (Propriety) Limited and Pretoria Portland Cement Company Limited. The cement manufacturers are all affiliated with a non-profit organisation, called "The Association of Cementitious Material Producers" (ACMP), managed by the executive director, Dr D.B.K. Rama. The primary objective of the ACMP being that to build stakeholder trust in the cementitious material producer industry in South Africa, through the relationship initiatives with employees, the surrounding communities, legislators, public authorities, stakeholders and NGOs. In addition to the above mentioned objective, ACMP promotes environmental, health and safety best practice amongst members through study, training and the establishment of industrial guidelines based on local

and international experience and best practice. This is done whilst promoting regulatory compliance and active participation with the authorities in the development of appropriate environmental, health and safety law reform in South Africa. Central to the efforts of ACMP is the responsibility to represent members in matters affecting common industry related interests.

3.2. THE ORIGINS OF THE ORGANISATION

In the early 1960's, the market for cement in the province of KwaZulu-Natal was predominantly clustered in the surrounding Durban area. Thus it was financially viable for a cement factory to be established in the Durban area. Durban Cement Company came into production in April 1964, with shareholders Anglo-Alpha, Blue Circle and Pretoria Portland Cement.

The company then utilised waste material, namely slag from Amcor (Arcelor Mittal Steel – Newcastle) and clinker (limestone) from its shareholder factories. In 1983, Durban Cement merged with Natal Portland Cement Company, which resulted in the new merged Company, building a clinker factory in Port Shepstone and railing the cement raw material to Durban. In 1987, an inter-grinding plant for slag was installed in Newcastle, thus exploiting the waste product from the steel manufacturing plant at Newcastle. This allowed the company to have a complete cement manufacturing operation to become self-reliant for the availability of the majority of its raw materials.

Early in the 21st century, the South African Competition Board conducted investigations into most manufacturing organisations for collusion and price fixing. The company, Natal Portland Cement Company at that point of time, was owned by the three biggest cement manufacturers in South Africa. This provided an opportunity for them to discuss various issues pertaining to the cement manufacturing and the sharing of markets within the country. The results from the investigation carried by the South African Competition Board led to external pressure from the Government institutions, which eventually put the company into forced sale. A Portuguese Conglomerate, "Cimpores de Portuguese", purchased Natal Portland Cement

Company, with the objective of extending its global footprint within Sub-Saharan Africa. In 2011, the listed Portuguese enterprise then merged into a Brazilian Cement Manufacturer called InterCement.

3.3. THE MANUFACTURING ORGANISATIONAL STRUCTURE

Cement manufacturing has been in existence for generations, and has been utilising common decision making organisational charts from the very beginning. The most common and basic way to distribute work and responsibility, decision-making and authority is by operational functions at the manufacturing level.

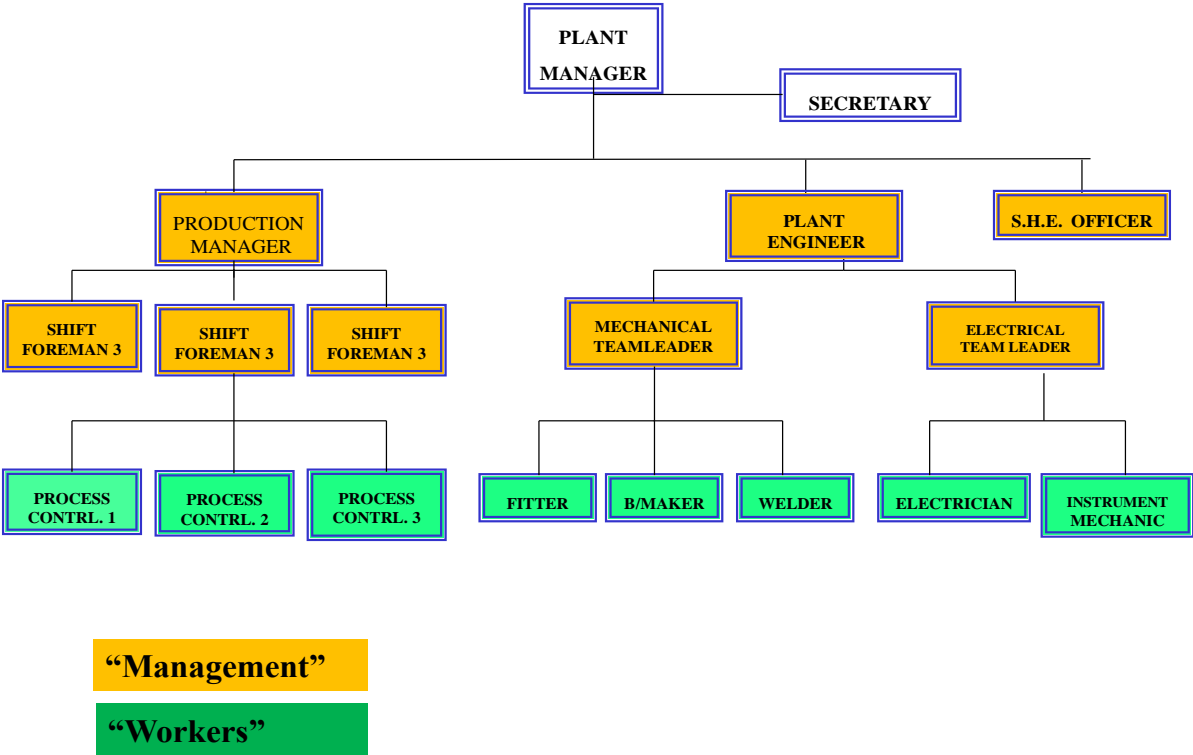


Figure 3.1.: A common cement manufacturing facility organisational chart in South Africa

In Figure 3.1., a typical organisational chart of a cement manufacturing operation is depicted and for larger operational sites the chart is replicated accordingly to accommodate the size of the operation.

The overall management responsibility of the manufacturing hierarchy is that of the plant manager, who normally reports to the industrial director based at a central location. As the cement manufacturing is predominantly of a mechanical nature, the plant manager's base degree originates from the engineering discipline. The organisational structure is based on functionality, segmented into the engineering, production and administration disciplines. These functions are further split into sub-functions such as mechanical and electrical orientated functions. The company has extended the manufacturing structures to accommodate the planning and inspection disciplines within the engineering discipline.

The employees as depicted in Figure 3.1. play a vital role in the management of occupational health and safety matters at the operational front. Nationally the majority of "Blue Collar" hourly paid employees tend to be affiliated with a recognised Union. In a highly Unionised environment, Canadian Researchers found that the least effective group accepted the Company and Government standards, guidelines and assessments as uncontested (Hall *et al*, 2006; Busbin and Campbell, 1999). This group relied on established rules and procedures for identifying and correcting hazards (Hall *et al.*, 2006). It is common in all cement operations for "blue collar" hourly paid employees to affiliate themselves to a Trade Union. At NPC-Cimpor, the role of trade unions is reinforced as was established by Fairbrother (1996:14-15), who concludes that trade unions improve OHS outcomes as is the case in the United Kingdom.

At NPC-Cimpor, incumbents holding the position of the safety, health and environmental (S.H.E.) officers are promoted from within the ranks of the engineering blue collar workforce. However a change is noticeable in the South African SHE manufacturing environment with S.H.E. officers attaining formal qualifications at

tertiary institutions. Some tertiary institutions are offering formal post matriculation degrees and diplomas in the field of occupational health and safety. Currently the experience necessary for the S.H.E. Officer consists of practical experience in the plant environment and a formal education which consists of a two week training course, such as SAMTRAC (Safety Management Training Course). In essence the safety, health and environmental officers serve the organisation in aiding in the prevention and mitigation of harm to employees and damage to the environment.

Furthermore the organisational chart (Figure 3.1.) segregates employees into workers and managers, with the “blue collar hourly paid employees” being part of the former group, whilst the safety, health and environmental officers or practitioners, first line supervisors, engineering technicians and engineers are part of management. This division has been aligned with the study objectives, based on an argument that workers can contribute to the prevention of industrial accidents by keeping an eye on the potential hazards in the workplace. Accordingly workers are better placed to give notice of imminent dangers (Gevers, 1983) because they are at the fore front of the operations.

The socio-cultural and demographic forces include society’s cultural values, norms and the physical characteristics such as sex and age. In the cement manufacturing sector, these forces relate to the ways employees think and act, in relation to one another and how they live their lives. In the past, apartheid policies have influenced labour force composition, which is driven by a demographic “race” distributions, age of employees, abilities, attitude, skills and experience of employees. At NPC-Cimpor, these changing variables influence the level of employee participation in OHS matters. Generally, cement operations in sub-urban locations experience low turnover of employees.

This also results in different age profiles across operations and varying attitudes and behaviour with respect to maintaining a healthy and safe working environment. The irony is that the expectations from an employee, who lives in a squatter settlement

with no access to basic amenities, no personal mode of transportation, who is exposed to public transport, with noise levels in excess of 85 decibels, is expected to arrive at the workplace with an attitude and exhibiting behaviour that ensures his health and safety and that of others.

3.4. THE IMPACT OF LEGISLATION ON THE ORGANISATION

Legislature since 1994 has virtually covered every aspect of employment relationships. These laws are a result of abuse in the market place, misuse of child labour, a lack of protection against injury, the systematic discrimination of groups, and the abuse of human rights. Occupational health and safety legislation is one of the most progressive legislations in the world, rendering both employees and employers to be subjected to increased liability. The accountability of management and responsibilities of all employees is increasingly becoming complex as new OHS legislation is enacted at a much faster pace. In South Africa employees all share the same level of enforcement by the OHS Inspectorate and require equal familiarity with respect to the ever changing legislation. The educational qualifications, experience and skills pertaining to the occupational health and safety at the workplace are clearly prescribed by current OHS legislation.

The cement manufacturing process entails the process of mining a primary raw material (limestone) and secondary components such as oxides of silica, alumina and iron. All are core ingredients in the manufacturing of cement but represent an on-going use of what are essentially finite resources in South Africa. These challenges fall within the scope of the Department of Mineral Resources (DMR). This obviously forces the cement industry to follow the legislation as prescribed by the DMR, more so when addressing occupational health and matters. NPC-Cimpor's mining operations and the manufacturing operations directly linked to the mining operations fall within the jurisdiction of the legislation as prescribed by the Mine Health and Safety Act, Act 29 of 1996.

In addition the NPC-Cimpor's manufacturing sites not linked to the mines, fall under the jurisdiction of legislation as prescribed by the Occupational Health and Safety Act, Act 85 of 1993. These operations have found a solution to the problem of utilising the finite mining resource. A part-solution to this problem lies in the degree to which we embrace the manufacture of blended cements or cements that have reduced clinker content through the use of suitable extenders. Such extenders and fillers include classified fly ash, granulated blast furnace slag (lument) and silica fume. These by-products are generated from other industries and are suitable for use as mineral substitutes in the cement manufacturing process. For example, in order to produce Ordinary Portland Cement (OPC) small quantities of gypsum have to be blended with the clinker.

In South Africa, these OHS legislations that have jurisdiction over the cement manufacturing sector afford employees a platform, to challenge employers with respect to negotiations and interpretations of specific workplace circumstances, providing employees with a collective voice This allows employees who are otherwise unable to express their needs, to contribute to OHS agenda and proving a counterbalancing voice that expresses the needs of employees, such as training.

Furthermore legislation requires employers to institute safety, health and environmental committees, as a means of communication between management and workers on S.H.E. matters concerning the workplace. Studies have reported that joint health and safety committees with employee representatives appointed by unions, as well as joint committees in which unions did not participate in the selection of employee representatives led to reductions in workplace injuries relative to those achieved in workplaces in which management alone determines health and safety policy (Reilly, Paci and Holl, 1995). NPC-Cimpor has instituted structures that include the appointment of Safety, Health and Environmental Representatives, who are voted in democratically by the workforce. This is twofold as it complies with legislation and it forms a conduit for communication between plant issues and management.

There is a mandatory duty for the Employer to appoint the Representatives in writing to ensure that the employees understand their roles and responsibility. The OHS legislation is difficult to comprehend and external training is necessary to assist these employees to grasp the implications of the legislation. All costs pertaining to the functioning of these S.H.E. committees are borne by the employer.

Globally, business is exposed to turbulent economic forces. The cement manufacturers in South Africa are not exempt, and are not protected from these economic forces. As a majority of the organisations are owned by Multinational companies and the need exists to import capital assets from abroad, the global economic downturn directly affects their bottom line, with the fluctuations of the exchange rates. Any global economic disturbance will have an impact on local manufacturers, although the impact may lag in some cases. The capital investment to ensure a healthy and safe working environment becomes even more difficult to justify, as funds are scarce, with the justification of immediate returns on occupational health and safety interventions not easily quantifiable.

Normally in tough economic times, the cost cutting exercises focus on areas such as training. During periods of recessions, initiatives are launched to curtail expenditure due to the shortage of funds. Expenditures that are not directly related to the core manufacturing processes bear the brunt of the exercise, the capital expenses to enhance the workplace environment and other voluntary wellness programs are slashed. These externalities have contributed to cement manufacturers complying only with the minimum requirements as stipulated by legislation.

3.5. THE OHS MANAGEMENT PROCESSES

In the past Business, Government and Labour have all participated together in creating an environment that promotes the management of occupational health and safety. The common goal is to make the workplace safe and healthy. A vehicle to

attaining this goal is the engagement of employees with management in joint decision-making and solving problems related to their health and safety via sophisticated OHS management processes.

To accommodate these objectives, NPC-Cimpor has established and embarked on management processes that encourages the participation of health and safety activities. These processes include the monthly review of operational matters in the S.H.E. Committees meetings, the reporting and investigation of injuries and damages in the accident/incident investigation committees, the planning, scheduling and implementation of daily maintenance programs. In addition management processes also include the identification and problem solving meetings to continuously improve OHS, the review of OHS management system effectiveness in management reviews meetings, the identification of hazards and the assessment of risks in the ad-hoc committee meetings, and the review and planning of actions and objectives in bi-annual and annual reviews.

In essence the business processes at NPC-Cimpor follow the steps of measurement, monitoring, managing and finding methods to continuously improve the current performance in health and safety. These improvements exercises are undertaken within operations in the company, and also within companies in the South African Cement Industry, and between South Africa and other cement manufacturing countries affiliated in the World Business Council for Sustainability Development. The challenge is to always have a standard system that can fulfil the requirements of these various stakeholders.

The company has a standard system in the form of an computerised library portal. It supports the reporting of fatalities, serious accidents that result in employees being absent from work, minor accidents that need first aid treatment with employees returning to work on the same day of the injury incident. The reporting of near miss incidents, which is a potential accident that did not cause any harm or damage to

property, health chronic cases of high blood pressure, diabetes , alcoholism and drug dependency, mental health and HIV/Aids.

Primarily the data is used to measure two performance indicators, which are used across the operations and the South African Cement Industry, namely the disabling injury frequency rate (DIFR) and severity rate. The DIFR is a ratio of the number of injuries that have resulted in employees being away from work when compared to the man-hours worked in the period under review. This factor is then multiplied by one million to make the ratio more realistic. In line with this definition, the severity rate measures the severity of the injury by determining the number of days the injured employee was absent from work as a result of the injury versus the man-hours worked in the period under review. This factor is then increased by multiplying it by a million. These indicators do not have any units. In addition the Company views all contractors related to its manufacturing processes as employees and they are also included in the compilation of the two OHS performance indicators.

The measuring, collection and recording of data is a necessary evil, however more importantly is the evaluation of such data. The database affords management to monitor trends and analyse, giving some meaning and understanding what the data is indicating. The S.H.E. department has been seconded with this responsibility and accountable to report to management to recommend mitigation or preventative measures that aim to eliminate and reduce the risks associated with prediction of possible hazards associated with the injuries.

The key to operational excellence at NPC-Cimpor is the focus on continuous improvements. In recent years, the emphasis has shifted remarkably towards making improvements in health and safety performance as one of the main responsibilities for plant management. With the clear performance measurement, the data collection, the data analysis, the evaluations that are well established and the leverage to benchmarking across operations, companies, industries and countries; line

management can establish its current OHS performance to implement improvement plans.

The philosophy around S.H.E. improvement has followed the breakthrough and continuous improvement strategies. The company experienced a spate of fatalities and serious accidents in 2009. This triggered a spate of interventions. The company immediately embarked on a S.H.E. awareness campaign, focusing on influencing employee behaviour and attitude. No information was leaked out and the sudden launch of the safety campaign in 2010, that coincided with the launch of the World Soccer Cup in South Africa. The company aimed at establishing a new culture of doing things within the Company. All operations were stopped, thus demonstrating to the masses that Senior Management perceived safety as one of its top priorities. The impact of the improvement was relatively sudden or abrupt and represented a different way of doing things. Senior Managers from across disciplines such as Finance, Information Technology, Human Resources and Sales participated depicting that safety was not an operational issue only. Such interventions were expensive, however improvements with the company experiencing fruitful safety and health performances going forward.

Operations have adopted the continuous improvement strategies where small incremental deviations in S.H.E. performance are investigated and solutions implemented. It has involved groups of employees from management and worker categories. The smaller interventions focussed more on the management systems issues, such as ensuring reviewing the zero energy isolation process, hazard identification and risk assessment review, emergency evacuation process and contractor management. These are smaller interventions than the breakthrough strategy, however having a greater impact on employee participation.

The improvement initiatives have increased leadership visibility, with the result that employees perceive that management is committed to the cause of ensuring the health and safety of the workers. The joint involvement in the PDCA (Plan, Do, Check

and Act) cycle (Deming Wheel), has allowed greater interaction between workers and line management in finding innovative solutions on the plant floor. This process brings groups of employees together to focus on a common goal. This philosophy of viewing any problem as process with a flow of events, has allowed employees to constantly utilise the PDCA model in problem solving. It now has become culture with employees illustrating the term PDCA to imply that a particular problem needs to be solved systematically.

3.6. EMPLOYEE PARTICIPATION IN OHS

In the context of the South African legislation, employers are tasked or mandated to create a channel to foster employee participation. The employer has used the monthly safety committee meetings as a platform to work jointly with employees to seek solutions to the occupational health and safety challenges. The company appoints members to represent employer and employee interests within the health and safety committees via the management hierarchy and employee representatives from the representative trade unions. The S.H.E. representatives play an active role by transferring issues from these committees to the employee mass and bringing forth issues emanating from the shop floor. This process provides a rapid conduit for the efficient and rapid communication of health and safety matters. Participation is voluntary and no financial incentive is provided for any work related to these committees.

At the company, workers are exposed to hazards and associated risks more so than management and as such experience a greater number of injuries. These employees are at the forefront and are expected to have followed a systematic process of identifying workplace hazards and assessing the risks associated with those hazards. The process further requires ranking and prioritization so as to implement actions to mitigate the risks. In addition, this process affords participating employees greater awareness to risks associated with their work, as they are forced to think of solutions that reduce or eliminate the higher ranked risks. This process forms the basis of both

the occupational health and safety legislation and the management process within the company.

The mitigating measures in hazard identification and risk assessment will always conclude with some form of residual, that employees will be exposed to. Injuries are inevitable, even if the employer has instituted measures that attempt to prevent a recurrence of a similar incident. The measures include the accident investigation that involves the injured person, the S.H.E. Officer, the injured person's supervisor and a S.H.E. Representative as a minimum forum. Specialists, such as the occupational nurse may be called upon as and when required by this forum. The root causes and the outcomes arising from the incident are shared across operational units and even to the extent that they are shared across the cement industry and local provincial mining operations via the Tripartite Mining Forums. This form of participation allows employees to share lessons from the accident investigation, learn from the incident and allow employees a certain level of introspection.

Management's process of driving the company in operational excellence is supplemented by the objectives and target setting forums. The company's philosophy is that if one cannot measure an objective, then it cannot be managed. The occupational health and safety key objectives are predetermined by the corporate OHS department with consultation with key local staff. The process of target setting involves the local operational employees, including line management and workers, agreeing on a reduction of the number injuries and the number days lost due to these accidents. The objective setting process entails planning a target on having accidents, and this is contrary to the objective of ensuring that the organisation has no accidents. Employees involved normally become aware of the gravity of the accident and its impact on the business, when considering variables such as cost, both directly related and hidden, the time lost because of these accidents, coupled with the negative perception off the local community and government caused by these accidents, and the extent to which the injured and the immediate family had to endure during the period of the accident.

At the operations, the presence of leadership on the shopfloor creates an ad-hoc communication channel, whereby employees perceive that leadership cares about their safety and immediate concerns are brought to the fore. Generally it is the little things that are raised at these informal meetings, such as the lights need changing at the work face, poor ventilation is being experienced and other minor health and safety issues. It allows employees to vent their feelings and creates the perception that they are being heard. During these visits, leadership always wears the appropriate personal protective equipment, thus, sending out the message that health and safety is a significant matter to leadership and creating an impression that's says this is a value that the organisation lives by. Leadership visibility affords management to have a hands on approach to current issues facing employees on the plant floor.

The hazards and risks associated with the manufacturing processes change on a daily basis, for example the sporadic malfunctioning of the plant and equipment gives rise to hazardous situations. These hazards are communicated via two participative environments, namely the daily production meeting consisting of line management and a follow-up meeting with the supervisor and his or her subordinates. These daily morning meetings are referred to as daily "5-minute tool box talk" meetings or also referred to as "green areas". This participative forum assists employees to discuss health and safety issues with their Supervisor on a daily basis. The supervisor then cascades any request needing further decision-making to more senior management. These forums have a set agenda and last for a maximum of 15 minutes.

The continuous focus on marketing and sustaining employee awareness toward health and safety matters is a challenge to the organisation. Working safely needs to be in the minds of employees. The company undertakes safety awareness campaigns by launching initiatives such as inviting famous public individuals, namely soccer stars, local community chiefs, the fire brigade chief officer, dieticians, local community clinic nurses and so forth, to speak about health and safety. At these events employees are exposed to banners, tokens of gifts and posters to influence

employee perception into believing that health and safety is top on the agenda of this organisation. The message conveyed by senior management is clear and with the same message being communicated at all operational sites, being that employees have a right to refuse to perform an unsafe act or work in an unsafe condition. It has been customary at these launches for employees to sign a pledge towards acting and behaving in safe manner at all times. These pledges are then placed at strategic locations that employees frequent, so as to constantly remind employees of their commitment to health and safety. In line with the concept of the slogan of the campaign employees are asked questions relating to the health and safety slogan and are recognised and rewarded with small gifts. The ultimate goal of improving health and safety awareness is to link these initiatives to the family as this has a personal impact on employees.

The Frank Bird (1966) model of the famous triangle that portrays the concept that there is a definite correlation between the number of fatalities, the serious accidents, minor accidents and near miss incidents is used as a guide to safety professionals. The theory extends itself to the belief that if organisations focus on eliminating and reducing the near miss incidents, then the number of fatal incidents, serious accidents and minor accidents will reduce. The message is clear, is that as long as the organisation focuses on the detail at the shop floor, namely creating awareness by encouraging employees to report the near miss incidents that they experience, the unsafe acts that they and their colleagues commit and the unsafe conditions that they encounter, the minor, major and serious accidents can be reduced.

It was Frank Bird's (1966) opinion that when a fatality occurs, the employees have been lucky on numerous occasions and had experienced near misses, worked unsafely and created unsafe conditions. Examples may be leaving off machine guards and working on live equipment without isolating the energy source. This principle is based on the fact that the employee practised many times to finally succumb to becoming a fatality statistic.

NPC-Cimpor has used this theory extensively and has extended the Frank Bird model to incorporate the reporting of unsafe acts and unsafe conditions, that form the base of the adjusted Frank Bird triangle. The S.H.E. Professionals have used the concept noting that if employees report the near miss incidents, unsafe acts and unsafe conditions, then employees simultaneously become aware of their physical environment and work towards making their work environment safer. The company further recognises and rewards employees for reporting near miss incidents, unsafe acts and unsafe conditions, as this process is voluntary. These rewards come in the form of monetary compensation and allows employees to accumulate the balance with other motivating initiatives such as long service awards, full attendance, best S.H.E. Representative etc.

The philosophy of continuous improvement is maintained by the creation of teams that address the investigation, analysis and find solutions to eliminate and reduce the root causes relating to the unsafe acts, the unsafe conditions and the near miss incidents. Employees, S.H.E. Representatives, S.H.E. Officers, Engineering Specialists and First Line Supervisors participate in these forums. These forums assist in allowing the employees to take direct ownership and empower them to make decisions regarding their work environment.

The company markets the participative process in all facets of its business. The engineering and maintenance of plant and equipment play an active role in ensuring a healthy and safe work environment. Poorly maintained safety equipment such as lifting tackle and scaffolding has the potential of being an ingredient in the creation of accidents. Employees within the engineering and maintenance department inspect all portable and fixed plant equipment on pre-determined frequencies and complete appropriate documentations as stipulated by legislation or prescribed by the external auditors. The inspection process is managed rigorously as all health and safety inspections are monitored by expert management systems. The participation of employees in inspections and audits is more driven by the compulsory job

description, legislation and performance bonus associated with key health and safety indicators.

Legislation has driven other forms of participation within the company. The participation of employees in mock emergency evacuation drills, the process of removing the energy source prior to working on energised plant, working in confined space and equipment and the wearing of personal protective equipment are some of the participative forms that are mandatory. NPC-Cimpor has an integrated approach when it comes to the discipline of health and safety. Safety is a responsibility of every employee and participation in ensuring the health and safety is deemed an obligation rather than a right.

3.7. THE OHS PERFORMANCE

The corporate shareholding of NPC-Cimpor changed from Holcim, and thereafter to Cimpor de Portugal and currently it is owned by InterCement. These shareholders are global cement players, with safety, health and environment management being a core value within their overall strategic objectives. Although the shareholders measured key performance indicators such as the injury frequency rate and severity rate, there are differences on how the input values were considered. Whilst one shareholder only considered the health and safety matters of only employees employed by the company, another incorporated both those employed directly and indirectly and only persons linked to the directly to the manufacturing process. However the Company always benchmarked itself against similar operations within the shareholders ownership.

Currently the Company's OHS performance management process deals with quantification of data, the measurement of the input data, analysis of the data, evaluation of the data, recommendation of actions to rectify deviations, the implementation of actions and a review to ensure effectiveness. The most significant aspect of data management is using the data to continuously improve performance.

The primary OHS standard measure focuses on the number of fatalities, the number of injuries that have resulted in employees being absent from work and the number of injuries which amounted to work time being lost.

The company experienced huge capacity expansions in 2008, which subsequently led to the employment of new recruits to supplement the expansion in production. With the introduction of new employees comes the lack of understanding of the risks associated with the cement manufacturing process. Additionally, the skills shortage impacts on safety as young and inexperienced employees are less careful. On the other hand, more experienced workers might be more likely to become complacent. Furthermore the demand for cement was at a high, as the country was preparing for the 2010 World Cup to be staged in South Africa. The greater production and the new recruitments were ingredients for the potential of injuries and serious accidents to occur. These evils led to the company experiencing two fatalities in 2009, which triggered a host of safety interventions thereafter that improved the company's performance. This is evident in Table 3.1., the OHS performance of Natal Portland Cement, which shows data from the year 2010.

Table 3.1.: The OHS performance of Natal Portland Cement.

<i>Name of Indicator</i>	2010	2011	2012	2013	2014	Average
*Number of fatalities	0	0	0	0	0	0.00
**LTIFR-safety related (Loss time injury frequency rate per 1 000 000 hours worked)	1.23	0	0	1.67	0	0.58
**Severity Rate per 1 000 000 hours worked	12.3	0	0	10.9	0	4.64

*The number of fatalities includes all fatalities of all persons on the manufacturing sites and those that occur outside the premises of persons that are directly and indirectly employed only.

**These indicators relate to accidents involving persons directly and indirectly employed by NPC-Cimpor.

The general consensus across organisations and industries is to use some form of standard measure. The norm in the industry and that of the organisation is to use the loss time injury frequency rate and severity rates as a means to compare OHS performance. The World Business Council for Sustainability Development for Cement Sustainability Initiative (WBCSD–CSI) has developed guidelines to measure these two rates. As the company subscribes to the WBCSD, these two rates are measured in Table 3.1. and show that, on average, the company achieved an injury frequency rate of 0.58, which was better than the industry average of 2.05 (Table 3.2.: The OHS performance of the South African Cement Industry), whilst the severity rate for the company was 16.77, which was much better than the industry’s value of 73.67 (unaudited). These two rates have shown that the company has outperformed the South African Cement Industry on average.

Table 3.2.: The OHS performance of the South African cement industry

Industry						
<i>Name of Indicator</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>Average</i>
**LTIFR-safety related (Loss time injury frequency rate per 1 000 000 hours worked)	1.95	1.52	0.98	1.63	4.18	2.05

Source: The Association of Cementitious Materials Producers (ACMP) – 2015 Sustainability Development Report (unaudited).

Furthermore the company works within the ambit of the Department of Mineral Resources as the raw materials are mined in open cast mines. In addition the Department of Labour has jurisdiction over some of the factories for health and safety matters. The Company has worked consistently with government institutions to focus on the underlying principle and ultimate goal of ‘Zero Harm’. An employee’s injury has immeasurable consequences for the employees and their families, and must therefore be prevented and avoided at all cost. The enforcement audits by

government inspectorates have contributed positively to the OHS performance of the company.

In 2010, through much analysis and many discussions, the management came to the conclusion that the employee behaviour and attitude played a vital role in managing occupational health and safety. Although employees are aware of the risks and the prevention equipment available, often they did not comply. This led to interventions that focused on employee awareness and behavioural based management. By taking this approach, the company aimed to change the culture from within the organisation to ensure that all employees are safe and healthy.

The company always seeks to improve its productivity levels and become more competitive. The number of full time employees is minimised and during periods of higher labour demands external resources are employed. The use of outsourced labour poses a major challenge for the company as the majority of accidents and injuries involve contractors. Contractors are frequently used for cleaning and maintenance activities, especially during major planned plant shutdowns, where an additional workforce is required to meet tight schedules. As a result, contractors are exposed to some of the higher risk activities, leading to an increased rate of accidents as contractors lack the full understanding of the hazards associated with the manufacturing sites. The company continues to outsource more of its auxiliary activities such as logistics associated with outbound and inbound transportation of raw materials and finished products. Training was the key to creating awareness amongst contractors and a key success factor to reducing injuries.

NPC-Cimpor has used other key leading indicators such as the hours spent by each employee on health and safety training, the absenteeism rate of employees, the number of employees being treated for HIV, TB, cholesterol, alcohol abuse and diabetes. These have been used to manage other occupational interventions.

3.8. SUMMARY

The current chapter encapsulates the overall management process that drive occupational health and safety within NPC-Cimpor. The objective was to give an overview of the origins of the company, the utilisation of the human resources strategy that leads and assists in improving the overall performance of the organisation. The chapter also provided an overview of how occupational health and safety legislation and management systems promote employee participation in achieving the goal of “Zero Harm”.

The functioning of the company within difficult economic conditions, for instance when local and imported cement manufacturers penetrate the current market share, was discussed. The discussion also covered the processes followed in ensuring that legislation is conformed with. The chapter has looked into how good occupational health and safety performance of the company has made the investment decisions more favourable. In the future the company acknowledges that the long term strategies will have to focus on sustainability, social, profitability through operational excellence whilst still ensuring that the employees are exposed to a safe environment.

The communication process in the form of safety committees and the other internal means was elaborated upon, thus depicting the various processes that support the participation of employees in health and safety interventions. This chapter was nuanced towards the health and safety perspective of the manufacturing operations within NPC-Cimpor, so as to align the information to the study at hand. In the following chapter the research methodology is explained.

CHAPTER 4: RESEARCH METHODOLOGY

4.1. INTRODUCTION

The previous chapter identified the decision-making process that is experienced by employees participating in managing OHS activities within NPC-Cimpor, even though the focus is seen as being biased towards the health and safety perspective of the manufacturing operations. The alignment constituted of a national overall view of the cement industry, the origin of NPC-Cimpor, the impact of occupational labour legislation on the organisation and the internal business processes and human resource organogram are portrayed. The primary being goal that these institutions are driven towards reducing and eliminating injuries to workers at the workplace.

This chapter deals with the research design of the study, comprising of the scientific measurements, the steps required in data collection, the collection and analysis of data, the challenges encountered, reliability and validity of the measurement instruments, ethical issues surrounding the study and finally the summary. Based on the gaps identified that this study will close, the study will focus on the data gathering at the operational front of NPC-Cimpor, identifying the cement manufacturer as the provider of resources and the study being readily accepted by the Company. In essence the research methodology will focus on the overall goal of the study which is to gain a better understanding of the participative role of employees. Added to that, the study evaluates the impact of employee participation on the decision-making process that result in a safer work environment.

4.2. KEY CONCEPTS

Most researchers agree that employee participation in health and safety can be expected to result in improvements in OHS at the workplace, thus contributing to the sustainable welfare of the organisation. In manufacturing organisations employees

participate in the decision-making processes at the operational level, tactical level and at the strategic level.

At the operational level, the employees are afforded rights to participate in decision-making at daily functional team-based (“green areas”) meetings. Employees are involved in the actual design and implementation of the organisation’s health and safety practices in recalling and reviewing safety accidents, discussing injury investigations with the objective of learning from lessons helping to prevent similar incidents at the workplace. It is also important to be aware of how to implement safety tasks scheduled by way of the maintenance systems, participate in occupational hygiene surveys, training programs and risk assessments. The process follows set procedures and organisational practices that have been planned into the task implementation, which is predominantly, directed participation. In this study **Employee Directed Participation** is defined as the process of employee engagement, where an employee is directed to perform his or her task, with minimum employee input occurring prior to the activity being undertaken. This decision-making process affords employees more information on a daily basis about the hazards and risks around their workplace, including greater control of the tasks at hand and involvement in managing health and safety at the operational front, thereby increasing employee consciousness of safety in their behaviour and enhancing awareness of the workplace.

The majority of manufacturing organisations meet on a multidisciplinary level at a frequency of daily to weekly, depending on the complexity of the organisational manufacturing processes. The multidisciplinary level includes the heads of department from the disciplines of production, electrical, mechanical, instrumentation, S.H.E. and planning. This tactical forum is represented by the lead representatives of the operational level forums. At these meetings, discussions and reviews about plant manufacturing performance for the past period, safety deviation and work plans for the immediate future are fostered. The safety inputs in these forums may include incident and accident investigations, outcomes of occupational hygiene surveys,

distribution of scheduled safety tasks emanating from the maintenance systems, and the review of the completion of actions arising from safety incidents. At the tactical level of decision-making, the process entails the sharing of information with employees using the participation process defined as “Employee Involvement”. The benefits experienced at the tactical level, are that there is the sharing of knowledge and experiences, the planning of future tasks and the awareness of the hazards and risks associated with tasks undertaken by other operational teams.

Employee participation at the organisation’s strategic level decision-making encompasses the policy review, the review of objectives and targets of the organisation, the benchmarking exercise between the organisation with other competitors, industry and global manufacturers, Similarly new production and safety technologies, brainstorming critical issues, the review of financial justifications for new safety investments and feedback of issues of common interest from the operational and tactical levels of the organisation. The participation process engaging employees at a strategic level is defined as “Employee Proactive Participation” which is a process of sharing with employees, consulting with employees, and the joint decision-making on issues related to occupational health and safety matters.

In the South African context, joint labour-management committees pertaining to safety, health and environmental objectives are scheduled at the operational, tactical and strategic levels of the organisation. Legislation prescribes the make-up of these committees, which constitute of S.H.E. Representatives, Supervisors and Management to jointly discuss and review S.H.E. issues. This participative approach encourages employers and employees to focus their efforts to reduce the number of occupational health and safety hazards, reducing injuries and diseases. This effort is further dictated by the maturity level, relationships and support levels between employees and employers, as these variables have the potential of achieving potential gains in the health and safety aspect of the business. This study explores the effectiveness of these committees by utilising the number of injuries sustained by the organisation.

Globally, injuries occur in the manufacturing sector and there is a drive to standardise the key indicators so as to allow comparisons and evaluations of SHE performance across organisations. The most common indicator to measure injury rates are the lost time injury frequency rate (LTIFR) and the severity rate. The loss time injury frequency rate uses the number of injuries that have led to employees being absent from work, measured over a period under review. In this study the period used is one calendar year as a reference period. The severity rate (SR) uses the number of days that the employee was away from work, so as to emphasise the severity of the injury. The two indicators are calculated as follows:

The key indicators are calculated as follows:

LTIFR = number of lost time injuries (LTI's) in a given period X 1 000 000 divided by total hours exposure to risks,

LTI, Loss time injury are defined as injuries that resulted in an employee being absent from work following the day of the accident,

SR = number of days lost due to the injuries in a given period X 1 000 000 divided by total hours exposure to risks.

Two of these indicators will be used to ascertain the OHS performance of NPC-Cimpor.

It has been argued that injuries are an outcome of employees disobeying the organisation's rules, or not acting responsibly and lacking the spirit of caring for others. Employees have the potential to influence the environment by following the set rules, which are considered mandatory by the South African legislation. NPC-Cimpor prescribes ten organisational health and safety rules:

- It is mandatory to use personal protective equipment as deemed necessary,

- No person shall perform any activity under the influence of alcohol or drugs,
- A harness must be worn when working at a height above 2 m,
- All machinery and equipment must be locked out before work may be performed on it,
- No person shall operate or drive any vehicle or any mobile equipment without the required qualification, authorization and identification,
- Only trained employees are permitted to work in confined spaces,
- Smoking is only permitted in designated areas,
- No work may be carried out without performing a task risk analysis prior to commencement of any task,
- No person is permitted to work close to a machine in motion, or to wear loose clothing, have loose hair and/or any type of accessory in all operational areas, unless authorized to do so, and
- No person is allowed to talk or text on a mobile phone or listen to radio whilst walking in an operational site or when driving a vehicle.

Furthermore the ability of employees to maintain a safe and healthy work environment is propagated by the institution of programs that encourage employees to voluntarily institute actions that ensure a clean, orderly and well maintained workplace. This research also alludes to the fact that this participative approach, of Employee Ownership is a process that encourages employees to assume full responsibility and to champion the health and safety activities at the workplace (Budd *et al.*, 2011; Dietz *et al.*, 2009; Kaufman, 2004; Strauss, 2006).

On the other hand, the nightmare in safety management is when the organisations continue to endure injuries and serious accidents, the management and employees blame each other and the focus changes from solving the root causes of the injuries to finding someone to blame for the incident. This finger-pointing fosters the abstinence of employee participation in health and safety programs, and discourages dialogue between management and employees. With the consequence that there is lack of identification of the root cause of the injuries, Management spends time on

solving the symptoms resulting in little reduction in the exposure of hazards and risk exposure to employees. It hinders employee participation in health and safety committee forums, as the trust, honesty and open dialogue that is encouraged by South African legislation is fragmented.

4.3. RESEARCH DESIGN

Mouton (2008) defines research design as the outline for accomplishing research objectives and the answering of research questions. The overall objective of this study advocates using employee participation as an intervention in influencing the decision-making process in the management of health and safety matters. There has not been any similar type of study observed in South Africa and other studies have not approached the employee participation process in OHS as segregated into different approaches within the decision-making process. The researcher acknowledges that to gain a deeper understanding into the employee participation process calls for a detailed plan for research design. Mouton and Marias (1998) and Mouton (2008) define the research design as a detailed plan about needs to be observed and analysed.

Since this study requires gathering information in various parts of the NPC-Cimpor, allowing for little or no intervention from the researcher and given that the information regarding human behaviour needs to be statistically analysed in a causal, deterministic manner, the researcher observes that this could be tested through a survey, providing a broad overview of a representative sample of a large population. The survey instrument will take the form of a self-administered questionnaire that each respondent will be encouraged to complete at the manufacturing workplace. More detail on the questionnaire is elaborated further on.

This research looks at a single point in time, namely cross-sectional research. Although this study is cost effective, it does not capture the change process in the external environment when internal stakeholders partake in OHS management. The

changes that occur within the external environment such as the introduction of new legislation, the changes in government's power base and trade unions, the current economic climate and the changes within the internal business processes that have a direct impact on the overall company's climate is not incorporated into this study.

4.4. SAMPLING TECHNIQUE

This study targeted employees at the manufacturing workforce as it is envisaged that a majority of accidents occur within this part of the business. The employees at the various operational sites were invited via email to participate in the survey. Singleton *et al.* (1988) and Maree (2007) defined the "accidental" and "convenient" sampling techniques as techniques that allow participants to volunteer to be included in the sample, until the desired number is obtained, based on the fact that the samples are easily and readily available.

This study adopted the "convenient" sampling technique. As such, employees from the employee groups (units of analysis), who were nearest and most easily available on that particular survey day, at each of the manufacturing operations participated in the survey.

At the initial stages of the study, NPC-Cimpor was eager to participate in the study. However due to the recent raids (2009) by the South African Competition Board, the Management at the cement operations have been extra cautious to share information that may be construed as anti-competitive. The impact is that management was reluctant to partake in surveys that include the competition. The researcher confirmed via written communication to the NPC-Cimpor management that the information that is gathered will not be used in any activity which is or may be construed as being anti-competitive as envisaged by competition law (Competition Act No. 89 of 1998) as amended. The information comprising health and safety can be shared as this information is required by the Department of Mineral Resources and Department of Labour. This information exists in the Public domain already.

The NPC-Cimpor employee compliment, namely the sample size, constituted of employees directly involved in the manufacturing of cement. Extrapolating the market share and the compliment of one organisation, an estimate was made of the targeted population segment in the cement industry, namely two thousand directly employed operational personnel.

The manufacturing process for cement has been in existence for many centuries, with NPC-Cimpor coming into operation in 1964. The current operational sites have been built and have been in the process of actively manufacturing cement for 20 to 50 years. This long presence of the cement manufacturing industry is perceived to be a vocation that provides employment security. Turnover of employees in the cement operations has been low; consequently the workforce is well experienced in relation to their respective job profiles. The age profile of the samples was surveyed in this study.

4.4.1. The Units of analysis:

As highlighted in the previous chapters, although there is significant study into worker participation and there are mixed findings regarding worker participation in occupational health and safety There is a lack of study that measures the types of OHS participation used in decision-making by employee groups (units of analysis), linking the participation to the occupational health and safety performance and work environment of the organisation. The units of analysis refer to the type of unit a researcher uses when measuring variables (Neuman, 1999). In this study the units of analysis are the groups of employees, including blue collar workers (bargaining unit and non-bargaining unit), first line supervisors (team leaders directly responsible for the supervision of blue collar workers); safety, health and environmental officers (Non-Bargaining Unit), engineers and the engineering technicians (Non-Bargaining Unit). This differentiation between the groups will assist the researcher to establish

whether or not there is a difference between the levels of participations and the different sample groups.

Nationally the majority of “blue collar” hourly paid employees tend to be affiliated with a recognised Trade Union. In a highly Unionised environment, Canadian researchers found that the least effective group accepted the Company and Government standards, guidelines and assessments as uncontested (Hall *et al.*, 2006; Busbin and Campbell, 1999). This group relied on established rules and procedures for identifying and correcting hazards (Hall *et al.*, 2006). It is common in cement operations for “blue collar” hourly paid employees to affiliate themselves with a Trade Union. The role of trade unions is reinforced as the study by Fairbrother (1996) concludes that trade unions improve OHS outcomes as is the case in United Kingdom.

4.5. DATA COLLECTION METHODS

Due to the research design, the quantitative collection method was utilised. A structured survey questionnaire was used for data collection. The process of communication and the questionnaire layout constitute the following components:

4.5.1. A general covering letter from the University of South Africa was emailed to the Chief Executive Officer and Managing Director of NPC-Cimpor, stating why the survey is being conducted, asking for support for this survey, informing that the researcher will be the contact person, that all responses will be treated with confidentiality. The information letter also mentioned that the input of participants will have a positive impact and will make a contribution to the occupational health and safety endeavours of the company.

4.5.2. A covering letter directed to the respondents attached to the questionnaire, stated the objective of the research problem, the topic, the target groups of the questionnaire. The covering letter also included the researcher’s contact information.

Participants were informed that their participation, would remain anonymous, and that all responses would be treated with confidentiality.

4.5.3. The questionnaire consisted of three parts: (1) instructions on how to complete the survey questionnaire, (2) biographical Information and the (3) survey questions. Respondents were requested to reflect on behaviours that they would or would have not experienced during the partaking of Occupational Health and Safety (OHS) matters, as employees at NPC-Cimpor.

The survey instrument had questions, pertaining to the four types of participation, namely: directed participation, involvement, pro-active participation and ownership. The statements were written in such a way that they were short (not longer than 15 words), familiar (using everyday language) and simple (focussed on only one complete thought) (Cooper D. 2001: 218).

The questionnaire was constructed and presented in a five-point Likert scale, which was used to rate the responses from the questionnaire. It ranged from never (1) to consistently (7).

The questionnaire suggests that respondents have the option of being anonymous. The researcher found it difficult to make the study completely anonymous as correspondence with the survey co-ordinators was necessary and so was the demographic information of the respondents. The follow-up process took the form of a reminder postcard and the mailing of another set of questionnaires. Some studies have shown that the response rates are affected by anonymity/confidentiality policy of a study.

The data collection was undertaken in a controlled manner with the researcher personally supervising the completion of the questionnaires. This had several advantages as the researcher ensured that the objectives of the study are the same.

All social research requires planning, and most quantitative researchers use pilot tests (Neuman, 1999). Mouton (2001) mentions that one of the most common errors in conducting study is that no piloting or pretesting is done. An objective in the planning phase is to assess whether the questionnaire measures what they were supposed to measure after successive trials. Pre-testing was undertaken at an aggregated operation as a means to identify and eliminate questions that pose a threat to internal validity. During the pre-testing stage, duplicate questions and other deficiencies were identified and corrected accordingly. The questionnaire was circulated and discussed with as many people as possible as suggested by De Vos *et al.*, (2005).

Secondary data collection was achieved with the assistance of senior S.H.E. on-site management personnel. Data collected was treated with confidentiality. Information that was suspected of being anti-competitive was discarded.

4.6. DATA ANALYSIS METHODS

The major contribution of this study is the empirical test of the relationship between participation types and the decision-making process when undertaking occupational health and safety activities within NPC-Cimpor. Mouton (2008) cites data analysis as a process that involves the inspection of the relationship between key variables, trying to see patterns that can be identified from the data set.

In line with the quantitative study design paradigm, the data was computed using the Statistical Program for Social Sciences, SPSS version 15.0 (SPSS Inc., Chicago, Illinois, USA). To analyse the responses, the frequency count distribution and graphical representations are depicted using tables, bar graphs and pie-charts. A p value < 0.05 is considered as statistically significant.

4.7. SURVEY CHALLENGES

Research surveys always come with challenges although a great effort has gone into the planning of the research method. The following are challenges that could be experienced:

4.7.1. The intention to complete a survey was communicated to the Chief Executive Officer (C.E.O.) of NPC-Cimpor so as to obtain the permission to conduct the surveys. The time allowance to receive feedback from the C.E.O.'s was four weeks. Although the duration of the feedback is a time consuming process, the survey required the authorisation to undertake the survey.

4.7.2. The blitz by the Competition Board resulted in Management behaving over cautiously. Some manufacturing organisations will be very reluctant to participate in the survey, because of the perception of sharing competitive information and violating competitive laws.

4.7.3. The manufacturing sites are exposed to other internal pressures such as annual shutdowns and the maintenance of the operations, the economic slowdown resulting in organisational restructuring, internal safety behaviour surveys, salary/wage negotiations and so forth. These demands are top on the list of internal management's priorities and the survey took the back seat with surveys occurring at some opportune time. This had a negative impact on the response rates.

4.7.4. As this survey was not directly beneficial to the organisation, the communication within the operational sites regarding the date of the survey, time and venue needed detailed planning. The researcher intervened with the operational staff to prompt the Site Manager to nominate an operational site Co-ordinator, preferably the S.H.E. Officer or the Secretary. Continuous liaison with the onsite co-ordinator was vital to ensure that the survey occurs.

4.7.5. The timing of the survey was crucial. For example when surveys coincide with the wage negotiations, respondents behaved negatively, especially when the relationship between management and workers is severed. These eventualities were difficult to manage.

4.8. RELIABILITY AND VALIDITY

The development of any questionnaire requires systematic preparation and the following of a logical sequence. Researchers are interested in researching and modelling various theoretical relationships between the different facets of occupational health and safety with the objective of making the workplace a healthy and safe environment. To this end they develop instruments that are reliable, consistently measuring what they are supposed to measure over many successive trials.

Leedy and Ormrod (2005) defines the following forms of reliability as follows:

- Internal consistency or reliability is the extent, to which all the items within a single instrument yield similar results,
- Test-retest reliability is the extent, to which the same instrument yields the same result on two different occasions,
- Interpreter reliability is the extent, to which two or more individuals evaluating the same performance give identical judgements,
- Equivalent forms reliability is the extent to which two different versions of the same instrument yield similar results,

The reliability of the measuring instrument was tested by taking the items of the research questionnaire through a reliability analysis based on the Cronbach's alpha coefficient. The alpha coefficient closer to one depicts more reliability than values closer to zero. Alpha values between 0.65 and 0.9 are regarded as being high

enough so that the researcher can conclude that the items in each sub-construct go together consistently to measure the same underlying characteristic.

Table 4.1.: Summary of the Cronbach's Alpha values

Item	Cronbach's Alpha
Employee Directed Participation	.284
Employee Involvement	.656
Employee Proactive Participation	.821
Employee Ownership	.721
Total Employee Participation (q1-q16)(or Employee Participation in the Decision-making Process (DMP))	.821
Participation in S.H.E. committees	.877
The Influence of Employees to create a Safe Workplace	.797
Employee Participation within a Safe Workplace	.874
Overall Decision-making Process (q1 – q56) except q17, q30 and q43	.942

The other test, namely the validity will take different forms (Leedy and Ormrod, 2005):

- Content validity is the extent, to which a measurement is a representative sample of the content area being measured,
- Face validity is the extent to which an instrument appears to be measuring a particular characteristic,
- Criterion validity is the extent to which the results of an instrument correlate with one another, presumably related measure.
- Construct validity is the extent to which an instrument measures a characteristic that cannot be directly observed but must be inferred from patterns in people's behaviour.

Survey questions were kept as simple and clear as possible so that there was no doubt as to the intention of the question. It was essential that the vocabulary was

aimed at the target audience as it ensured unnecessary questions would be avoided. In this study the researcher will use factor analysis to determine the validity of the questions.

4.9. ETHICAL ISSUES

Ethics has, in many instances, conflicted with scientific procedures. The researcher was aware of any possible conflicts that may arise and ensured that scientific and ethical study was undertaken (Babbie, Mouton, Vorster and Prozesky, 2006). There is no guarantee that researchers will always be motivated by ethical concerns when the study is undertaken, nor that the scientific findings will be used for ethical purposes. Some of the ethical issues presented were confidentiality, competitiveness, information sharing, project selection, manipulation and voluntary participation.

The ideal situation in maintaining the interests of the respondents and in protecting the identity of the respondent was to ensure that the surveys were anonymous and confidential. It was difficult to ensure that the survey was completely anonymous as the units of analysis had to be linked to the occupational health and safety groups. The researcher endeavoured to re-assure respondents that the research responses would not be accessible to the general public. All assistants were informed of their ethical responsibilities. Names and addresses were removed from questionnaires and replaced with identification numbers. A master identification file linking the numbers with the name was created for access only to the researcher and will be made available only in exceptional and legitimate circumstances.

The researcher is employed by NPC-Cimpor (Pty) Ltd as the Group S.H.E. Manager including responsibilities that encompass the strategic focus on the health and safety of employees at the workplace. The ethical issues arising from this are twofold, being that the company is sponsoring the researcher in this study and that the respondents may be influenced as to how they answer the questionnaire. In more extreme cases, it might affect the likelihood of cooperation. If the respondents are introduced to the

fact that the Group S.H.E. Manager is engaged in a study about their behaviour, it stands to reason that the respondent will be careful not to sound prejudiced. It is significant that the researcher is honest with respondents and communicates to the respondents that the sponsor of the study is NPC-Cimpor. It is better that the respondents hear this before undertaking the questionnaire. The general purpose of the study will be communicated, they will be informed that their responses will be treated with confidentiality, the knowledge of who the respondents are will be in the Researcher's safe keeping and that their input into this survey will assist many other organisations in managing health and safety matters.

The units of analysis at each of the cement operational sites were asked to participate in the survey via the management of these sites. It was envisaged that this may pose a situation in which employees are expected to participate in the survey, and might feel pressurised to conform to management's request. A major tenet of the study survey is that the experimental participation is regarded as voluntary. The researcher included a codebook to impress upon the participants that the survey is completely voluntary. The survey feedback was presented honestly and without any distortion. Incomplete or spoilt questionnaires were removed from the coding process, and late responses were excluded.

4.10. SUMMARY

This chapter described the study methodology for the quantitative survey with the external communications and the measuring instruments at the end of the report (Annexure A, Annexure B and Annexure C). The sampling technique, assumptions of the study, data collection methods, data analysis methods, reliability and validity were elaborated upon. The survey challenges and ethical issues that were considered in this study were highlighted.

Key concepts were defined and the questionnaire was formulated with the objective of focusing on the four types of participation undertaken at the operational front within the cement manufacturing environment. The questionnaire is included.

Chapter Five deals with the results arising from the statistical computation of the data that was captured and analysed using statistical software program SPSS version 15.0. The results discussed in the next chapter include findings of the pilot test, biographical information, validity, reliability, bivariate inter-correlation, descriptive statistics and inferential statistics. The findings chapter begins with an introduction analysing the response rates and the profile of the sample. Descriptive statistics is used to analyse the types of participation and performance rates as well as the inter-correlation among the study variables.

CHAPTER 5: RESULTS AND INTERPRETATION

5.1. INTRODUCTION

The previous chapter outlined the study design used in this study. A full exposition of the study was undertaken, identifying the concepts and constructs, defining the variables that will be used in the survey measured empirically and quantitatively, and the critical factors that affect the field survey.

The data received from the 117 completed questionnaires was captured and analysed with the statistical software program Statistical Package for Social Sciences (SPSS). The survey data was collated onto a spreadsheet as per the planned codes described in the previous chapter. Thereafter the software was used for data capturing, statistical analysis and internal consistency testing. In this chapter, the results obtained after applying the statistical tests is presented and interpreted. The Company employs a total of 304 employees that are in the Departments of Human Resources, Information Technology, Finance, Sales and Marketing, Logistics and Distribution and Purchasing. Table 5.1. depicts the estimated response rate of 41.45 % that was achieved:

Table 5.1.: Response rate:

Completed Questionnaires	117
Spoilt Questionnaires	3
Late Questionnaires	6
TOTAL	126
Response rate (%)	41.45 %

5.2. RESEARCH CONSTRUCTS

The survey questionnaire consisted of questions concerning biographical information and key variables for the four study hypotheses. The key variables for the research constructs consisted of employee participation in decision-making forums within the cement manufacturing processes. The decision-making forums comprised of mandatory safety committees, voluntary participation in operational committees, incident investigations and review forums.

The construct of employee participation was further separated to identify the four variables, namely Employee Directed Participation, Employee Involvement, Employee Pro-active Participation and Ownership. A total of 16 sub-constructs were tested using the seven-point Likert scale questions. The questions focused on the different types of employee participation and perceptions of the respondents that were grouped into blue collar workers, supervisors that directly supervised blue collar workers, the S.H.E. practitioners who supported the organisation with expert knowledge on safety, health and environmental matters, engineers and technicians and “other” personnel who were based at the operational sites and focused on administrative duties. Thus by completing the 16 questions employees in the different groups would have utilised a type of participation within decision-making forums, allowing the researcher to establish if there are any significant differences between the participation types.

As described in the research literature, employee and management participation in mandatory health and safety decision-making forums are stipulated by South African legislation. The frequency of the meetings is monthly and with set criteria stipulated on matters concerning its constituent’s, duties, power and member eligibility. The ultimate purpose is to use these S.H.E. forums to curb injuries at the workplace. The questionnaire consisted of 13 questions for the employee and management participation within the mandatory safety committees and perception as to whether the participation in these forums has a relationship to the reduction in the number of

workplace injuries. A question that directly tested for a relationship by using YES or NO response question and a total of 12 sub-constructs was tested using the seven-point Likert scale questions.

As employees participate in safety activities in the work frontline, their influence in creating a safe workplace is investigated. The questionnaire comprised of 13 questions which were aimed at investigating the experiences of the respondents to influence and to create a safe workplace.

The fourth construct focused on 14 questions that investigated employee participation within a safe workplace environment. The questions comprised of YES or No response as well as 13 questions using the seven-point Likert scale. The objective is to establish whether safe workplace encourages the participation of employees in management's safety and health matters. The analysis of the computed responses from the questionnaires begins with an analysis of the biographical description of the research respondents.

The questionnaire consisted of 56 questions focusing on participation within the decision-making process. The decision-making forums are where inspections are conducted, where rules are formulated and where isolation processes are undertaken to facilitate continuous improvement. Decision-making forums also facilitate objectives and target setting, hazard identification, risk assessments and reporting of unsafe acts, unsafe conditions and near-misses. The forum is also a space for undertaking emergency drills, conducting alcohol test thereby maintaining a safe workplace.

5.3. BIOGRAPHICAL DESCRIPTION OF THE RESPONDENTS

The demographic characteristics of the sample are shown in Table 5.2. below.

Table 5.2.: Frequency and percentage of the demographic variables

		Frequency	Percentage
Position	Blue Collar Workers	71	60.7
	Supervisors	15	12.8
	SHE Practitioners	5	4.3
	Engineers or Technician	15	12.8
	Others	11	9.4
Gender	Male	99	84.6
	Female	18	15.4
Shift Cycle	Full time day	75	64.1
	Shift work	40	34.2
	Other	2	1.7
Bargaining Council	Yes	39	33.3
	No	78	66.7
Experience at NPC	0-5 years	40	34.2
	6-15 years	37	31.6
	16-25 years	20	17.1
	Greater than 26 years	20	17.1
Age	16-25 yrs.	7	6
	26-35 yrs.	39	33.3
	36-45 yrs.	28	23.9
	> 46 yrs.	43	36.8
Job Profile	Management (Managerial and Supervising)	36	30.8
	Blue Collar Workers	81	69.2

5.3.1. Position (Units of analysis)

Table 5.2. shows that 60.7% of the respondents hold the position, of blue collar workers at the cement operations. The SHE practitioners (4.3%) had the fewest respondents. See figure 5.1. for a better illustration.

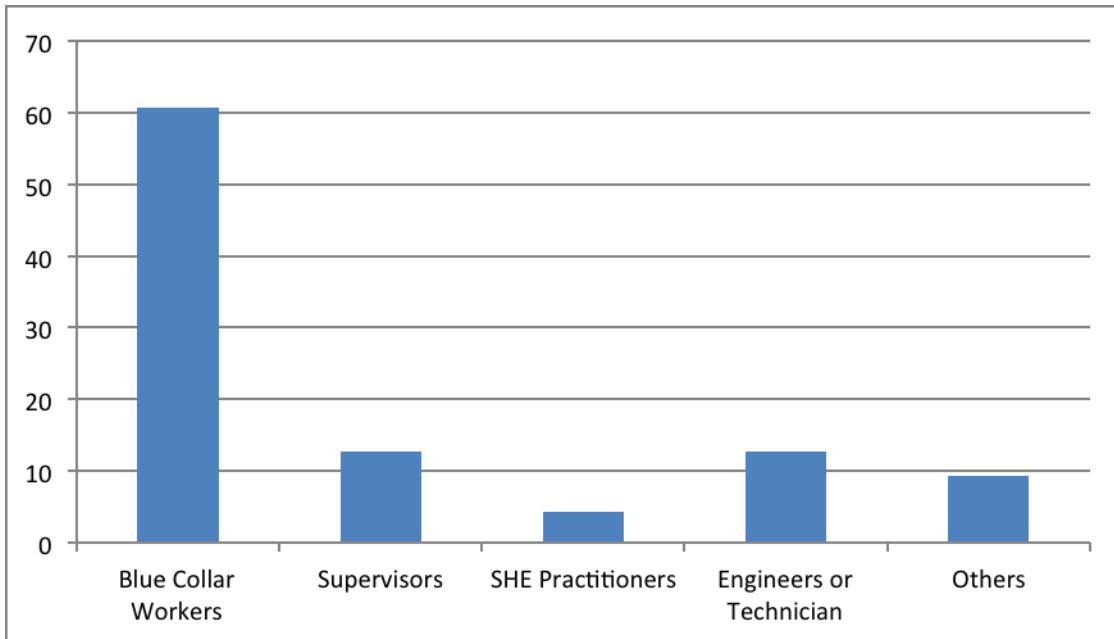


Figure 5.1. : The Category : Position

The positions are used to categorise the employees into the groups of employees (the units of analysis), namely Blue Collar Workers (at the cement manufacturing face), first line Supervisors, S.H.E. Practitioners, Engineering Technicians and Engineers, which are the bulk of personnel at the manufacturing sites excluding the site administration staff that formed part of the category “Others”. Most responses came from the Blue Collar Workers, followed by first line Supervisors, Engineers, Technicians, and lastly S.H.E. Officers. As cement manufacturing comprises a heavy industrial work environment that operates 24 hours daily seven days a week, it is expected that the number of Blue Collar Workers will comprise the majority of the workforce, followed by category Engineers and Supervisors.

5.3.2. Gender

Table 5.2 shows that 84.6% of the respondents were males. Figure 5.2 gives a better illustration.

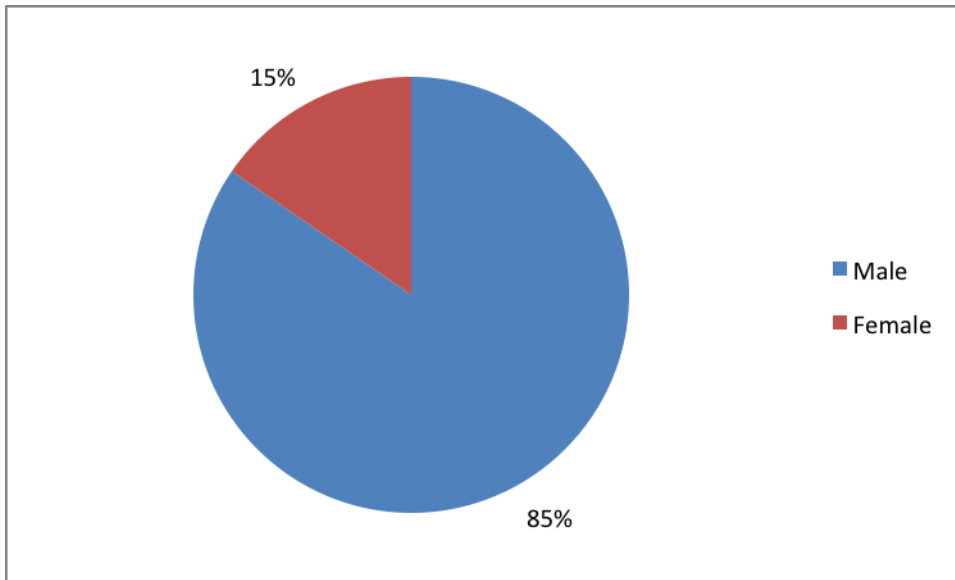


Figure 5.2. : Gender

The Cement Manufacturing Industry is heavily steeped in the industrial environment, which is dominated by males. There has been pressure from government to introduce women into all sectors of manufacturing operations. With much debate between Government and business, organisations within the manufacturing sector and those linked to mining have made noticeable strides in the introduction of the government's initiative, of increasing the women compliment at the workplace front within the main production process.

5.3.3. The mode of operations (“Working Cycle”)

According to table 5.2., 64.1% were working full time, 34.2% shift work and only 1.7% were other. This is further illustrated in Figure 5.3 below.

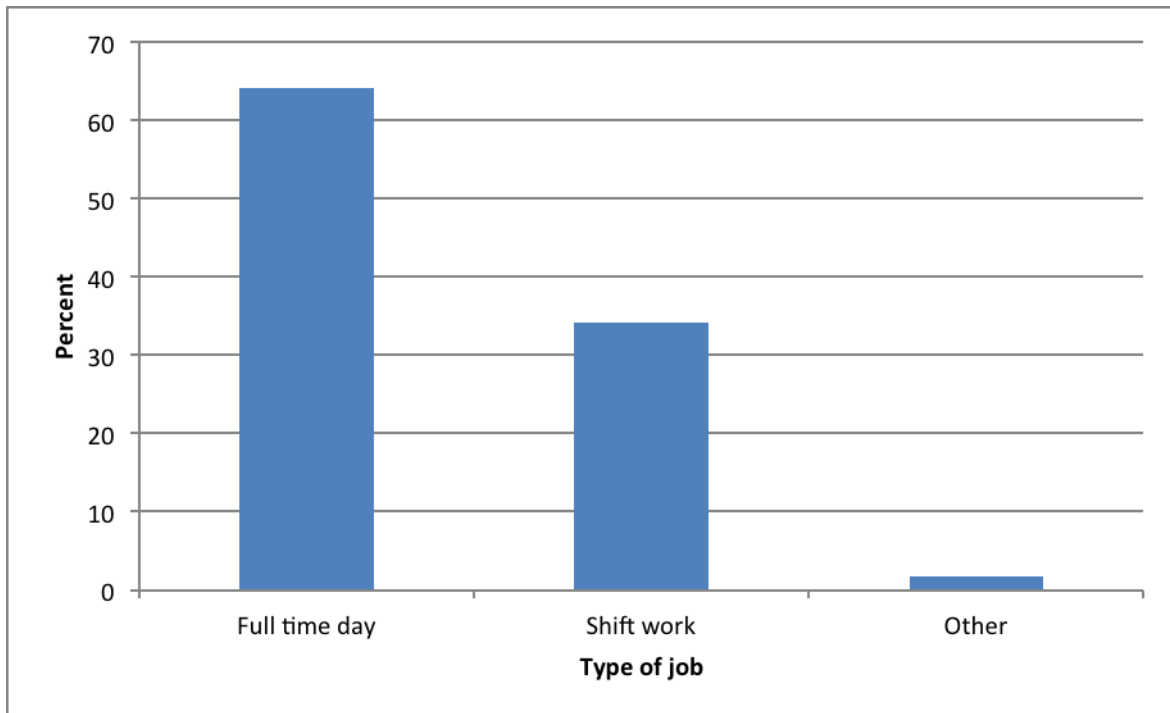


Figure 5.3. : Working cycle

In South Africa, the cement manufacturers generally operate their plants 24 hours a day, seven days a week. Consequently cement manufacturing is inherently a continuous process. This implies that the plants have to be manned 24/7. The operation of the manufacturing processes require staff on a four shift cycle forming part of the 34.2% of the respondents, whilst the majority of the plant management, engineering maintenance services and production support services work during “normal office hours”.

5.3.4. Bargaining Unit Membership

Table 5.3. shows that only 33.3% of the respondents were members of the bargaining unit. This can be attributed to the fact that within the category blue collar worker, the staff compliment working within the engineering functions have opted to deregister themselves from the union membership.

Table 5.3. : Bargaining unit membership

	Frequency	Percent
Yes	39	33.3
No	78	66.7
Total	117	100.0

5.3.5. Work experience group

According to table 5.4., 34.2% of the respondents had a work experience of 0 – 5 years; 31.6% had work experience between 6 – 15 years, the smallest groups (17.1%) were of work experiences of 16 – 25 years and greater than 26 years at Natal Portland Cement.

Table 5.4.: Work experience

	Frequency	Percent
0 – 5 years	40	34.2
6 – 15 years	37	31.6
16 – 25 years	20	17.1
Greater than 26 years	20	17.1
Total	117	100.0

The introduction of women into the manufacturing front has an impact on the larger employee base with 0-5 years work experience. In addition, in recent years, the organisation has invested in plant expansion projects that necessitated the employment of personnel that formed part of the largest group of employees. Furthermore there have been other strategic management decisions that have contributed to the increase in the 0-5 year work experience group, as the Company has outsourced the labour of various production facilities and outsourced non-core functions such as gardening, security and canteen facilities.

A better illustration is given in Figure 5.4. below.

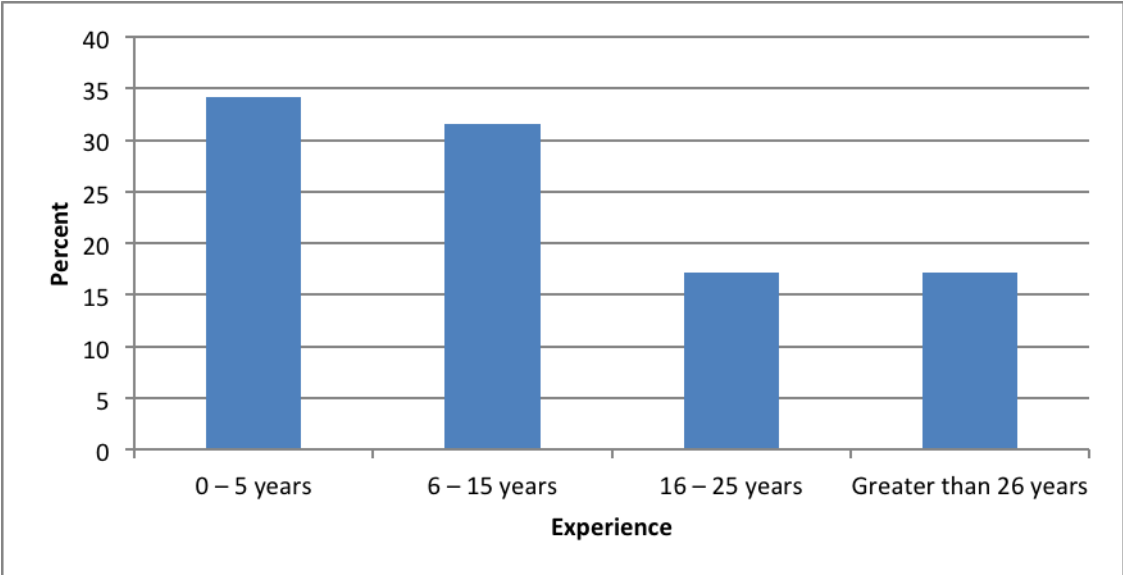


Figure 5.4: Work experience

5.3.6. Age

Figure 5.5. shows that the largest group of respondents (36.8%) were over 46 years of age. The smallest group of respondents (6.0%) were 16 – 25 years old. See figure 5.5. for a better illustration. The larger percentage of respondents, specifically 60.7% (Table 5.2.) were over the age of 36 years. This could be attributed to the fact that there is a slow turnover of employees within cement manufacturing operations

and that in the recent 5 years the Company have recruited experienced employees older than 36 years.

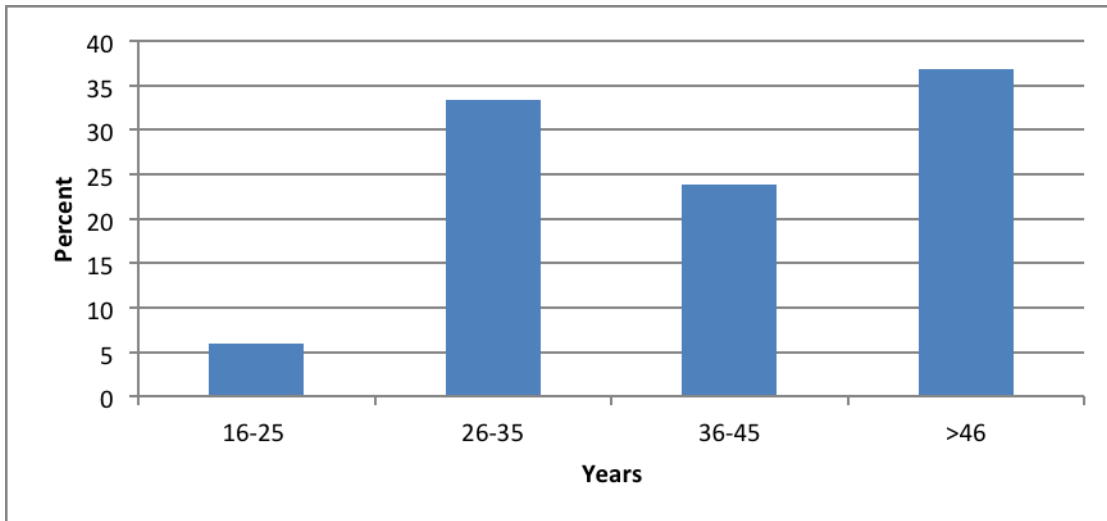


Figure 5.5. : Age profile of respondents

5.3.7. Job profile

According to Table 5.2. of the 117 respondents, the majority, 69.2% were blue collar workers. A better illustration is given in Figure 5.6.

Table 5.5.: Type of job

	Frequency	Percent
Management	36	30.8
Blue Collar Worker	81	69.2
Total	117	100.0

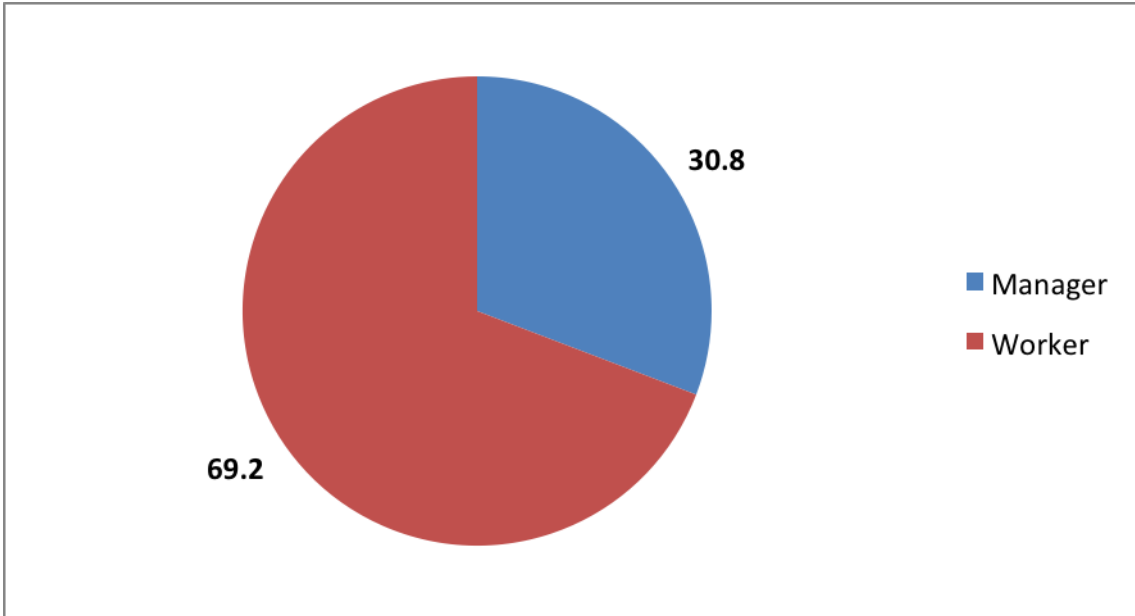


Figure 5.6.: Job profile

The groups of employees, in this case, first line supervisors, s.h.e. practitioners, engineering technicians and engineers compose the management category. At the manufacturing front there are more Blue Collar Workers than Management Staff. The reason for categorising the units of analysis into blue collar workers and management is to understand the perception in relation to the different types of participation used by these groups of employees within the various occupational health and safety decision-making forums.

5.4. PRESENTATION AND ANALYSIS OF THE RESEARCH RESULTS

Arising from the data collected via the survey questionnaires, the descriptive and inferential statistical analysis was used to directly focus on the hypotheses of the study and the relationship between the biographical variables and the hypotheses.

5.4.1. An analysis was undertaken to investigate the difference between the types of participation, paying special attention to the first null hypothesis, with the idea that there is no relationship between the participation types; namely Employee Directed Participation, Employee Involvement, Employee Pro-active Participation and Employee Ownership; and the decision-making process in managing occupational health and safety.

Table 5.6. shows the correlation between the four types of employee participation, namely, Employee Directed Participation, Employee Involvement, Employee Proactive Participation and Employee Ownership. The analysis was directed at establishing whether the four types of participation, used in the decision-making process by the different groups of employee have any relation.

In general, the types of participation are highly correlated at the 1% level. Employee Directed Participation is however not highly correlated with Employee Proactive Participation; they are correlated at the 5% level. It should be noted that in all tables, the use of double (**) indicates that the correlation coefficient is significant at the 0.01 level and the use of a single (*) indicates that it is significant at the 0.05 level.

Table 5.6.: Correlations between the four types of employee participation

		Employee Directed Participation	Employee Involvement	Employee Proactive Participation	Employee Ownership
Employee Directed Participation	r	1	.286**	.212*	.261**
	P		.002	.022	.005
Employee Involvement	r	.286**	1	.454**	.410**
	P	.002		.000	.000
Employee Proactive Participation	r	.212*	.454**	1	.761**
	P	.022	.000		.000
Employee Ownership	r	.261**	.410**	.761**	1
	P	.005	.000	.000	

Table 5.7. shows the estimated Pearson correlation coefficients for the correlational relationships between types of participation and the four decision-making process (DMP) components: employee participation in the DMP, participation in S.H.E. committees, the influence of employees to create a safe workplace and employee participation within a safe workplace.

It is indicated that Employee Directed Participation is highly correlated with only one component, that is, Employee Participation in the DMP ($r=.542$, $P=.000 < 0.01$). A composite index, decision-making process index (DMP) was created as a proxy for participation in the decision-making process. This was done by adding scores of the questions/statements in the questionnaire (i.e., q1 to q56), excluding the statements q17, q30 and q43. This was divided by the sum of the number of scores that have been added, which was 53.

Table 5.7.: Relationship between types of participation and DMP components

		Employee Participation in DMP	Decision-making Process
Employee Directed Participation	R	.542**	.177
	P	0.000	.056
Employee Involvement	R	.759**	.498**
	P	.000	.000
Employee Proactive Participation	R	.833**	.698**
	P	.000	.000
Employee Ownership	R	.818**	.748**
	P	.000	.000
Decision-making Process		.177	1
		.056	

Employee Involvement is highly correlated with the component of the decision-making process in managing occupational health and safety, that is, Employee Participation in the decision-making process ($r=.759$, $P=.000<0.01$).

Employee Proactive Participation is highly correlated with the component of decision-making process in managing occupational health and safety, that is, employee participation in the decision-making process ($r=.833$, $P=.000<0.01$).

Employee Ownership is also highly correlated with the component of decision-making process in managing occupational health and safety, that is, employee participation in the decision-making process ($r=.818$, $P=.000<0.01$).

It can be noticed that except Employee Directed Participation ($r=.177$, $P=.056$), all the other types of employee participation are indeed related with the decision-making process. Employee Involvement ($r=.498$, $P=.000<.01$), Employee Proactive

Participation ($r=.698$, $P=.000<.01$) and Employee Ownership ($r=.748$, $P=.000<.01$) are highly related with process.

Regression analysis was performed to find out whether there are significant differences between types of participation with regards to decision-making process. DMP was the dependent variable and the types of participation were the independent variables. Table 5.8. shows the results.

Table 5.8. Differences between the types of participation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.794	.631	.618	.38916

ANOVA

Model	Sum of Squares	df	Mean Square	F	P
Regression	28.969	4	7.242	47.821	.000
Residual	16.962	112	.151		
Total	45.930	116			

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	P	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
Constant	2.479	.262		9.473	.000	1.960	2.997		
Directed Participation	-.063	.060	-.063	-1.042	.300	-.183	.057	.893	1.120

Employee Involvement	.139	.046	.199	3.007	.003	.047	.230	.752	1.330
Employee Proactive Participation	.184	.068	.245	2.682	.008	.048	.319	.396	2.524
Employee Ownership	.432	.078	.497	5.527	.000	.277	.587	.408	2.452

According to the normal assumption test, the normality assumption of the ANOVA is not significantly violated, so the results might not have been adversely affected.

The ANOVA table indicates that “Type of Participation” significantly affects the decision-making process, as expected since the P value (.000) of the corresponding t value is even less than .01, the strongest level of significance. Of the four types of participation, only the Directed Participation ($P=.300 > .05$) is not significant; the other three are significantly related to the Decision-making Process. According to the standardized coefficients results, Employee Ownership ($B=.497$, $P=.000 < .01$) is the most effective or important type of participation, followed by the Employee Proactive Participation ($B=.245$, $P=.008$), and then Employee Involvement ($B=.199$, $P=.003 < .003$), in that order.

5.4.1.1. A further analysis was undertaken to establish the relationship between the various groups of employees and Employee Directed Participation, Employee Involvement, Employee Pro-active Participation and Employee Ownership.

Analysis of variance (ANOVA) was performed to find out whether there is a relationship between the position held by an employee and the type of participation. The results are shown in Table 5.9.a.

Table 5.9.a. : Relationship between position and type of participation

		Sum of Squares	df	Mean Square	F	P
Directed Participation	Between Groups	.700	4	.175	.428	.788
	Within Groups	45.800	112	.409		
	Total	46.500	116			
Employee Involvement	Between Groups	8.184	4	2.046	2.650	.037
	Within Groups	86.477	112	.772		
	Total	94.661	116			
Employee Proactive Participation	Between Groups	2.203	4	.551	.777	.542
	Within Groups	79.403	112	.709		
	Total	81.606	116			
Employee Ownership	Between Groups	.810	4	.203	.378	.824
	Within Groups	59.934	112	.535		
	Total	60.745	116			

The ANOVA table indicates that it is only Employee Involvement ($F=2.650$, $P=0.037$) which is significantly related to Position. None of the P values corresponding to the relevant Tukey multiple comparisons is less than even 0.1 (the weakest level of significance), therefore, none of the mean differences between the different positions is significantly greater than zero implying that Position does not affect employee participation. This may be due to the fact that some of the positions had too few observations or data points for valid results.

Because some positions had too few observations for valid multiple comparison tests, positions 2, 3, 4 and 5 were combined (to avoid such a situation). In this case, independent-samples T tests were performed instead of using ANOVA because only two of the position groupings were compared. Table 5.9.b. shows the results.

Table 5.9.b: Relationship between position and type of participation

	Position	N	Mean	Std. Deviation	Std. Error Mean
Directed Participation	1	71	3.6937	.69846	.08289
	2, 3, 4 & 5	46	3.6250	.52108	.07683
Employee Involvement	1	71	3.1408	.86575	.10275
	2, 3, 4 & 5	46	3.4565	.93587	.13799
Employee Proactive Participation	1	71	3.9824	.84866	.10072
	2, 3, 4 & 5	46	4.2065	.81361	.11996
Employee Ownership	1	71	3.9366	.74966	.08897
	2, 3, 4 & 5	46	3.9946	.68817	.10147

Based on the T-test, only Employee Involvement ($t=-1.866$, $P=.065<.1$) is weakly related to Position. This implies that the higher the position an employee holds the more involvement they have in the decision makes process.

5.4.1.2. A further analysis to establish the relationship between the Job Profile, in this instance Management versus Blue Collar Workers and Employee Directed Participation, Employee Involvement, Employee Pro-active Participation and Employee Ownership.

Also, T-tests were performed to find out whether Employee Directed Participation, Employee Involvement, Employee Proactive Participation and Employee Ownership differ between Manager and Blue Collar Worker. This would establish whether there is a relationship between Job Profiles and the different types of participation. See Tables 5.10.a, b., c. and d.

5.4.1.2.1. Employee Directed Participation

Table 5.10.a: Directed participation versus job profile

	Manager=1; Worker=2	N	Mean	Std. Deviation	Std. Error Mean
Directed Participation	1	36	3.6111	.53933	.08989
	2	81	3.6914	.67230	.07470

Because the P value of the t value of -.631 is .529 which is higher than .05 the level of significance, this means that there is no relationship between Job Profile and Employee Directed Participation.

5.4.1.2.2. Employee Involvement

Table 5.10.b.: Employee involvement versus job profile

	Manager=1; Worker=2	N	Mean	Std. Deviation	Std. Error Mean
Employee Involvement	1	36	3.5625	.91295	.15216
	2	81	3.1327	.87239	.09693

Because the P value of the t value of 2.382 is .020 which is less than .05 the level of significance, this means that there is a relationship between Job Profile and Employee Involvement.

5.4.1.2.3. Employee Proactive Participation

Table 5.10.c.: Employee proactive participation versus job profile

	Manager=1; Worker=2	N	Mean	Std. Deviation	Std. Error Mean
Employee Proactive Participation	1	36	4.2153	.83271	.13878
	2	81	4.0062	.83850	.09317

Because the P value of the t value of 1.251 is .215 which is higher than .05 the level of significance, this means that there is no relationship between Job Profile and Employee Proactive Participation.

5.4.1.2.4. Employee Ownership

Table 5.5.10.d.: Employee ownership versus job profile

	Manager=1; Worker=2	N	Mean	Std. Deviation	Std. Error Mean
Employee	1	36	4.0139	.72443	.12074
Ownership	2	81	3.9352	.72648	.08072

Because the P value of the t value of .541 is .589 which is higher than .05 the level of significance, this means that there is no relationship between Job Profile and Employee Ownership.

5.4.1.3. A further analysis was undertaken to establish the relationship between gender, age, bargaining, working cycle, experience and Employee Directed Participation, Employee Involvement, Employee Pro-active Participation and Employee Ownership.

T-tests and ANOVA were performed for the various types of participation, to find out whether there is any significant difference in employee participation in occupational health and safety activities in Natal Portland cement manufacturing organisation with relation to according gender, age, bargaining, working cycle and work experience. The following were the results (see Tables 5.11.).

5.4.1.3.1. Gender and decision-making process

Table 5.11. shows the results for gender.

Table 5.11.: Gender versus decision-making process

	Male =1 Female-2	N	Mean	Std. Deviation	Std. Error Mean
Directed Participation	1	99	3.6540	.64356	.06468
	2	18	3.7361	.58456	.13778
Employee Involvement	1	99	3.3157	.89042	.08949
	2	18	2.9861	.94896	.22367
Proactive Participation	1	99	4.0455	.84769	.08520
	2	18	4.2083	.79636	.18770
Employee Ownership	1	99	3.9823	.73127	.07350
	2	18	3.8333	.68599	.16169
Decision-making Process	1	99	5.1462	.62586	.06290
	2	18	5.2296	.66148	.15591

All probabilities for the t values are higher than 0.05 the level of significance, which imply that gender does not affect the decision-making process. In other words, there is no relationship between gender and any of the decision-making process component or the decision-making process in general.

5.4.1.3.2. . Working cycle and decision-making process

Table 5.12. shows the results for the working cycle and the types of participation.

Table 5.12.: Working cycle versus decision-making process

	Full day time = 1 Shift =2	N	Mean	Std. Deviation
Directed Participation	1.00	75	3.7033	.57934
	2.00	40	3.5938	.73748
Employee Involvement	1.00	75	3.3700	.82646
	2.00	40	3.0625	1.03272
Proactive Participation	1.00	75	4.2033	.73945
	2.00	40	3.8313	.95975
Employee Ownership	1.00	75	4.0500	.66653
	2.00	40	3.8125	.81601
Decision-making Process	1.00	75	5.2435	.60338
	2.00	40	5.0274	.66183

Group Statistics

	Working Shift	Std. Error Mean
Directed Participation	1.00	.06690
	2.00	.11661
Employee Involvement	1.00	.09543
	2.00	.16329
Proactive Participation	1.00	.08538
	2.00	.15175
Employee Ownership	1.00	.07696
	2.00	.12902
Decision-making Process	1.00	.06967
	2.00	.10465

The results indicate that Employee Proactive Participation ($t=2.137$, $P=.036<.05$), Employee Ownership ($t=1.681$, $P=.096<.1$) and Decision-making Process ($t=1.769$, $P=.080<.1$) are positively related to the work cycle.

Table 5.13. shows the results with two categories after combining categories 2 and 3.

Table 5.13.: Working cycle (combined categories) and decision-making process

	workshift2	N	Mean	Std. Deviation	Std. Error Mean
Directed Participation	1.00	75	3.7033	.57934	.06690
	2.00	42	3.6012	.72217	.11143
Employee Involvement	1.00	75	3.3700	.82646	.09543
	2.00	42	3.0774	1.00984	.15582
Proactive Participation	1.00	75	4.2033	.73945	.08538
	2.00	42	3.8333	.95583	.14749
Employee Ownership	1.00	75	4.0500	.66653	.07696
	2.00	42	3.7976	.79870	.12324
Decision-making Process	1.00	75	5.2435	.60338	.06967
	2.00	42	5.0081	.65327	.10080

Similar results were obtained. The results indicate that Employee Involvement ($t=1.694$, $P=.093<.1$), Employee Proactive Participation ($t=2.171$, $P=.033<.05$), Employee Ownership ($t=1.828$, $P=.070<.1$) are positively related with work cycle.

5.4.1.3.3. Work experience and decision-making process

Table 5.14.: Work experience and decision-making process

		Sum of Squares	df	Mean Square	F	P
Directed Participation	Between Groups	.222	3	.074	.181	.909
	Within Groups	46.278	113	.410		
	Total	46.500	116			
Employee Involvement	Between Groups	2.893	3	.964	1.187	.318
	Within Groups	91.769	113	.812		
	Total	94.661	116			
Employee Proactive Participation	Between Groups	1.645	3	.548	.775	.510
	Within Groups	79.961	113	.708		
	Total	81.606	116			
Employee Ownership	Between Groups	1.217	3	.406	.770	.513
	Within Groups	59.528	113	.527		
	Total	60.745	116			
Decision-making Process	Between Groups	2.715	3	.905	2.366	.075
	Within Groups	43.216	113	.382		
	Total	45.930	116			

The results indicate that Decision-making Process ($F=2.366$, $P=.075<.1$) is positively related to work experience of the respondents.

5.4.1.3.4. Age profile and decision-making process

The age profile was grouped as follows as per table 5.2.: Age 1 being between 16 and 25 years old, Age 2 being between 26 and 35 years old, Age being between ages 36 and 45, Age being between 46 and 64 years old and Age 5 being greater than 65 years old. Ages 2 and 3 were combined to avoid having too few data points for an age group.

The results indicate that Employee +Involvement ($F=2.588$, $P=.080$) is positively related to age. Age 2 differs from age 4 ($P=.064<.1$) significantly in terms of Employee Involvement.

4.4.1.3.5. Job profile and the decision-making process

	Manager = 1 Worker = 2 +	N	Mean	Std. Deviation
Directed Participation	1	36	3.6111	.53933
	2	81	3.6914	.67230
Employee Involvement	1	36	3.5625	.91295
	2	81	3.1327	.87239
Employee Proactive Participation	1	36	4.2153	.83271
	2	81	4.0062	.83850
Employee Ownership	1	36	4.0139	.72443
	2	81	3.9352	.72648
Decision-making Process	1	36	5.2573	.68757
	2	81	5.1153	.60085

The results indicate that it is only Employee Involvement ($t= 2.382$, $P=.020<.05$) which is related to the job profile. Managers get involved in safety, health and environmental committees more than blue collar workers, as is expected.

5.4.2. An analysis was undertaken to investigate the relationship between the participation in S.H.E. committees and the number of injures at the workplace, paying special attention to the null hypothesis, namely, that there is no relationship between the participation in S.H.E. committees and the number of injuries experienced at the workplace.

5.4.2.1. Respondents answered Question 17, which read: Do you think that there is a relationship between the participation in safety committees and the number of injuries that is experienced?

Table 5.16.a. shows that the majority of the respondents (86.3%) answered “Yes”, that there is a relationship between the participation in safety committees and the number of injuries that is experienced.

Table 5.16.a: Relationship between safety committees and number of injuries experienced (question 17)

	Frequency	Percent
Yes	101	86.3
No	16	13.7
Total	117	100.0

Table 5.16.b. shows the results of a One Sample T test of the employee perceptions about the relationship between safety committees and number of injuries experienced. The test value of “4”, the neutral or don’t know level was used as a threshold. According to the table, the mean values of all the items in the measuring

scale are higher than 4. If the mean value of an item is significantly higher than 4, this means that on average, the employees agree with the statement.

Table 5.16.b.: Relationship between safety committees and number of injuries experienced (question 18 to 29)

	N	Mean	Std. Deviation	Std. Error Mean
q18	117	5.4786	1.41176	.13052
q19	117	5.7436	1.49224	.13796
q20	117	6.0000	1.29322	.11956
q21	117	5.5726	1.31514	.12158
q22	117	6.1453	1.15419	.10670
q23	117	5.9915	1.09462	.10120
q24	117	5.1453	1.85354	.17136
q25	117	6.3248	1.05723	.09774
q26	117	5.9060	1.21046	.11191
q27	117	5.7436	1.38436	.12798
q28	117	6.2051	1.00463	.09288
q29	117	5.8803	1.31413	.12149
Employee Participation in S.H.E. Committee	117	5.8447	.85866	.07938

All the t values in the table are highly significant ($P=.000<.01$). This implies that in general, the employees agree with the statements. The t value of the composite index, “Employee Participation in Safety, Health and Environmental Committees” of 23.238 is also highly significant; implying that the general perception of the employees is that there is a relationship between the participation in S.H.E. Committees and the number of injuries that is experienced at the workplace.

Logistic regression was used to determine whether or not the type of participation influenced the answer to q17 (Do you think that there is a relationship between the **participation in safety committees** and the **number of injuries** that is

experienced?) The logistic function is normally applied to identify the underlying factors of a categorical variable.

The results are shown in table 5.17.

Table 5.17.: Association between types of employee participation and the perception about the relationship between the participation in safety committees and the number of injuries that is experienced

	B	S.E.	Wald	Df	P	Exp(B)
Constant	-1.843	.269	46.891	1	.000	.158

Variables in the Equation

	B	S.E.	Wald	Df	P	Exp(B)
Employee Directed Participation	0.089	0.453	0.039	1	0.843	1.094
Employee Involvement	0.002	0.356	0	1	0.994	1.002
Employee Proactive Participation	-0.835	0.516	2.618	1	0.106	0.434
Employee Ownership	0.405	0.602	0.451	1	0.502	1.499
Constant	-0.476	1.773	0.072	1	0.788	0.621

Since all the P values in the table are higher than .05 and .1 the levels of significance, there is no association between the type of participation and the perception about the relationship between the participation in safety committees and the number of injuries that is experienced.

5.4.2.3. Relationship between types of employee participation and employee participation in S.H.E. committee.

Table 5.18. shows the results of correlational analysis between the types of participation and employee participation in Safety, Health and Environmental (S.H.E.) Committees. According to the table, the type of participation is correlated at least at

the 0.05 level of significance. The table indicates that all the types of participation , except Employee Directed Participation ($r=.067$, $P=.472>.05$), are highly correlated with employee participation in Safety, Health and Environmental Committee at the 0.01 level.

Table 5.18. : Relationship between participative types and participation in S.H.E. committee.

		Employee Directed Participation	Employee Involvement	Employee Proactive Participation	Employee Ownership	Employee Participation in S.H.E.C.
Employee Directed Participation	R P	1 .002	.286** .002	.212* .022	.261** .005	.067 .472
Employee Involvement	R P	.286** .002	1 .000	.454** .000	.410** .000	.359** .000
Employee Proactive Participation	r P	.212* .022	.454** .000	1 .000	.761** .000	.543** .000
Employee Ownership	r P	.261** .005	.410** .000	.761** .000	1 .000	.568** .000
Employee Participation in S.H.E.C.	r P	.067 .472	.359** .000	.543** .000	.568** .000	1

5.4.2.4. Analysis of variance (ANOVA) was performed to find out whether the employee groups, under the category “position”, namely management and blue collar workers, influences the perception of employee participation in Safety, Health, and Environmental committees (S.H.E.C.). Table 5.19. shows the results.

Table 5.19.: Relationship between position and participation in S.H.E. committee and the number of injuries.

	Sum of Squares	df	Mean Square	F	P
Between Groups	2.817	4	.704	.954	.436
Within Groups	82.709	112	.738		
Total	85.526	116			

Tukey Multiple Comparisons

(I) Position	(J) Position	Mean Difference (I-J)	Std. Error	P	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-.40524	.24420	.463	-1.0823	.2719
	3	-.44413	.39761	.797	-1.5466	.6583
	4	-.02191	.24420	1.000	-.6990	.6552
	5	-.16080	.27845	.978	-.9329	.6113
2	1	.40524	.24420	.463	-.2719	1.0823
	3	-.03889	.44376	1.000	-1.2693	1.1915
	4	.38333	.31379	.739	-.4867	1.2534
	5	.24444	.34112	.952	-.7014	1.1903
3	1	.44413	.39761	.797	-.6583	1.5466
	2	.03889	.44376	1.000	-1.1915	1.2693
	4	.42222	.44376	.876	-.8082	1.6527
	5	.28333	.46350	.973	-1.0018	1.5685
4	1	.02191	.24420	1.000	-.6552	.6990
	2	-.38333	.31379	.05739	-1.2534	.4867
	3	-.42222	.44376	.876	-1.6527	.8082
	5	-.13889	.34112	.994	-1.0847	.8070
5	1	.16080	.27845	.978	-.6113	.9329
	2	-.24444	.34112	.952	-1.1903	.7014
	3	-.28333	.46350	.973	-1.5685	1.0018
	4	.13889	.34112	.994	-.8070	1.0847

The results indicate that there is no relationship between position and perception about employee participation in S.H.E. Committee (S.H.E.C.) ($F=.954$, $P=.436$). The results of Tukey multiple comparisons support the above finding because there is no mean difference which is significantly different from zero as all the P values are higher than .05, the level of significance.

Table 5.20. shows the results when positions 2, 3, 4 and 5 were combined.

Table 5.20.: Relationship between position and the perception about employee participation in S.H.E. committee.

Position		q17		Total
		Yes	No	
1- Blue collar workers	Frequency	61	10	71
	Expected frequency	61.3	9.7	71.0
2, 3, 4 and 5 - management	Frequency	40	6	46
	Expected frequency	39.7	6.3	46.0
Total	Frequency	101	16	117
	Expected frequency	101.0	16.0	117.0

	Value	df	P
Pearson Chi-Square	.026 ^a	1	.873
Continuity Correction	.000	1	1.000
Likelihood Ratio	.026	1	.873
Fisher's Exact Test			
Linear-by-Linear Association	.025	1	.873
N of Valid Cases	117		

These results also indicate that there is no relationship between position and the perception of employees participation in S.H.E. committees ($\text{Chi-sq.} = .026$, $P = .873 > .05$).

T-tests and ANOVA were performed for employee participation in S.H.E. committees to find out whether there are any significant differences in employee participation in occupational health and safety activities in Natal Portland Cement manufacturing organisation according to gender, age, and bargaining, working cycle and work experience. The following were the results (see tables 5.21.).

5.4.2.5. Gender and the perception of employees participating in S.H.E. committees:

Table 5.21.: Gender versus employee participation in S.H.E. Committees

	Male=1 Fem =2	N	Mean	Std. Deviation	Std. Error Mean
Employee Participation in S.H.E. Committee	1	99	5.8333	.84691	.08512
	2	18	5.9074	.94406	.22252

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
Employee Participation in S.H.E. Committee	Equal variances assumed	.612	.436
	Equal variances not assumed		

		t-test for Equality of Means	
		t	Df
Employee Participation in S.H.E. Committee	Equal variances assumed	-.335	115
	Equal variances not assumed	-.311	22.256

		t-test for Equality of Means	
		P	Mean Difference

Employee Participation in S.H.E. Committee	Equal variances assumed	.738	-.07407
	Equal variances not assumed	.759	-.07407

All probabilities for the t values are higher than 0.05 the level of significance, which implies that gender does not affect the decision-making process. In other words, there is no relationship between gender and any of the decision-making process components or the decision-making process in general.

5.4.2.6. Working cycle and the perception of employees participating in S.H.E. Committees:

Because the third category (3) had only 2 data points, which were too few for valid results, category 2 and category 3, shift cycle, were combined to create only two categories. The following results were obtained. Table 5.22. shows the results for the working cycle (with 2 categories).

5.4.2.7. Table 5.22.: Working cycle versus the perception of employees participating in S.H.E. committees:

	Working Shift	N	Mean	Std. Deviation
Employee Participation in S.H.E.C.	1.00	75	5.9478	.88030
	2.00	40	5.7000	.79255

Group Statistics

	Working Shift	Std. Error Mean
Employee Participation in S.H.E.C.	1.00	.10165
	2.00	.12531

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
Employee Participation in	Equal variances assumed	1.887	.172

S.H.E.C.	Equal variances not assumed		
		t-test for Equality of Means	
		t	Df
Employee Participation in S.H.E.C.	Equal variances assumed	1.487	113
	Equal variances not assumed	1.536	87.289

The results indicate that employee participation in S.H.E. committees ($t=1.487$, $P=.140 >.05$) are not positively related to the job cycle.

5.4.2.8. Working experience and the perception of employees participating in S.H.E. committees:

Table 5.23: Work experience and the perception of employees participating in S.H.E. committees

		Sum of Squares	df	Mean Square	F	P
Employee Participation in S.H.E.C.	Between Groups	6.207	3	2.069	2.947	0.036
	Within Groups	79.32	113	0.702		
	Total	85.526	116			

The results in Table 5.23. indicate that employee participation in S.H.E.C. ($F=2.947$, $P=.036 <.05$) is positively related to work experience.

Tukey HSD multiple comparisons

Dependent Variable	(I) WorkExp	(J) WorkExp	Mean Difference (I-J)	Std. Error	P.	95% Confidence Interval	
						Lower Bound	Upper Bound
Employee Participation in S.H.E.C.	1	2	.18311	.19110	.773	-.3152	.6814
		3	.34583	.22945	.437	-.2525	.9442
		4	.66250	.22945	.024	.0642	1.2608

	2	1	-.18311	.19110	.773	-.6814	.3152
		3	.16273	.23253	.897	-.4436	.7691
		4	.47939	.23253	.172	-.1270	1.0857
	3	1	-.34583	.22945	.437	-.9442	.2525
		2	-.16273	.23253	.897	-.7691	.4436
		4	.31667	.26494	.631	-.3742	1.0075
	4	1	-.66250	.22945	.024	-1.2608	-.0642
		2	-.47939	.23253	.172	-1.0857	.1270
		3	-.31667	.26494	.631	-1.0075	.3742

*. The mean difference is significant at the 0.05 level.

The Tukey multiple separation results indicate that for employee participation in S.H.E.C., work experiences 1 and 4 differ significantly ($P=.024<.05$). The implication is that the more work experience one has the more he or she will participate in the decision-making process or rather the experienced people participate in safety and health committees more than the less experienced on average.

5.4.2.9. Age profile and the perception of employees participating in S.H.E. committees

Ages 2 (26-35 years) and 3 (36-45 years) were combined to avoid having too few data points for an age group. The results are shown on table 5.24.

5.4.2.10. Table 5.24: Age versus employees participating in S.H.E. committees ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Employee Participation in S.H.E.C.	Between Groups	3.740	2	1.870	2.607	.078
	Within Groups	81.786	114	.717		
	Total	85.526	116			

Tukey HSD multiple comparisons							
Dependent Variable	(I) age	(J) age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Employee Participation 1 in S.H.E.C.	2	3	-0.19436	0.20302	0.605	-0.6765	0.2878
		4	0.26314	0.17967	0.312	-0.1635	0.6898
	3	2	0.19436	0.20302	0.605	-0.2878	0.6765
		4	0.4575	0.20569	0.071	-0.0309	0.9459
	4	2	-0.26314	0.17967	0.312	-0.6898	0.1635
		3	-0.4575	0.20569	0.071	-0.9459	0.0309
		3	-0.22239	0.15272	0.316	-0.5851	0.1403

The results indicate that employee participation in S.H.E. committee ($F=2.607$, $P=.078<.1$) are positively related to age. Age 3 differs from age 4 ($P=.071<.1$) significantly in terms of employee participation in S.H.E.C.

5.4.2.11. Job profile (Managers vs Blue Collar Workers) and the perception of employees participating in S.H.E. committees:

T Test

Table 5.25.: Job Profile and employees participating in S.H.E. committees

	Manager = 1 Worker = 2	N	Mean	Std. Deviation
Employee Participation in S.H.E.C.	1	36	5.9838	.93347
	2	81	5.7829	.82176

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	P.
Employee Participation			.361

Index	Equal variances not assumed		
		t-test for Equality of Means	
		T	Df
Employee Participation in S.H.E.C.			115
	Equal variances not assumed	1.114	60.141
		t-test for Equality of Means	
		P	Mean Difference
Employee Participation in S.H.E.C.	Equal variances assumed	.245	.20087
	Equal variances not assumed	.270	.20087

The results indicate that there is no difference between the Manager participation in S.H.E. committees and Blue Collar Worker participation.

5.4.3. An analysis was undertaken to investigate the relationship between employee participation and the propensity of employees to create a safe environment, also paying special attention to the null hypothesis; namely, that there is no relationship between employee participation and the propensity of employees to create a safer environment.

5.4.3.1. Question 30 focussed on the following: Do you think that employees play a significant role in safety programs? The aim of this question was to access the influence employees perceive that they have to create a safe workplace.

Table 5.26. shows that the majority of the respondents (88.0%) answered “Yes”, that employees play a significant role in safety programs.

Table 5.26: Role played by employees

	Frequency	Percent
Yes	103	88.0
No	14	12.0
Total	117	100.0

Logistic regression

The following results (table 5.27) indicate that there is a relationship between the type of participation and the answer to q30 (Do you think that employees play a significant role in safety programs?) and the type of employee participation.

Table 5.27.: Relationship between the answer to q30 and type of employee participation

	B	S.E.	Wald	df	P	Exp(B)
Constant	-1.996	.285	49.086	1	.000	.136

Variables in the equation

	B	S.E.	Wald	df	P	Exp(B)
Employee Directed Participation	1.330	.605	4.837	1	.028	3.781
Employee Involvement	.564	.456	1.531	1	.216	1.758
Employee Proactive Participation	-.884	.556	2.526	1	.112	.413
Employee Ownership	-1.608	.706	5.183	1	.023	.200
Constant	.349	1.962	.032	1	.859	1.418

Alternatively, the results indicate that Employee Directed Participation ($P=.028<.05$) and Employee Ownership ($P=.023<.05$) are related with the answer to q30.

One Sample T test

The mean differences between the scores given on the scale items and “4” the neutral position were also tested for statistical significance using a one sample T test. Table 5.27. indicates that all t values except that of q32 (Sometimes I depart from safety requirements for the sake of production) are highly significant ($P=.000<.01$). This implies that in general, employees (workers and managers) in the organisation agree with the statements in the scale that measured the influence of employees to create a safe workplace. The t value of the composite index, “Influence of Employees to Create a Safe workplace” (24.596) is also highly significantly greater than 4, implying that the perception of the employees is that the Influence of Employees Creates a Safe workplace.

5.4.3.2. Position and influence of employees to create a safe workplace

Table 5.28 shows the results of the ANOVA on the relationship between position and the perception about the Influence of employees to create a safe workplace. The results indicate that the position held by an employee does not influence their perception ($F=.744, .564$).

Table 5.28.: Relationship between position and perception about the influence of employees to create a safe workplace

	Sum of Squares	df	Mean Square	F	P
Between Groups	1.704	4	.426	.744	.564
Within Groups	64.121	112	.573		
Total	65.826	116			

Using the Tukey multiple comparisons method, it was also found that none of the mean differences in the perception between the positions was significantly different from zero according to the t values with P values which are higher than 0.05, the level of significance.

The T test was also performed when positions 2, 3, 4 and 5 (Table 5.2.) were combined to avoid a situation where some position subgroups had too few observations. Still position was not indicated to be a factor in the perception of the influence of employees to create a safe workplace.

Table 5.29.: Relationship between combined position and perception about influence of employees to create a safe workplace

Independent Sample tests

		Levene's Test for Equality of Variances			
		F	Sig.		
The influence of employees to create a safe workplace	Equal variances assumed	0.104	0.748		
	Equal variances not assumed				
	Position3	N	Mean	Std. Deviation	Std. Error Mean
Influence of employees to create a safe workplace	1	71	5.696	0.76208	0.09044
	2, 3, 4 and 5	46	5.739	0.74714	0.11016

The results in table 5.29. indicate that position ($t=-.301$, $P=.764>.05$) does not influence the perception about the influence of employees to create a safe workplace.

5.4.3.3. T-tests and ANOVA were performed for the influence of employees to create a safe workplace and to find out whether there is any significant difference in employee participation in occupational health and safety activities in Natal Portland Cement manufacturing organisation according gender, age, bargaining, working cycle and work experience. Table 5.30. shows the results for gender.

Table 5.30.: Relationship between gender versus the influence of employees to create a safe workplace

	Gender	N	Mean	Std. Deviation	Std. Error Mean
The influence of employees to create a safe workplace	1	99	5.6944	.75827	.07621
	2	18	5.8148	.73795	.17394

Independent Samples Test

		t-test for Equality of Means	
		t	Df
The influence of employees to create a safe workplace	Equal variances assumed		115
	Equal variances not assumed	-.634	24.000

		t-test for Equality of Means	
		P	Mean Difference
The influence of employees to create a safe workplace	Equal variances assumed	.535	-.12037
	Equal variances not assumed	.532	-.12037

All probabilities for the t values are higher than 0.05 the level of significance, which implies that gender does not affect the decision-making process. In other words, there is no relationship between gender and any of the decision-making process component or the decision-making process in general.

5.4.3.4. Working cycle and decision-making process

Table 5.31. shows the results for the working cycle (with 2 categories)

Table 5.31.: Relationship between working cycle versus the influence of employees to create a safe workplace.

	Working Shift	N	Mean	Std. Deviation
The influence of employees to create a safe workplace	1.00	75	5.7500	.74422
	2.00	40	5.6771	.78087

Group Statistics

	Working Shift	Std. Error Mean
The influence of employees to create a safe workplace	1.00	.08594
	2.00	.12347

Because the third category (3) had only 2 data points, which were too few for valid results, category 2 and category 3 were combined to create only two categories. The results indicate that the influence of employee to create a safe workplace is not influenced by the job cycle.

5.4.3.5. An analysis to investigate the relationship between work experience and the influence of employees have in creating a safe working environment is undertaken below.

Table 5.32.: Relationship between work experience and the influence of employees to create a safe environment.

		Sum of Squares	df	Mean Square	F	P
The influence of employees to create a safe workplace	Between Groups	7.659	3	2.553	4.960	.003
	Within Groups	58.166	113	.515		
	Total	65.826	116			

The results indicate that the influence of employees to create a safe workplace (F=4.960, P=.003<.01) is positively related to work experience.

The Tukey multiple separation results indicate that for the influence of employees to create a safe workplace, work experiences 1 and 4 (P=.018<.05), 2 and 4 (P=.001<.05), and 3 and 4 (P=.060<.05) differ significantly. The implication is that the

more work experience one has the more he or she will participate in the decision-making process to create a safe workplace.

5.4.3.6. An analysis to investigate the relationship between age profile and the influence of employees to create a safe working environment is undertaken. Below Ages 2 and 3 were combined to avoid having too few data points for an age group. The results are shown on table 5.33.

Table 5.33.: Relationship between age and the influence of employees to create a safe environment.

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
The influence of employees to create a safe workplace	Between Groups	1.490	2	.745	1.320	.271
	Within Groups	64.336	114	.564		
	Total	65.826	116			

The age profile of the respondent was not significant enough to influence employees into creating a safe workplace.

5.4.3.7. Below is an analysis to investigate the job profile and employees influence to create a safe workplace.

Table 5.34.: Relationship between job profile and the influence of employees to create a safe environment.

	Manager = 1	N	Mean	Std. Deviation
	Worker = 2			
The Influence of Employees to create a Safe Workplace	1	36	5.7708	.77699
	2	81	5.6872	.74600

The results from the independent tests indicate that the job profile is not significantly related to the influence of employees to create a safe workplace.

5.4.4. The analysis was undertaken below to investigate the relationship between the levels of employee participation and the perception of a safe work environment, paying special attention to the null hypothesis; which presupposes that, there is no relationship between the levels of employee participation and the perception of a safe work environment.

5.4.4.1. Question 43 asked respondents the following question: Do you obey the safety rules because this makes the workplace safe?

Almost all respondents (99.1%) answered “Yes”, that they obeyed the safety rules because this made the workplace safe. See table 5.35.

Table 5.35: Question 43 - Safety rules and a safe workplace

	Frequency	Percent
1.00	116	99.1
2.00	1	.9
Total	117	100.0

The results of One Sample T tests indicates that all the t values are highly significant at the 1% level, meaning that all the mean values of the answers to the scale items are significantly higher than 4. This implies that the employees agreed with all the statements in the scale. The t value of the composite index, employee participation within a safe place ($t=23.129$, $P=.000<.01$) is also highly significant – implying that in general, employees perception is that employees participate within a safe workplace.

5.4.4.2. Relationship between type of participation and perception about employee participation within a safe workplace

Table 5.36. shows the relationships between different types of participation and perceptions on employee participation within a safe workplace.

The results in the table indicate that all types of participation except Employee Directed Participation ($r=-.010$, $P=.912$), are related to the perception about Employee Participation within a safe Workplace.

Table 5.36. Relationship between types of participation and employee participation within a safe workplace

		Employee Directed Participation	Employee Involvement	Employee Proactive Participation	Employee Ownership	Employee Participation within a Safe Workplace
Employee Directed Participation	r	1	.286**	.212*	.261**	-.010
	P		.002	.022	.005	.912
Employee Involvement	r	.286**	1	.454**	.410**	.280**
	P	.002		.000	.000	.002
Employee Proactive Participation	r	.212*	.454**	1	.761**	.465**
	P	.022	.000		.000	.000
Employee Ownership	r	.261**	.410**	.761**	1	.551**
	P	.005	.000	.000		.000
Employee Participation within a Safe Workplace	r	-.010	.280**	.465**	.551**	1
	P	.912	.002	.000	.000	

5.4.4.3. Position and employee participation within a safe workplace

Table 5.37. shows the ANOVA results on the relationship between position and the perception of employee participation within a safe workplace. The results indicate that there is no significant relationship between position and the perception of employee participation within a safe workplace ($F=.769$, $P=.548>.05$).

Table 5.37.: Relationship between position and perception about employee participation within a safe workplace

	Sum of Squares	df	Mean Square	F	P
Between Groups	2.101	4	.525	.769	.548
Within Groups	76.547	112	.683		
Total	78.648	116			

Using the Tukey multiple comparison method, it was also found that none of the mean differences in the perception between positions was significantly different to zero according to the t values whose P values were higher than 0.05, the level of significance.

Also an independent samples T test was performed to test for the relationship between position and the perception of employee participation within a safe workplace when positions 2, 3, 4 and 5 were combined. The following results in table 5.39 were obtained.

Table 5.38.: Relationship between position and perception about employee participation within a safe workplace (positions 2, 3, 4 and 5 combined)

	Position	N	Mean	Std. Deviation	Std. Error Mean
Employee Participation to create a Safe Workplace	1	71	5.6977	.85315	.10125
	2, 3, 4 and 5	46	5.8579	.77434	.11417

The t value ($t=-1.049$, $P=.296>.05$) is not significant at the 5% level. So, this also implies that position does not influence the perception of employee participation within a safe workplace. Furthermore the Tukey multiple comparisons show that none of the mean differences is significant as well.

T-tests and ANOVA were performed for the employee participation within a safe workplace to find out whether there is any significant difference in employee participation in occupational health and safety activities gender, age, bargaining, working cycle and work experience. The following were the results.

5.4.4.4. Gender and perception about employee participation within a safe workplace

Table 5.39. shows the results for gender.

Table 5.39. : Relationship between gender and perception about employee participation within a safe workplace.

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Employee Participation within a Safe Workplace	1	99	5.7249	.80932	.08134
	2	18	5.9573	.89560	.21110

Independent Samples Test

		t-test for Equality of Means	
		P	Mean Difference
Employee Participation within a Safe Workplace	Equal variances assumed	.273	-.23232
	Equal variances not assumed	.315	-.23232

All probabilities for the t values are higher than 0.05 the level of significance, which imply that gender does not affect the decision-making process. In other words, there is no relationship between gender and any of the decision-making process component or the decision-making process in general.

5.4.4.5. Working cycle and employee participation within a safe workplace.

Table 5.40 shows the results for the working cycle (with 3 categories).

Table 5.40.: Relationship between working cycle and perception about employee participation within a safe workplace.

	Working Shift	N	Mean	Std. Deviation
Employee Participation within a Safe Workplace	1.00	75	5.8636	.79907
	2.00	40	5.5942	.85852

Group Statistics

	Working Shift	Std. Error Mean
Employee Participation within a Safe Workplace	1.00	.09227
	2.00	.13574

The results of the independent T-tests indicate that employee participation within a safe workplace (1.824, P=.071<.1) is positively related to the job cycle.

5.4.4.6. Working experience vs employee participation within a safe workplace

Table 5.41.: Relationship between working experience and perception about employee participation within a safe workplace.

		Sum of Squares	Df	Mean Square	F	P
Employee	Between Groups	3.431	3	1.144	1.718	.167

Participation within a Safe Workplace	Within Groups	75.218	113	.666		
	Total	78.648	116			

The results indicate that employee participation within a safe workplace is not positively related to work experience.

5.4.4.7. Age profile versus employee participation within safe workplace.

Ages 2 and 3 were combined to avoid having too few data points for an age group. The results are shown on table 5.42.

Table 5.42.: Relationship between age and perception about employee participation within a safe workplace.

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Employee Participation within a Safe Workplace	Between Groups	1.190	2	.595	.875	.419
	Within Groups	77.459	114	.679		
	Total	78.648	116			

The results indicate that employee participation within a safe workplace is not positively related with the age profile of the respondents.

5.4.4.8. Job profile (Manager vs Blue Collar Worker) and employee participation within a safe workplace.

	Manager = 1 Worker = 2	N	Mean	Std. Deviation
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Employee Participation in a Safe Workplace	1	36	5.8440	.82018
	2	81	5.7236	.82722

The results indicate that employee participation within a safe workplace is not significantly related with job profile.

5.5. HYPOTHESES TESTING

In the last section the descriptive and inferential statistics laid a solid foundation to test the four hypotheses. The testing included frequency and percentage distribution of each biographical variable, regression analysis, Pearson's correlation, Analysis of Variances (ANOVA) and normal distributions analysis. The p-value is used to make a decision as to whether or not to reject the null hypotheses is based on a p-value less than 0.05, the researcher rejects the null hypothesis.

In the hypotheses testing process the following procedure was followed:

- Identifying the assumptions,
- Stating the null and alternate hypothesis,
- Identifying the test statistics,
- Comparing the p-value to the critical values,
- Deciding whether or not to reject the null hypothesis.

5.5.1. Hypothesis 1:

This study assumes that the groups of employees within the manufacturing environment, namely Blue Collar Workers, Supervisors, Engineers or Technicians and S.H.E. Practitioners, participate equally to ensure zero harm in the workplace. Furthermore the notion is that the Blue Collar Workers and Management are influenced by the type of participation that they use in the various decision-making processes that are driven by legislation or internally within the company.

In this study **Employee Directed Participation**, which is the process of employee engagement where an employee is directed to perform his or her task, with minimum employee input occurring prior to the activity being undertaken. This is apparent where employees follow set procedures as prescribed by Corporate Head Office and as dictated by best practices and Legislation, defining what, how, when and where to perform set tasks (Hall *et al.*, 2006; Marchington and Wilkinson, 2005). A process requiring more employee participation than employee directed participation is Employee Involvement which entails the process of sharing information with employees, examples explored are the financial justification processes to attain funds for safety initiatives, objectives and targets setting (Hall *et al.*, 2006; Cabrera, 2007; Raines, 2011).

In addition this study explores Employee Proactive Participation, which is a process of sharing with employees, consulting with employees, and joint decision-making on issues related to occupational health and safety matters, with employees and management working together to create a safe workplace (Pater, 2013; Rivkin *et al.*, 2014).

This study also reiterates the fact that **Employee Ownership** is a process that encourages employees to assume full responsibility of their health and safety at the workplace, working together to find solutions to safety challenges, and championing the health and safety activities at the workplace (Budd *et al.*, 2011).

Arising from the need to explore the participative role of employees in the management of occupational health and safety (OHS) in the decision-making processes, the following is the null hypothesis:

The null hypothesis: There is no relationship between the participation types; namely Employee Directed Participation, Employee Involvement, Employee Pro-active Participation and Employee Ownership; and the decision-making process in managing occupational health and safety.

The hypothesis relates to the participation of employees within the decision-making processes at the same time utilising directed participation, involvement, pro-active and ownership participations. It can be noticed that besides Employee Directed Participation ($r=.177$, $P= .0560$), Employee Involvement ($r=.759$, $P=.000$), Employee Proactive Participation ($r=.833$, $P= .000$) and Employee Ownership ($r=.818$, $P=.000$) are highly correlated with components of decision-making process. The order of the most effective to the least effective type of participation that is utilised by employees is Employee Ownership, Employee Proactive Participation, then Employee Involvement and lastly Employee Directed Participation.

Regression analysis was performed and the “Type of Participation” significantly affects the decision-making process, as expected since the P value (.000) of the corresponding t value is even less than .01, the strongest level of significance.

According to the normality assumption of the ANOVA, which was not significantly violated, of the four participation types only Employee Directed Participation is not significant. According to the standardised coefficients results, Employee Ownership ($B=-.497$, $P=.000<.01$) is the most effective or important type of participation, followed by Employee Proactive Participation ($B=.245$, $P=.008$), then Employee Involvement ($B=.199$, $P=.003$).

Further analysis to explore the impact of the grouping of employees in the various types of participation resulted in only employee involvement ($F=2.650$, $P=0.037$). The P values corresponding to the relevant Tukey multiple comparisons were less than 0.1 , implying that “Position” does not affect employee participation. This signifies that the position that an employee is grouped in does not affect their participation. Similarly results show that the gender of an employee does not influence his or her participation in the management health and safety.

Within the heavy industrial environment that operates 24/7, employees work in varying work cycles. Results indicate that Employee Involvement ($t=1.694$, $P=.093<.1$), Employee Proactive Participation ($t=2.171$, $P=.033<.05$) and Employee Ownership ($t=1.828$, $P=.07 < .1$) are positively related with job cycle.

Based on the p-value of less than .05 for the types of participation, the researcher notes that statistically there is a significant difference, and therefore rejects the null hypothesis. This implies that alternate hypothesis is confirmed, that there is a relationship between the participation types; namely Employee Directed Participation, Employee Involvement, Employee Pro-active Participation and Employee Ownership; and the decision-making process in managing occupational health and safety.

This confirms that the employees participating in health and safety issues have an impact on the decision-making process. The position held by the employee within the manufacturing organisation did not have any significant bearing on the type of participation that is used in the decision-making forums. In addition the type of participation used is significant in managing the decision-making process when it comes to health and safety.

Furthermore although the majority of the respondents were males (84.6%), this did not have a significant impact on the any of the types of participation utilised at the different health and safety forums. The gender of the respondents was not related to the participative role of employees in the decision-making forums. However the experience of the employee was related to the decision-making processes. The majority of employees have less than 5 years (34.2%) of experience with the company and 31.6% of the respondents being found to be at the company for 6 to 15 years, implying that 65.8% of the respondents had been with the company for less than 15 years.

The majority of employees work on a full time day work (office hours) cycle. The manufacturing process is undertaken 24/7, implying that very few of the employees

work at night, i.e. Shift work. The surveys were undertaken during a period where the maximum number of shift workers is available during day office hours. The results indicate that Employee Proactive Participation ($t=2.137$, $P=.036<.05$), Employee Ownership ($t=1.681$, $P=.096<.1$) and decision-making process ($t=1.769$, $P=.080<.1$) are positively related with work cycle, implying that the participation of employees working during the office hours differed significantly with shift workers.

5.5.2. Hypothesis 2

Globally health and safety legislation calls for worker representation and joint labour-management health and safety committees (Hall *et al.*, 2006). In the South African context, legislation prescribes the constitution of the safety, health and environmental forums. The representation within these forums is picked from employee groups, Blue Collar Workers, Supervisors, S.H.E. Practitioners and Engineers or Technicians. In addition representation is required from members of the Unionised sector. The assumption is that employee participation in the S.H.E. committee meetings increase safety awareness and negate unsafe conditions, thereby helping to reduce injuries at the workplace.

As a result of these assumptions, the researcher explores the null hypothesis, namely:

The null hypothesis: There is no relationship between the participation in S.H.E. committees and the number of injuries experienced at the workplace.

Respondents were asked to answer by using a Yes or No as to whether or not there was a relationship between S.H.E. committees and the number of injuries experienced at the workplace. The majority of the respondents (86.3%) answered "Yes" that there is a relationship between the participation at safety committees and the number of injuries that is experienced. On average the mean values of all the

items in the measuring scale was higher than 4, implying that the employees agreed with the statement.

With the One-Sample test, all the t values are highly significant ($P=.000<.01$). This implies in general, that employees agree with the statements. The t value of the composite index, "employee participation in S.H.E. committees" of 23.238 is also highly significant. In general employees perceive that there is a relationship between the participation in S.H.E. committees and the number of injuries that is experienced at the workplace.

The t values of the values of several statements are highly significant. In general the respondents agreed that safety meetings are necessary to prevent injuries ($t=20.105$; $P=.000<.01$), that accidents are discussed at safety meetings ($t=19.679$; $P=.000<.01$), that unsafe acts are causes of injuries ($t=23.785$; $P=.00<.01$) and that unsafe acts are highlighted at safety meetings to prevent injuries ($t= 17.072$; $P=.000<.01$). In general employees perceive that the safety meetings and the number of injuries experienced are related.

Logistic regression was used to determine if the type of participation was associated with the perception that participation at these S.H.E. committees and the number of injuries experienced had a relationship. Since the P values were higher than .1 level of significance, there is no association. However correlational analysis between the types of participation and employee participation in S.H.E. committees show that the results are correlated at the 0.05 level of significance. All types of participation, save for the exception of Employee Directed Participation ($r=.067$, $P=.472>.05$) are highly correlated the Employee Participation in S.H.E. committees.

The Tukey Multiple Comparisons were performed to find out whether the position that was held by an employee influences the perception about employee participation in S.H.E. committees. The results indicate that there is no relationship between position and perception about employee participation in S.H.E. committees. This implies that

the perception of employees representing the different groups of employees is not significant when participating in the S.H.E. committees. Consequently this means that worker representation from the various groups being Blue Collar Workers, Supervisors, S.H.E. Practitioners and Engineers, did not have a significant impact on the participation in these Committees.

Analysis as to whether the gender or the work cycle is not positively correlated to employee participation in S.H.E. committees, implying that although the majority of the respondents were males (84.6%) and females being 15.4%, this did not have any significant impact on the employees participating in the S.H.E. committees.

The results (Tukey multiple separation) emanating from the relationship between the work experience of employees and the perception of employee participation in S.H.E. committees, indicate that the work experience of employees with 0-5 years of experience and those with greater than 26 years of experience differ significantly ($P=.024<.05$). This implies that the more experience one has the more he or she will participate in the decision-making process or rather more experienced people participate in S.H.E. committees more than the less experienced on average.

When comparing the age of the employee and their participation in S.H.E. committees, the results indicate that the Employee Participation in S.H.E. committees ($F=2.607$, $P=.078<.1$) are positively related to age. Respondents between the ages of 36 to 45 years differed significantly when compared with the age group between 46 and 65 years of age ($P=.071<.1$) significantly in terms of participation in S.H.E. committees. The age of the employees plays a significant role in their participation in the safety forums, which means that the older an employee is, the more likely he/she will participate in the decision-making process or rather that older people participate in the S.H.E. committees more than their younger colleagues.

Based on the p-value of less than .05 for the types of participation, the researcher notes that there is a statistically significant difference, and therefore rejects the null

hypothesis. This implies that the alternate hypothesis is confirmed, that there is a significant relationship between the participation in S.H.E. committees and the number of injuries experienced at the workplace.

5.5.3. Hypothesis 3

Hall *et al.* (2006), Pater (2013) and Raines (2011) point out that employees have the capacity to influence their workplace safety by encouraging their participation in safety processes, leading to a higher safety performance that is attained and this will benefit the organisation. Employees within the manufacturing front have the ability to influence the safety conditions and behaviour by acting responsibly, where employees exercise the right to refuse to perform unsafe acts, by undertaking that their unsafe behaviour can create danger to others in close proximity. It is crucial to note that working together to exercise their rights and create awareness of unsafe behaviour and the participation in the various safety programs will create a safer workplace (Tristan *et al.*, 2014).

The assumption in this study is that employees have the influence to create safer workplaces. Furthermore, that there is no significant difference between the various groups of employees as defined in the research, also further grouping employees into Blue Collar Workers and Management, and their perceptions of influence to create a safer workplace.

This is a prelude to the following null hypothesis:

The null hypothesis: There is no relationship between employee participation and the propensity of employees to create a safer environment.

Respondents were asked whether they thought that employees play a significant role in safety program by answering with a “YES” or “NO” answer. The majority of the

respondents, namely 88%, perceived that employees played a significant role in safety programs.

The responses to statements such as “I have the right to refuse to undertake work which is unsafe” ($t=18.908$; $P=.000<.01$), “By reporting unsafe conditions, I make my workplace safe” ($t=24.891$; $P=.000<.01$), “We investigate accidents to stop a recurrence of similar accidents” ($t=16.929$; $P=.000<.01$) and “ Employees contribute to the success of safety of the safety programs” ($t=19.711$; $P=.000<.01$). In general employees perceive that they have an influence in creating a safer workplace.

The mean differences between the scores given on the scale items and “4” the neutral position were also tested for statistical significance using a one sample T test. The results indicate that the t values are highly significant ($P=.000<.01$). In general both Blue Collar Workers and Managers in the organisation agree with statements that measured the influence of employees to create a safe workplace. The t value is also significantly greater than 4, implying that the perception of the employees is that the influence of employees creates a safe workplace.

The employee representation from within the groups of Blue Collar Workers, Supervisors, S.H.E. Practitioner and Engineers or Technicians does not influence the perception of their Participation within a Safe Workplace. Furthermore the Tukey multiple comparisons show that none of the mean differences are significant as well, implying that there is no significant difference between their perceptions of the influence they have to create safe workplace.

Results from logistic regression indicate that there is relationship between the type of participation and whether employees that they play a significant roles in safety programs. Alternative all types of participation except Employee Directed Participation ($r =.025$, $P=.79 >.05$) are highly correlated with perception about to influence employees have to create a safe workplace at the 0.01 significance level. In general

this implies that the type of employee participation is related to the influence of employees have to create a safe workplace.

Based on the p-value of less than .05, the researcher notes that there is a statistically significant difference, and therefore rejects the null hypothesis. This implies that the alternate hypothesis is confirmed, and that there is a relationship between employee participation and the propensity of employees to create a safer environment.

5.5.4. Hypothesis 4

The researcher hypothesizes that employees participate because the workplace is safe. In addition a safer workplace increases the participation of employees in promoting safety programs. Furthermore the study assumes that employees, most importantly Blue Collar Workers and Management, utilise a certain type of participation to make the workplace safer.

These assumptions are included In order to explore the null hypothesis, namely:

The null hypothesis: There is no relationship between the types of employee participation and the perception of a safe work environment.

The survey questionnaire asked respondents whether or not they perceived that obeying safety rules will make the workplace safer. Almost all respondents (99%) answered “Yes”, that they obeyed safety rules because this made the workplace safe.

The results of One Sample T tests on the perceptions about employee participation within a safe workplace indicate that all t values are highly significant at the ,1% level, meaning that all the mean values of the answers to the scale items are significantly higher than “4”. This implies that the employee agreed with all statements in the scale. The t value of the composite index, employee participation within safe

workplace ($t=23.129$, $P=.000<.01$) is also highly significant, implying in general employees perceive that employees participate within a safe workplace.

The responses to statements such as “It is everyone’s duty to follow safety rules even though the workplace is safe” ($t=32.763$, $P=.000<.01$) and “A safe workplace encourages employees to participate in safety programs” ($t=20.188$; $P=.000<.01$), signifies that employees agree that they participate because they perceive that the workplace is a safe.

Further results relating in a relationship between varying types of participation and the perceptions about employees participating within safe workplace; indicate that all types of participation except Employee Directed Participation ($r=.01$, $P=.912$), are related to participation within a safe workplace. The order of significance is that Employee Involvement ($r=.280$, $P=.002<.01$), then Employee Proactive Participation ($r=.465$, $P=.000<.01$) and lastly Employee Ownership ($r=.551$, $P=.000<.01$) are related to the perception of employees participating within a safe workplace. This means that the perception of employees participating within a safe workplace is not affected or influenced by employee directed participation, the process of employee engagement where an employee is instructed to perform their task, with minimum employee input occurring prior to the activity being undertaken. This implies that employees are not significantly affected by being instructed to perform a task with no input from them when working in a safe workplace.

The tests undertaken between position and the perception of employee participation within a safe workplace indicates that there is no relationship. This implies that there is no significant difference between the various groups of employees, whether blue Collar Workers, Supervisors, Engineers or Technicians and S.H.E. Practitioners, and the perception of their participation within a safe workplace. The results indicate that the perception about the employee participation within safe workplace is not affected or influenced by the position held by an employee.

Based on the p-value of less than .05, the researcher notes that there is a statistically significant difference, therefore rejects the null hypothesis. This implies that the alternate hypothesis is confirmed, and that there is a relationship between the types of employee participation and the perception of a safe work environment.

5.6. CONTRIBUTIONS OF THE RESEARCH

The research makes the following contributions:

5.6.1. Work councils, labour-management committees and other forms of worker participation as a means to improve health and safety performance have been the subject of a recurring debate. This study establishes that within the various forums different types of participation exist, namely directed participation, involvement, pro-active participation and ownership, which is utilised in the decision-making process in the management of occupational health and safety. Each type of participation is necessary, as the role of each of these participation types varies in content to the extent that employees participate in the decision-making processes, based on the encouragement by the managing structures (Alverson, 2011; Brewster *et al.*, 2007; Brooks, 1987; Creighton, 1982; Dixon *et al.*, 2009; Eaton *et al.*, 2000; Franca, 2011; James *et al.*, 2002; Kleiner *et al.*, 1997; O' Grady, 2000; Rivkin *et al.*, 2014).

In terms of ranking, the respondents agree that the most effective type of participation is ownership, thereafter proactive participation, then followed by involvement and lastly directed participation. The contribution of this analysis implies that employees acknowledge that the most significant participative process is one in which they need to assume full responsibility for their health and safety at the workplace, working together to find solutions to safety challenges, and championing the health and safety activities at the workplace. Also extending the participative process to include the sharing of knowledge, consultation with each other, and jointly making decisions on issues related to occupational health and safety matters, with employees and management working together to create a safe workplace.

This understanding of this framework will assist all employees in managing occupational health and safety activities more effectively by employing the

various methods of participation. By using the participative methods of directed participation, involvement, pro-active participation or ownership as a vehicle; it encourages employee participation in driving the reduction and severity of work related accidents and illnesses. This engagement process can positively affect the organisation's health and safety performance (Raines, 2011).

5.6.2. The evidence of this study has highlighted that employees perceive that their participation in occupational health and safety decision-making is related to the prevention of incidents or accidents at the workplace. In line with the thinking of Cabrera (2011) and Salaman (1992), the researcher defines OHS participation as an engagement process that allows an employee to exert influence over the decisions that affect the occupational health and safety (OHS) activities within the work environment.

Employee participation in OHS can range from one extreme of having no influence on decisions making to taking full responsibility. The study defines Employee Directed Participation as the process of employee engagement where an employee is instructed to perform his or her task, with minimum employee input occurring prior to the activity being undertaken. The employee has little or no influence over the activity at hand. During this engagement process employees normally follow set procedures, defining what, how, when and where to perform set tasks.

A more advanced stage of employee directed participation, namely employee involvement. Employee Involvement entails the process of sharing information with employees, however making critical decisions outside the employee domain with very little participation encouraged, and Management reserving the right to make the final decisions. Normally the process is a one way communication process with the employee being involved, due to the process being forced on by all, by legislation (Hall *et al*, 2006; Cabrera, 2007; Raines, 2011).

In line with South African Legislation, this study defines Employee Proactive Participation as a process of sharing with employees, consulting employees, and the joint decision-making on issues related to occupational health and safety matters. This process is perceived as the ideal vehicle to engage employees in mandatory S.H.E. committees.

This study proposes that the ideal process of engaging employees is employee ownership, whereby the engagement process ensures and sustains long term benefits in the management of occupational health and safety. Employee Ownership is defined as a process that encourages employees to assume full responsibility and to champion the health and safety activities at the workplace.

This study highlights the decision-making process entails all the types of approaches to make a success of the OHS management processes. The motive of employee participation at these various decision-making interventions is to ensure the employee's own safety and well-being including that of his colleagues.

5.6.3. This study further analyses the participative roles of the groups, Blue Collar Workers and Managers (Dyreborg, 2011). The results have highlighted the participation by Managers or Blue Collar Workers was not significantly different. The OHS performance of the organisation was better than the industry as a whole (Table 3.1.) might be due to the fact that both Management and Blue Collar Workers jointly work together with the common objective of reducing injuries at the workplace. In addition the study highlights that the occupational health and safety performance can be enhanced by Blue Collar Workers and Management jointly participating in managing health and safety at the workplace.

- 5.6.4. Most manufacturing organisations operate 24 hours a day, seven days a week. In general two work cycles are used by employees, namely office hours and shift based eight hour work cycle that consist of three work cycles per day. In this study, the majority of employees worked during the day. Employees that worked office hour shifts participated significantly more than employees who worked on other shifts. These “office hour” employees acknowledged that the participative roles of assuming full responsibility of their health and safety at the workplace, by voluntarily working together to find solutions to safety challenges, combined with the sharing of knowledge and the implementation of health and safety activities at the workplace more than their “shift based” colleagues.
- 5.6.5. South Africa is seeing an increase in women entering the male dominated manufacturing platform. This study results showed that although the majority of the workforce was male dominated, there was no significant difference between males and females in their utilisation of the different types of participation in the decision-making forums, or in the participation in the monthly mandatory S.H.E. committees and in their influence to create a safe workplace. This implies that both men and women focused on the prevention of injuries and securing above average safety performances.
- 5.6.6. There are a lack of studies focusing on the age and experience of employees versus the number of injuries experienced. The results from this study emanating from the relationship between the work experience of employees and the perception of employee participation in the decision-making forums and in the S.H.E. committees, indicate that the more experience one has the more he or she will participate in the decision-making process, or rather the more experienced people participate in S.H.E. committees more than the less experienced on average. This knowledge is significant for persons chairing the decision-making processes in health and safety, as it is vital to encourage the

employees with less experience to participate in the decisions that affect their daily work environment.

In addition the study found that the Employee Participation in S.H.E. committees is positively related to age. The age of employees plays a significant role in their participation in the safety forums, which means that the older an employee is, he or she will participate more in the decision-making process, or it illustrates that the majority of people who participate in the S.H.E. committees are older than their colleagues .

Whether the participative process is voluntary or mandatory, and is being used as a vehicle to curb the accidents and illnesses at the workplace, the age and experience of forum members should constitute a fair number of younger employees and the same number of older employees. The participation process incorporates meetings that constitute the Blue Collar Worker representatives and Management, working jointly in accident investigations, planned maintenance work order systems, occupational hygiene investigations, hazard identification and risk assessment forums, monthly plant reviews, management reviews and S.H.E. site inspections. Within these forums, the age and experience should be “balanced”.

5.6.7. Quoting the words of John Spath (2004): “Safety committees are a hallmark of effective safety programs, but many find employee participation a nagging problem”. The effectiveness of the S.H.E. committees is reliant on the contribution of employees in the decision-making process with the primary objective being to prevent injuries and illnesses. This study supports the process, whereby employees are exposed to accidents and unsafe acts reported elsewhere. The outcomes that are shared at these forums create awareness on the prevention of injuries. The employees attending these meetings are the communication conduits for the remedial actions and outcomes that can be shared with the entire organisation.

5.6.8. Globally Governments have focussed on the development of joint labour-management S.H.E. committees to regulate health and safety problems. The legislated process of giving employees the necessary authority to act on their daily problems, comes with its own challenges such as enforcement of the S.H.E. committees, the compulsory participation of Blue Collar Workers and Management, with the objective of reducing injuries at the workplace and encouraging organisations to drive safety and health initiatives voluntarily.

The analysis of this study depicts that there is no significant difference between the participation of Blue Collar Workers and Management. The principle of the joint labour-management philosophy can function as Workers and Management have a common objective of utilizing their participative roles at the S.H.E. committees to prevent injuries. This can be attributed in the safety performance of the organisation as depicted in Table 3.1., where the organisation, over a period of five years, achieved a loss time injury frequency rate of 0.58 which is better than the global benchmark of 1 (Cement Sustainable Initiative – Benchmark Dictionary 2014).

5.6.9. The analysis of the study depicts that employees formed an integral part of safety programs and have the influence to create a safe workplace. The employee as an individual and as a member of a team can exercise their right to refuse to undertake work which is unsafe, to report unsafe conditions, to join in the investigation of accidents to prevent similar accidents that have occurred, and to contribute to safety programs. In general employees have the influence to create a safer workplace. In addition in general both Blue Collar Workers and Managers in the organisation agree employees have the influence to create a safe workplace.

5.6.10. The safety of employees lies in the hands of the employee themselves. This study found that there is no significant difference between the Managers and

Blue Collar Workers in influencing the creation a safe workplace. Both Management and Blue Collar Workers have the influence to make their workplace safer. A possible threat however is that this increase in the worker's voicing their concerns has the potential of victimisation on the part from management, who view these employees as a hindernace in the managment initiatives. In addition the participation of employees in decision-making forums may portray unions as increasingly irrelevant in the workplace and employees may become less involved in supporting them, weakening the unions' bargaining power.

5.6.11. The results gathered from the study showed that in general the type of employee participation is related to the influence of employees have to create a safe workplace. This means that the more employees assume full responsibility of their health and safety at the workplace, work together to find solutions to the safety challenges, share their knowledge, and jointly making decisions on issues related to occupational health and safety matters, then the greater the influence of employees to create a safe workplace is.

5.6.12. A safe workplace encourages employees to participate in safety programs. In this study the results showed a positive relationship exists between the employee participation in safety initiatives and a safe working environment. This is argued that within a safer workplace the more employees will participate or rather that employees participate more in a safer workplace. When examining the relationship between which groups of employees participate more in a safe workplace, no significant relation was observed. This demonstrates that on average all employees, whether they form part of Management or Blue Collar Workers, agree that a safe workplace encourages employees to participate in occupational health and safety activities.

The current study is in line with study and case studies undertaken by Mylett and Markey (2007), Pater (2013), Raines (2011) and Spath (2005) into employee participation in occupational health and safety that have shown that worker participation has impacted positively in improving workplace safety performance. In addition the study undertaken into understanding the effectiveness of worker participation in health and safety decision-making has highlighted that the different types of participation have a role in the management of health and safety, the transparency of reporting unsafe acts, unsafe conditions and near misses, the workplace standards and procedures. additionally exercising influence for one's safety and that of others, functioning within a safe work environment and the participation within joint committees of Unions, Employees and Management have promoted worker participation fostering the purpose of injury prevention.

5.7. GENERALISATION OF THE RESEARCH

The researcher is of the view that the fatalities, serious accidents, costly damage to property and poor public image endured by organisations can be attributed to the lack engagement of employees in the management of health and safety activities. In the study the participation processes explored the participative role of employees in S.H.E. committees, injury and damage prevention investigations, physical asset maintenance programs, continuous improvement forums, management reviews, hazard identification and risk assessment committees that resulted in four distinct types of participation.

Employees need to contribute by adhering to set internal organisational standards and procedures at the various S.H.E. interventions. There are certain aspects within the management of occupational health and safety where little or no employee debate is entertained. This type of participative process is known as Employee Directed Participation and is crucial as to ensure that employees do not deviate from set rules and procedures. An example is the process of de-energising the electrical power to driven machinery when work is undertaken on such equipment. In organisations that

are sustaining above average S.H.E. performances employees obey prescribed guidelines and procedures as a norm.

A more advanced stage of employee directed participation is Employee Involvement, which allows employees to make suggestions, work in teams to implement agreed solutions and monitor compliance to the organisational guidelines and Legislation. It consists of employees sharing information with each other; however the critical decisions are made outside the employee domain with very little participation encouraged. Normally the process is a one way communication process with the employee being encouraged to participate, due to the participative process being forced on by all, possibly by Legislation or Corporate guidelines (Hall *et al.*, 2006).

Globally, and as is the case in South Africa, Legislation prescribes employee participation. Employee Proactive Participation is an empowerment process of sharing with employees, consulting with employees, and the joint decision-making by Management and Workers on issues related to occupational health and safety. The participative role of all employees is significant and requires the joint communication process in consultative forums to achieve organisational health and safety objectives, the engagement of teams to influence continual improvement initiatives, the encouragement of team members to find innovative solutions and the engagement of teams to set clear objectives that ultimately achieve zero harm or avoid an injury culture. As Management has control over the financial budgets, the final decisions still lies in the hands of Management. There are decisions that could create a cost burden that the organisation cannot afford. This requires Management intervention.

The ideal participation approach, as explored by this study is Employee Ownership that encourages employees to assume full responsibility and champion the health and safety activities at the workplace. The process is regarded as the most significant when comparing the different types of participation used in the decision-making in the various S.H.E. forums. However this process needs further investigation as it relates to the maturity of the safety culture in the organisation. This is beyond the scope of

this study. Spath (2011) indicated that safety and health programs that incorporated a high level of employee participation are likely to be more successful.

Globally as is the case in South Africa, trade union councils, work councils, labour-management joint committees and other forms of worker participation are used to improve the safety at the workplace. In South Africa, although this collective form of representation has benefits such as representing the collective preferences of workers in regard to working conditions, being a vehicle to efficiently gather and disseminate information on rights, administrative procedures and the workplace risks, and a means of providing protection from employer discrimination, these collective voices however have not been able to efficiently influence the health and safety of workers. This can be attributed to the declining representation of employees and the reduction in the power base of trade unions that have influenced the ability of these entities to influence and impact positively on the organisations' OHS performance.

This study points out that in the mandatory S.H.E. committees, the ideal decision-making is accomplished by both Management and Workers seeking solutions jointly, the commitment of both management and the workforce, the acceptance of personal responsibility for poor performances by all employees and a safe working environment are the vital ingredients to ensure that OHS is of a strategic value within organisations. By making both Managers and Workers self-accountable for the inherent contributions of their input towards the achievement of the overall goals of the organisations, an improved safety performance can become a reality. These monthly S.H.E. committees are credible vehicles in the prevention of injuries at the workplace. The study found that there is a need to work together to find innovative solutions to the hazards, seeing as how workers know best as they are at the operational forefront and managers can provide the economic backing for the implementation of such positive solutions in mitigating the risks that workers assessed systematically.

The study concurs with the fact that if the systems and processes one must use and operate within, permits exposure to hazards, then eventually the day to day activities pressurise employees to employ unsafe work practices that contribute to injuries and serious accidents. In these cases it is the responsibility of the employee to understand and exercise his or her right to refuse to undertake an unsafe act that could pose a danger to him/her or others, by not being afraid to be victimised after reporting unsafe acts or unsafe conditions. Similarly participating in accident investigations, by actively participating in the review of safety procedures and contributing to the success of the safety management system as workers have the authority to act on daily problems that these workers encounter. Once changes that affect safety are made with the consultation of employees' input and involvement, organisations will find it easy to continuously improve OHS performance over time. These processes require a mature safety culture that requires further research.

A safe working environment is key to encouraging the participation of employees in the safety initiatives. A safe workplace motivates employees to work safely as the perception is that the management cares about them, workers feel safe and secure, workers feel free to participate in safety programs such as alcohol testing, and understand that a safe workplace assists in the prevention of workplace injuries. On average all employees, both Management and Blue Collar Workers, agree that a safe workplace encourages employees to participate in occupational health and safety activities. A safe workplace is an indication of employees working systematically in their day to day activities. This contributes to an above average OHS performance.

The participative roles of employees in the various decision-making forums are related to the age and experience of the participants. Participants with more experience and of a higher age will participate greater in the decision-making processes. This knowledge can be utilised at the decision-making forums, as the younger and less experienced individuals need to be encouraged to participate in the decisions that affect their daily work environment.

The overall participation of employees across the organisational hierarchy can have an astronomical effect on safety initiatives, which in-turn will have an effective intervention to curb the unacceptable number of lives lost

5.8. SUMMARY:

In Chapter Five the results of the findings were discussed in detail. The results support that there are four types of participation, namely directed participation, involvement, pro-active participation and ownership, which are utilised by blue collar workers and managers, jointly achieving better health and safety performance within the workplace.

The vehicles to achieving increased decision-making in participative forums can be attained by means of S.H.E. committees, injury and damage prevention investigations, physical asset maintenance programs, continuous improvement forums, management reviews, hazard identification and risk assessment committees.

The participation is practised by all the groups of employees, with no marked difference of the level of participation between the groups of employees, namely Blue Collar Workers, First Line Supervisors, S.H.E. Practitioners and Engineers or Technicians. This was the case with Blue collar Workers and Management as no significant difference in participation as established.

Chapter Six consists of the discussions of the study, general conclusions, future research, limitations of the study and recommendations.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1. INTRODUCTION

An overview and outcome of the research, the conclusions and recommendation in this chapter arise from the direct result of the survey questionnaire responses, data analysis of the feedback and the relationship of the results in respect of the study questions as depicted in the previous chapter.

This chapter highlights the contribution of answering the research questions, thereby demonstrating the implications and relevance of the study. The following is a summary of the research questions that evaluated the employee participative processes and utilised employee participation to contribute positively to the occupational health and safety performance within a manufacturing organisation.

The study investigated the types of participation that are used by the internal stakeholders in making decisions in the management of health and safety activities. The reasoning being is that there are different types of participation and all the types are necessary to ensure that the decision made with respect to the health and safety cause is successful.

South African legislation stipulates that a manufacturing organisation must institute participative committees. This study investigated whether the participation of employees in the S.H.E. committees contribute to the prevention of injuries at the workplace. In addition the study explored if Managers participated more than Blue Collar Workers.

Furthermore the participation of internal stakeholders and the propensity of employees to create a safe working environment was investigated. Employees have the influence to make their workplace safe. Lastly the study explored employee participation within a safe workplace.

6.2. RESEARCH MOTIVATION

Various studies that looked into improving occupational health and safety identified employee participation (EP) as an instrument that can affect the organisations' performance positively. This study was motivated by a realisation that the best way to deal with health and safety problems is to provide a platform, that allows employees to act on hazards that they face daily (Parsons, 2011). This study advocated that employee participation was an apt intervention in the improvement of the decision-making process within the management of OHS.

Based on the literature review regarding employee participation and the commonalities across the empirical studies, there is still confusion as to the conceptual definition of participation (Budd *et al.*, 2011; Cabrera, 2007; Jeung, 2011; Marchington *et al.*, 2005). This study combined the various definitions and suggested that there exists different types of participation.

Arising from the differentiation of the employee participation types (hypothesis 1) utilised in the decision-making processes, and the participation in S.H.E. committees (hypothesis 2), the study affords practitioners an opportunity to apply an appropriate participative style in the decision-making process at the OHS forums. The investigation considered factors such as the team dialogue, initiative in finding solutions to OHS problems, taking on responsibility, innovation by making suggestions to improve OHS activities, and OHS maturity in the form of sharing information and encouraging each other, is applied at the decision-making OHS forums. The study analysed and found that there was no significant difference in the participation between the different groups of employees, namely Blue Collar Workers, Supervisors, S.H.E. Practitioners and Engineers or Technicians. There are other studies that have found that there is significant difference between Management and Blue Collar Worker participation in decision-making forums.

6.3. SUMMARY OF THE RESEARCH FINDINGS

The following discussions will follow the process of contributing to answering the research questions, thereby satisfying the research objectives with cross references to other relevant studies and underlying theory.

In the analysis of this study a greater emphasis is placed on enhancing occupational safety to engage employees into being responsible for their safety, thus resulting in a safe and productive working environment. In line with the thinking of Mylett and Markey (2007), this study explores the employee engagement process in managing occupational health and safety within a South African manufacturing environment, which is expected to improve the health and safety performance at the workplace (Bryne, 2011; Pater, 2013; Werhane *et al.*, 2004).

This study supported the participation process that goes hand in hand with the amount of resources that the organisation is willing to contribute in encouraging and sustaining employee participation on the shop floor. The resources such as the availability of information, and the time that is dedicated and allocated for safety representatives to inspect the workplace is crucial in ensuring the success of the participation process. In addition other resources such as affording employees the opportunity to learn methods for problem solving, combined with hazard identification and risk assessments, and the management processes that allows for quick feedback, and open and honest dialogue free from any victimisation also contribute to sustaining the participation process. Perry (2010) highlighted that the participation process is enhanced by these factors, resulting in employees assuming more responsibility for health and safety issues. Other forms of innovative participative measures have been suggestion schemes and near miss reporting competitions. The successful outcome of these schemes is the heightened awareness towards health and safety issues and its impact on accident prevention and reduction programs (Akpan, 2011; Beriha, 2011; Cohen, 1997).

Legislation on its own does not have the potential to reduce injury and accident rates (Bedfort, 2010; Epstein, 2012). It is impossible to expect the OHS Inspectorate to supervise the OHS process continuously in all organisations. This is not feasible or practical. Legislation in occupational health and safety stands a better chance of improving OHS performance by creating an environment that facilitates collaboration with workers in prevention measures at the work front.

Beirne (2008), Brewster *et al.* (2007), Dunlap (2012), Frick (2010), Geller (2000), Hohnen *et al.* (2011), Mylett and Markey (2007) and Walters *et al.* (2005) point out that even in countries such as Britain, Denmark and Ireland, that attempt to promote a “voluntaristic” approach to industrial relations and OHS participation, it is always difficult to have a system that is totally voluntary. The voluntary participation approach as used in United Kingdom, Denmark and Ireland aims to make all parties, namely Employers, Suppliers, Contractors and Employees responsible for health and safety at work through a self-regulating system. This process requires employers to consult with employees at the workplace about health and safety matters. The current study explored employee participation and the propensity of employees to create a safe workplace. The results showed that employees have the influence to create a positive and safer workplace.

Researchers Frick (2010), Beriha *et al.* (2011), Dyreborg (2011) and Fam *et al.* (2012) argue that despite the differences and similarities in the underlying objectives relating to participation in health and safety at workplace, the variety in industrial relations between countries and the worker representative institutions, there is no one model whether mandatory or voluntary that will ensure a zero accident environment.

The respondents in the survey were dominated by males. The Cement Manufacturing Industry falls within a Sub-Sector of the Mining Industry, which is characterised and dominated by males. There has been government pressure (Department of Mineral Resources) to introduce women into all sectors of mining operations. With much reluctance, organisations manufacturing and linked to mining have made noticeable

strides in the introduction of the government initiative, increasing the women compliment at the workplace front.

Jeung (2011), Kleiner (1997), Kobayashi *et al.* (2008) and Reich (1988) cite trends in the employment pattern in Japan, as women show shifts from primary Industry towards the secondary and tertiary Industries and towards professional positions. In addition the age distribution of employed women is shifting upwards as more married women enter or return to the labour market.

The study has confirmed that there was no significant difference in scores for the participation between males and females. The entry of females into the manufacturing sector has been slow. This indicating that the organisation is mature, as males and females are afforded the platform to participate in the various safety initiatives.

The results of the study highlight that with organisations that have an above average safety performance, structural determinants such as the practical and user friendly workplace standards and procedures, the entrenched management systems, transparency in reporting safety issues, the enforcement of the Occupational Health and Safety Act, the support of Trade Unions, the increase in employee power base and the worker support have also been identified as being reliable in promoting worker participation.

The above average safety performance can be attributed to one of the many contributing factors that manufacturing organisations in the cement industry have entrenched into their occupational health and safety management systems. Researchers such as Ball, Willcock and Aung (2009), Bellamy *et al.* (2008), George et Quinlan (2009), George (2013), Goetzel *et al.* (2008), Hohnen et Hasle (2011), Kaila (2012), Kristensen (2011), Machles *et al.* (2010), Rocha (2010), Spath (2004), and Zanko and Dawson (2011) have noted that an effective occupational health and safety management system is crucial and has the potential of guiding organisational performance, as it allows transparency of information, translating transgressions into

concrete actions. The positive effect of this is that of enabling employees to think and behave differently, thus allowing management to track progress of safety initiatives.

The results from the research showed that there is a relationship that exists between employee participation and age. This can be attributed to the fact that employees working for a longer period exposed to hazards at the workplace have seen or experienced previous accidents and injuries, thus making them more cautious and aware of the hazards around them. In the study undertaken by Reich (1988) and Aoyama (1982), the authors identified a trend which highlighted that the age of the workers has an impact on OHS performance. Workers aged less than 20 and over 50 years experienced more injuries than the other age groups. This can be attributed to the fact that the younger employees were inexperienced, whilst those employees older than 50 reacted much slower or were complacent. Other studies by Iqbal and Iqbal, Taufiq, Mohammed (2010) have found that employees with less than 2 years' experience endured more injuries than other employees with more than 2 years' experience.

Generally, the results showed that the older the employee, the greater the likelihood that they will perform better. The ability to identify hazards and assess the risks associated with such hazards comes with time. This experience gained assists employees to act in the prevention of accidents and injuries, and contribute positively to achieving an improved organisational performance.

Biaga (2002), Brogger (2010), De Santis *et al.* (2008), Franca (2011), Groover *et al.* (2008), Kato *et al.* (2005), Muthuveloo *et al.* (2012) and Sieberhagen *et al.* (2011) investigated employee participation holistically. The gap exists when defining employee participation as an appropriate participative approach in the decision-making processes that employees are exposed to during the intervention of health and safety matters. The study extends the definition as depicted in the International Encyclopaedia of Organisational Studies, where Cabrera defines employee participation as a process that allows employees to exert influence over the decisions

that affect their work and work environment. This study encompasses this definition of employee participation in managing occupational health and safety to include the different employee participation types and its applicability as a tool in the intervention to assist organisations daily in managing occupational health and safety activities at the workplace (Bolger, 2004; Brogger, 2010; Budd, 2011; Gunningham, 2008; Jeung, 2011; Kobayashi *et al.*, 2008; Meldrum *et al.*, 2009; Shearn, 2004).

The evidence confirms that within organisations exists four types of participation in the management of occupational health and safety, namely employee directed participation (Hall *et al.*, 2006; Marchington et Wilkinson, 2005), employee involvement (Cabrera, 2007; Raines, 2011), employee pro-active participation (Eaton and Nocerino, 2000; Milgate, Innes and O'Loughlin, 2002; Raines, 2011; Shearn, 2004) and employee ownership (Budd *et al.*, 2011; Dietz *et al.*, 2009; Kaufman, 2004; Strauss, 2006).

Each type of participation contributes to the management of occupational health and safety matters. Clearly if directed participation is the type of participation necessary to ensure the maximum benefit of an intervention, then any of the other participative approaches will be less effective. Take for example if the organisation and legislation prescribe that no person shall work on a moving machine that is unprotected or unguarded, then this guideline becomes mandatory within the organisation. Directed participation is the ideal type of engagement process to manage the safety aspects of the task at hand.

Although the four types of participation exist, this study found that these participation processes overlap each other. The types of participation are highly correlated to each other. All of the participative types have a significant impact on the decision-making processes within S.H.E. management programs and initiatives. Other research and case studies into employee participation in occupational health and safety (Dell 'Aringa, 2011; Mylett and Markey, 2007; Raines, 2011) have also shown that worker participation has impacted positively on workplace productivity, whilst other research

in employee participation has found that many employees, particularly “Blue Collar” hourly paid employees, are choosing not to partake in employee wellness services (Busbin and Campbell, 1999).

The most significant type of the participation in terms of ranking from the highest to the lowest is employee ownership, employee proactive participation, employee involvement and lastly employee directed participation. Employee ownership is the participative process that encourages employees to assume full responsibility and champion the health and safety activities at the workplace, whilst employee proactive participation deals with sharing with employees, consulting employees, and the joint decision-making by management and workers on issues related to occupational health and safety. Cooper (2001) further elaborates that the successful implementation of participative processes requires a mature safety culture.

In line with the thinking of Brewster *et al.* (2007), Eaton *et al.* (2000), Franca (2011), Hovden *et al.* (2008) and O’ Grady (2000), the study supports the notion that the joint labour-management committees in the workplace fosters employee participation and consultation in the workplace. The Researcher found that the general perception of employees is that the joint labour-management committees contribute positively to the prevention of injuries at the workplace (Glennon, 1987). The study considers several factors such as employee work experience, employee knowledge of the management systems and processes, the knowledge of the legislation, the exposure to hazard identification and risk assessments techniques and employee encouragement that impact on the effectiveness of employee participation within the SHE committees.

Employees involved in the study that were unionised comprised of 33.3% of the sample. The lack on unionism tends to distort the significance levels as only the participation type involvement was found to be significant at the 95% level. Other studies have established that Unions have played significant roles in improving the workplace safety of all employees. Despite the differences between unions,

employers, governments, cultures, value systems, legislation and economical wealth, authors Alverson (2011), Brewster *et al.* (2007), Eaton *et al.* (2000) and Parsons (2001) acknowledge that OHS participation through joint labour-management committees has been instrumental in improving organisational safety performance. Cates (2010), Epstein (2012), Hall *et al.* (2006) and Jamieson *et al.* (2001) acknowledge that in most countries legislation has prescribed worker representation and the joint union-management within health and safety committees. As captured by Frost (2000) and Brogger (2010), the case for worker involvement has gained much strength from recent reforms in OHS legislation.

Cates (2010), Gevers (1998) and Walters (2005) have observed that mandatory participation has been extended from the prevention of accidents and occupational disease to the protection of the health of workers and even promoting the workers' wellbeing. This has incorporated the duties of employers to act reasonably and provide a safe and health work environment to all persons that are directly linked to the operations of the workplace.

Evidence in the current study has confirmed that there is a significant difference between the various types of employee participation in S.H.E. committees and other S.H.E. forums. This in-turn impacts positively on the total organisational performance. These findings are consistent with studies by Biggins (1987), Brooks (1987), Creighton (1982), Glennon (1987), and Johnson (1999) which have shown that the engagement process entails the voting of Safety Representatives, who will put forward the suggestions, safety inspections, unsafe conditions and unsafe acts.

Other studies by Creighton (1982), Eaton and Nocerino (2000), Franca (2011) and Reilly, Paci and Hall (1995), have reported that joint health and safety committees with employee representatives appointed by unions as well as joint committees, in which unions did not participate in the selection of employee representatives, have led to the reduction in workplace injuries relative to those achieved in workplaces in which management alone determines health and safety policy. The significant

positive relationship between the participation in S.H.E. committees in the reduction in the number of injuries experienced at the workplace was also found with this study.

In the opinions of Alverson (2011), Brewster *et al.* (2007), Coyle *et al.* (1981), Eaton and Nocerino (2000), James and Walters (2002) and Walters *et al.* (2005), the legislative process has attempted to ensure that all organisations need to have joint occupational health and safety committees eliminating any comparative management-employee advantage or disadvantage. It is also crucial that organisations agree on the consultative process with respect to health and safety at the workplace.

In line with legislation, the organisation that was being examined, had jointly signed an acknowledgement with the registered union and standardised the structural issues such as the number of safety representatives per group of employees, the time allowed for inspections, the meeting of joint committees and other matters such as the duration of the office. It is perceived that legislation will ensure uniformity across organisations and that the rights and responsibilities of employees are withheld.

Furthermore in this study the employee groups made up of the Safety, Health and Environmental (S.H.E.) Practitioners (Daud *et al.*, 2010; Franca, 2011; Groover *et al.*, 2008), Engineers and Technicians (Clarke and Ward, 2006), First Line Supervisors (Krausse et Weekley, 2005) and Blue Collar Workers (Busbin *et al.*, 1999; English *et al.*, 2006; Hall *et al.*, 2006; Howell, 2000; Shearn, 2004), did not show any significant different levels of utilisation of the participative processes, undertaken in S.H.E. committees. This study found that, injury and damage prevention investigations, physical asset maintenance programs, continuous improvement forums, management reviews, hazard identification and risk assessment committees contributed positively to the management of the occupational health and safety by all internal stakeholders. This can be attributed to the fact that the organisation is attaining safety performance levels above the industry average.

Employees in the various decision-making forums exercise their rights by their influence in the participation in OHS activities at the workplace, impacting positively in the creation of a safe working environment. The evidence in this study showed that on average, all employees, both management and blue collar workers agree that all employees within the manufacturing operation have the influence in the creation of a safe workplace.

Generally when employees are encouraged and engaged in the participation in the OHS decision-making process, they have the ability to create a safe workplace, in-turn a safe workplace encourages employees to participate more in OHS decision-making at the workplace. In line with the work of Durbar (1975), Dunlop (2011), Dyreborg (2011), Halbesleben *et al.* (2013) and Tristan *et al.* (2014), this study also highlights the fact that a safe environment encourages employees to participate in the various occupational interventions in maintaining the working environment safe and healthy.

In line with the work of Carrillo (2010), Eaton and Nocerino (2000), Milgate, Innes and O'Loughlin (2002), Muthuveloo *et al.* (2012), Markey and Mylett (2007), Raines (2011), Soehod (2008) and Walters (2006), that when employees across the operational hierarchy at the forefront are engaged in the management of OHS at the workplace, this can have an astronomically positive contribution on safety initiatives, which equate to having an effective intervention for curbing this unacceptable loss in lives.

6.4. IMPLICATIONS ARISING FROM THE FINDINGS

The study has highlighted numerous areas for future research to be conducted in the field of participation in the management of health and safety at the workplace. It is apparent when analysing the contributions of Findley and Gorski (2005) and Eweje (2005), that as organisations become entities of International Corporations, greater pressure is experienced from international legislation and special interest groups. Jeung (2011) argues that the positive outcome of these acquisitions is that organisations in under developed countries, have had to modify their behaviour to conform to benchmarks set by the industrialised countries. Although numerous countries have had comprehensive legislation patterned in line with the occupational health and safety laws of industrialised countries, their governments often lack the political “will” to demand the enforcement of these regulations at the expense of slower economic growth.

Research is required to explore the impact of the corporate culture of International organisation and the health and safety culture locally in South African manufacturing organisations. In addition a need exists to evaluate proactive participation and ownership in relation to the safety culture of the organisation. More research is required to analyse the safety culture and explore the relationship between safety culture and employee participation in improving OHS performance.

As organisations seek to continuously improve in terms of their operational costs, a greater portion of non-core manufacturing is being outsourced. Contractors normally seek short-term profit and minimise costs to the larger detriment of the health and safety of the employees. Research that evaluates the relationship between the safety culture and behaviour of permanent operational workers versus contracted workers will benefit the cause of accident prevention programs. Arezes and Miguel (2003), Beriha *et al.* (2012), Clarke (2000) and Smallwood (1998) recommend for further investigation for empirical studies of safety attitudes and behaviours of workers with

different types of employment contracts. Ideally a practical model to increase participation of all internal stakeholders should be explored.

The authors Beirne *et al.* (2008), Brogger (2010), Bryne (2011), Busck (2010) and Markey and Patmore (2011) have insisted that the employee participation process goes beyond the boundaries of the organisations. The process of occupational health and safety at work has an impact on individuals outside the organisations on the general public, for example, an employee takes contaminated protective clothing (silica) to be washed at home (Gupta and Joshi, 2004). The contamination exposes the employee's family by the process of washing. The organisation pollutes irresponsibly which causes children to become asthmatic. Thus the engagement process of employees goes beyond the organisation's perimeters.

Other external factors such as the employee consuming excessive alcohol and substance abuse, addiction to gambling, poor nutrition and lack of access to health care, have been shown to have an impact on the overall performance of the employee in the workplace. Considering the views of Ball *et al.* (2009), Bolger (2004), Carrillio (2010), Cooper (2001), Detert *et al.* (2000) and Fullan (2001), management faces this dilemma daily. It is management's responsibility to provide, as far as is reasonable, reduction in exposure of the employee to an unhealthy and unsafe environment and in doing so create a culture and climate that is favourable for safety at the workplace. Research is recommended to establish the impact of health and safety eventualities, at home and the community, on the workplace environment. According to Byrne (2011), Busck *et al.* (2010), De Santis (2008), and Muthuveloo *et al.* (2012), a significant contributor to injuries and accidents experienced by workers within organisations results from aspects of social life that is external to the workplace environment.

Clarke *et al.* (2000), Daud *et al.* (2012), Dunlap (2011), Dyreborg (2011) and Mylett and Markey (2007) conclude that it is with difficulty that effective occupational health and safety management can be separated from effective management in general.

The employee engagement process in occupational health and safety is the building block for every operation and relationship in organisations, including human resource management. This can be illustrated by the example of the separation of OHS training from the general training. Generally most training programs to improve work performance will also incorporate safe work performance. The improvement of the health and safety measures within organisations is not just an ethical or social issue, but rather a driver to improve the organisation's effectiveness and support from all its stakeholders. An investigation into health and safety training and its relationship to employee participation will create a greater understanding into injury prevention programs.

As legislation evolves, and organisations drive the social pillar of their overall strategy, research will assist in evaluating the effectiveness of the enforcement of the occupational health and safety inspectorate in improving occupational health and safety performance. Edwards (2000), Epstein (2012), Eweje (2005) and Gunningham (2008) observe that it is no co-incidence that industry such as those operating within the manufacturing domain, that are linked to the Mining Industry, are exposed to high levels of Inspectorate enforcements by the Department of Mineral Resources, as this industry continues to experience unacceptable levels of fatalities. Bedford *et al.* (2009) perceived that a more focused enforcement agency, driving enforcements through substantially higher fines, will act as a deterrent to accident prone organisations. Research in determining the relationship between enforcement of OHS legislation and its impact on the sole purpose of zero harm or loss to society will improve the understanding as to whether the Governmental Inspectorate is meeting their long term objectives on accident prevention.

Trade Unions are a necessity for encouraging the health and safety drive in manufacturing organisations. It provides workers with a voice so that workers may not be victimised. Research into the evaluation of the impact of trade unions on the OHS performance within organisations needs to be explored. Despite the differences between Unions, Employers, Governments, Cultures, Value systems, Legislation and

Economical Wealth, authors Alverson (2011), Brewster *et al.* (2007), Eaton *et al.* (2000) and Parsons (2001) acknowledge that OHS participation in safety decision-making processes through joint labour-management committees has been instrumental in improving organisational safety performance. More research in the South African context into the effectiveness of S.H.E. committees will assist legislators and manufacturing industry. One of pillars of safety management is the joint labour-management philosophy, which endeavours to ensure that organisations are focused on one goal, that employees are safe and healthy at the working environment.

Communication is vital to enhance the health and safety programs. The communication channels should be simple and fast. Accidents will occur internally within the organisation and externally within other organisations. The lessons and safety awareness of these incidents need to reach the worker on the shop floor as soon as possible. Similar mistakes within the organisations could be mitigated. Research into effective communication channels within the management of occupational safety to enhance the OHS performance needs further investigation (Spath, 2004).

Hasle and Navrbjerg (2009), Harris (2004), Markey and Mylett (2007) and Sorencio *et al.* (2009) note that in Australia and New Zealand, legislation provides statutory rights for worker participation in occupational health and safety. The expectation is that such participation will improve occupational health and safety in workplaces, which will increase productivity of employees, motivate employees, improve their well-being that inturn will lead to a less wasteful society. Further research within the South African context into evaluating the effectiveness between the participation between Blue Collar Workers and Management may support or negate the current study.

This list is not exclusive, as the limitations of this study have identified other areas of study that are beyond the scope of this study.

6.5. LIMITATIONS OF THE RESEARCH

The research limitations set out below have been identified as having implications for the extent to which the findings can be generalised and clarified to fall within the scope of this research.

6.5.1. The occupational health and safety legislation in the South African context attempts to drive organisations to ensure the health and safety of any person entering the Company's premises. In this research, the term employees encapsulates the substance rather than the legal form of relations, as it refers to all personnel that are directly employed by the Company, but also contractors and temporarily employed personnel. Other persons such as customers, suppliers of ad-hoc services and goods, auditors, OHS Inspectorates, logistical outsourced such as the rail transporters, educational institutions, media services and other interested stakeholders have been excluded in the units of analysis. Moreover the sample of employees has been restricted to one industry, the cement Industry, which falls under the category "Other" within the mining sector. Variables that make comparative analysis difficult, due to different industry and country differences.

6.5.2. Today, much greater emphasis is placed on the social aspects of the organisational obligations to society, but the dominant acceptable goal for business still being economic (Pouliakas and Theodossiou, 2013). The study focuses primarily on the health and safety participation within the production of cement and services, directly associated with the production the cement, excluding other business activities such as the Information Technology, the Marketing and Distribution of the cement, the Legislation compliance and Financial Risk mitigation activities. Employees functioning within these support business activities have been excluded in the analysis.

6.5.3. Primarily the research design is a cross sectional study, which considers data that was collected from units of analysis at a particular point of time. The health and safety performance of organisations is influenced by economic cycles. During periods of economic booms, organisations employ a greater number of employees to satisfy the increase in the demand for goods and services. These personnel are contracted and employed over the short term, which pressurises these contracted employees to perform beyond their capabilities with a promise of being permanently employed. The greater number of employees and the attitude to ensure production at all cost, increases the possibility of fatalities and serious injuries being endured by this category of employees. Furthermore during economic booms, organisations invest in new production capabilities. The construction of these expansion projects requires the employment of short term contracted employees, which again increases the exposure to risk resulting in fatalities and serious injuries.

6.5.4. The research focused on the cement manufacturing sector within the Republic of South Africa. The occupational health and safety performance of these cement operations fall under both the Department of Labour and the Department of Mineral Resources. Currently the enforcement of legislation by the inspectorates of these departments vary due to numerous reasons, resulting in the compliance and adherence in ensuring a healthy and safer work environment across differing cement operations in South Africa.

In the Amended Mines Health and Safety Act, 2008 (Act 74 of 2008), section 47, the Inspectorate has been given greater juristic enforcement powers and has been practicing this new power. In light of Section 50(7A), the Inspector may impose a prohibition on the further functioning of a Mine, where a person's death, serious injury or illness, health threatening occurrence, block, barricade or bar the site. The Inspectors have been exercising the right and prohibited the operation of the Mining Companies, resulting in production losses as was the case with Aquarius Platinum, losing a potential production of about 2000 ounces of platinum (MININGMX, 2010). This enforcement of the

legislation has led to the management within the Mining operations behaving differently than similar manufacturing organisations.

6.5.5. In addition the big five South African cement manufacturers are owned by multinational companies that are located across the globe or have operations across our borders. The corporate entities differ in their emphasis on health and safety obligations (Eweje, 2005). These variations influence the manner in which the cement operations in South Africa are strategically managed and determine the culture and even the climate within the cement manufacturing sites.

6.5.6. The researcher acknowledges that the health and safety of employees goes beyond the perimeter of the cement operations. A person's wellness or illness in one sphere of life has implications for their resilience and coping in other spheres of life (Mylett and Markey 2007). For example, strain at home can lead to a lack of concentration of an employee at the workplace, which can mean less resilience at work. In addition other external factors such as poor housing, lack of basic amenities such as clean water and access to electricity, combined with a lack of access to medical care and poor nutrition, all have a negative impact on the employee's performance. These variables which have an impact on the occupational health and safety performance of the employee at the workplace have not been included in the research.

6.5.7. Nationally the employees in the cement manufacturing sector are involved in the delivery of cement via roadways. The spread of HIV in South Africa is being reshaped by the road transportation. A high proportion of workers in the South African Mining Industry are domiciled in other HIV/Aids devastated countries such as Botswana, Lesotho, Mozambique, Swaziland, Zambia and Zimbabwe. Most arrive without spouses and have a variety of sexual contacts, as do migrant labourers everywhere (Shell, 1999). The spread of HIV/AIDS has had a detrimental impact on the Manufacturing Industry. The productivity

level of HIV infected employees has the potential to influence the employee's occupational health and safety performance at the workplace. This aspect has been excluded and is beyond the scope of this study.

6.5.8. The official language within the cement operations is English. All formal communication at the operations assumes the English language, and as an alternate the local language. This has posed difficulties for the Researcher as there are eleven official languages in the country. The Researcher liaised with Survey Co-ordinator to assess whether difficulties arose from the language comprehension. This then triggered off remedial action to compensate for any language barrier. The researcher has made contact with the management of the plant management, who have recommended that the communication in the surveys be conducted in English.

6.5.9. World-wide, Budd (2009), Mylett and Markey (2007), Newcom (1999), Raines (2011), Sieberhagen, Pienaar and Els (2011), Tooma (2001) and Zimmerman (2005), note that a key feature of health and safety legislation is that it allows for statutory rights for employee participation in health and safety at the workplace, with the objective that such participation will improve OHS performance at the workplace, thereby contributing positively to the incident prevention program. The research only focuses on risk management, accident prevention and the general duties pertaining to health and safety, especially the participation in S.H.E. Committees. Aspects such as the knowledge and training in understanding their rights and obligations as per health and safety legislation, the awareness promotion of health and safety at the workplace, and the willingness to comply with legislation are beyond the scope of this research (Burkes *et al.*, 2006; Fam, Nikoomatam and Soltanian, 2012; Mylett and Stubbs, 2006).

6.5.10. Industries such as those operating within the Mining Industry are exposed to high levels of Inspectorate enforcements as this industry continues to experience unacceptable levels of fatalities. The study does not capture the

participation arising from enforcement measures undertaken by the Legislative Inspectorate. The process involves enforcing organisations to conform by driving enforcements through substantially higher fines with organisations manipulating conformance, resulting in the reality that the prevention of injuries, accidents and fatalities at workplace become a secondary objective.

6.5.11. The research excludes the investigation of the impact of the influence by Trade Unions and Work Councils in respect of the decisions that affect OHS challenges that require negotiations and interpretation of specific work environments. Yet, the provision of a collective voice that allows employees who are otherwise unable to express their needs, to contribute to the OHS agenda and on the other hand a counterbalancing voice. The collective voice expresses the needs of employees with matters that are of concern to them, such as the provision of training and information, thereby effectively improving OHS outcomes (Buske *et al.*, 2010; Dell' Aringa, 2011; Jeung, 2011; Juniper, 2011; Kaufman, 2011; Muthuveloo, Abdul, Ping and Nee, 2012).

6.5.12. George and Quinlan (2009), Goetzel, Hohnen and Hasle (2011), Kaila (2012), Keating, Kristensen (2011), Machles, Bonkemeyer and McMichael (2010), Rocha (2010) and Zanko and Dawson (2011) have noted that an effective occupational health and safety management system forms the basis of Worker and Management participation that guides organisational performance. The management system allows for transparency and ease of access to information, translating transgressions into concrete actions, employees encouraged to think and behave differently, and allow management to track progress of safety initiatives. The impact of management systems such as Du Pont, NOSA (National Occupational Safety Association), ASPASA (Association for the Stone Products and Aggregates of South Africa), SARMA (South African Ready-Mix Association of South Africa), OHSAS 18001, OHSA's Voluntary Protection Programs (VPP), American Institute of Chemical Engineer's Centre for Chemical Process Safety, ISO 9000- and ISO 14000 series on the organisational overall OHS performance within the overall business strategy measuring occupational health and safety

performance is beyond the scope of this research (Bellamy, 2008; Hansen, 2006; Hohnen and Hasle, 2011; Kaila, 2006).

Although Government agencies, academic research and high risk Industry have all identified safety culture as one of the driving forces in improving safety performance at the workplace, this research does not explore the impact of safety culture dimensions. The employee's perception of safety, the Management's value of safety and production, the attitude of the employee in relation to safety procedures, the mutual understanding and trust between Management and employees, and Management's attitude to condoning deviations are significant ingredients of the safety culture (Galang, 1999; Hudson, 2001; Krumwiede, Hackert, Tokle and Vokurka, 2012; Zohar, 2002).

Furthermore Clark points out that much of the literature suggest that the attitude towards safety and the safety climate, are related to employee participation, which has been found to influence the organisation's health and safety performance.

The cement producers in South Africa are affiliated to a non-profit organisation, "The Association for Cementitious Products" (ACMP). There has been a blitz on this association as allegations by the Competition Board, who surmised that there is coalition between the cement producers, and that there may be price fixing within this manufacturing sector. This has led to the Management at this Association freezing information that is industry specific until the investigation is concluded. Statistics pertaining to OHS performance per Manufacturer is not readily available.

6.6. CONCLUSION

Arising from the hypotheses tested and statistical analysis conducted, the researcher proposes a model for employee participation in occupational health and safety (OHS) within an industrial work environment. The term employee incorporates both blue collar workers and management, paid by the organisation directly via its payroll and those employees who are contracted within the manufacturing operations. OHS is difficult to separate from the other activities within the workplace. As such, it is impractical to identify OHS's contribution to workplace productivity separately from other aspects of organisational management.

In line with the work of Bryne (2011), Markey and Mylett (2004), Pater (2013) and Werhane *et al.*, (2004), this study depicts that employee participation in managing OHS can improve the organisation's OHS performance, contributing to the prevention of serious accidents, damage to property and fatalities. Employee participation affords blue collar workers with a voice; and managers with source of information that yields positive OHS outcomes.

Furthermore the researcher captured the different types (Figure 6.1.) of employee participation that are utilised by the different groups of employees in managing OHS decisions within the working environment. The different approaches to decision-making in managing OHS consist of directed participation, involvement, pro-active participation and ownership. Decision-making processes are related. Therefore each of the employee participation types is highly correlated to the decision-making process in managing OHS activities. Thus it is possible to have one or more of the types of participation being utilised simultaneously to address one OHS activity. To illustrate this, if a decision is made via the S.H.E. forum jointly by labour and management to undertake a certain activity, for example to demarcate an area for using cell phone within the manufacturing shop floor, the decision-making process is that of employee proactive participation. The implementation however will entail shop floor artisans undertaking the task, by utilising set engineering norms and procedures,

with little or no discussion occurring prior to the task being undertaken. The decision-making approach is that of directed participation.

The argument this thesis put forward is that directed participation is ideal, when little or no input is sought from employees, whilst the participative process of involvement is applied in situations where critical decisions are made outside the domain of the employee. The pro-active participative process entails the sharing, consulting and the making of joint decisions, whilst the process of ownership empowers employees to champion the OHS activities. Notwithstanding the views of Werhane *et al.* (2004) and Bryne (2011), this research alludes to the fact that all the types of the participation are concurrently necessary to manage OHS at the workplace.

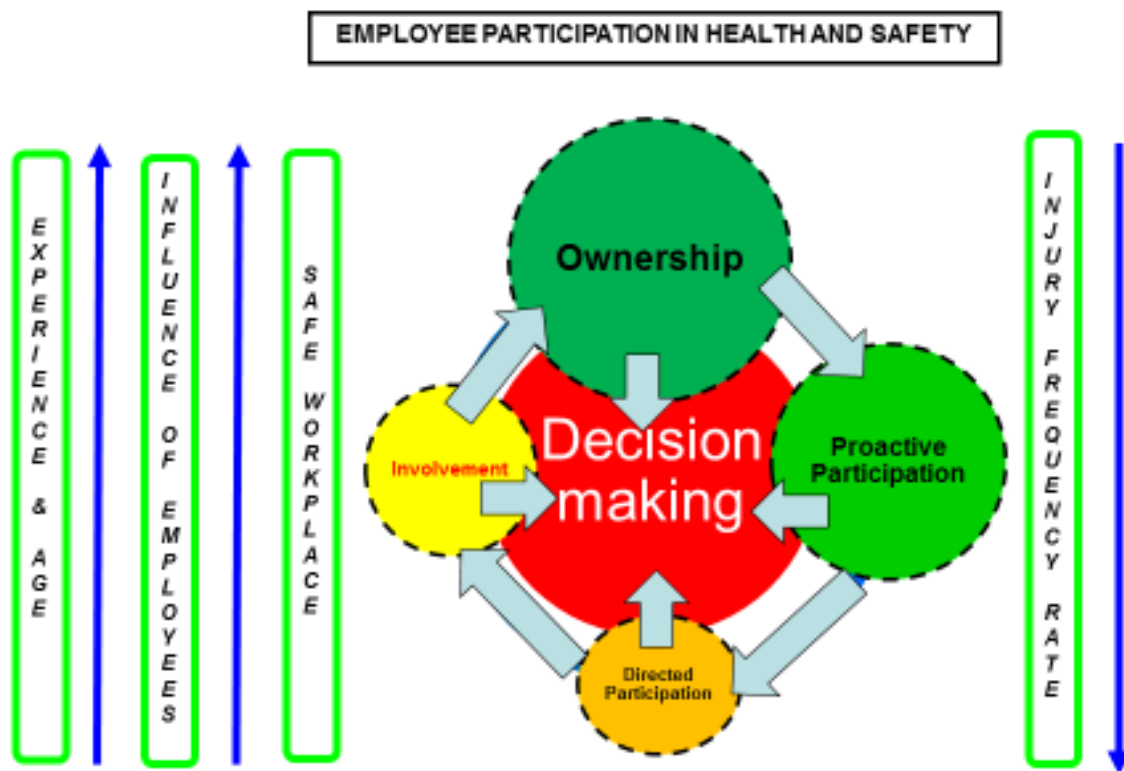


Figure 6.1.: The OHS participation model

Figure 6.1. highlights that employee ownership, which is most significant and is integrated to the other types of participation, followed in order of significance from the

highest to the lowest, namely employee proactive participation, employee involvement and employee directed participation. These approaches of participation are interrelated to the decision-making process and encourages employees to assume full responsibility and champion the health and safety activities at the workplace. Within the engagement process employees communicate to maximise opportunities at S.H.E. committees and other S.H.E. forums with employees seeking opportunities for continual and sustained OHS performance.

In South Africa occupational health and safety legislation has encouraged joint participation of employees and Management in safety committees. The decision-making approach is referred to as Employee Proactive Participation. The process assists in the establishment of Safety, Health and Environmental (S.H.E.) committees in the workplace, which fosters employee participation and consultation in the workplace. The level of employee participation within the S.H.E. committees contributes to the reduction of the number of injuries experienced by organisations. S.H.E. committees form the cornerstone of safety awareness and a communication channel, forming a vital training ground for employees to become engaged in. Identifying hazards, undertaking risk assessments that evaluate the frequency, severity and probability that the risk will result in physical harm and instituting control measures through the process of elimination, substitution, engineering, administration and personal protective equipment.

The model highlights that employees have a significant impact on the participation process. When employees participate more in the decision-making process, the greater the influence they have, to create a safer and healthier working environment. Raines (2011) highlights that the process of turning OHS followers to active participants strengthens the level of participation, which gives employees a sense of security of working in a perceived healthy and safe workplace.

Furthermore the study supports that Managers and Blue Collar Workers have a natural identity of interest concerning OHS (Markey and Mylett, 2004). All employees

seek positive outcomes at the workplace. Within safe working environments, the greater the likelihood that employees will participate more in the decision-making process. This can be attributed to employees having a clear indication of the safety standards that are expected and that the organisation has invested financially to make the workplace safe. On the other hand, an unsafe workplace discourages employees, as it is perceived that the supervision and employees, do not regard safety as a value in the company's culture.

The research highlights that within the S.H.E. committees and S.H.E. forums, employees will vary in age and experience within the working environment. Evidence strongly indicates (Figure 6.1.) that older and the more experienced employees participated more in the decision-making of health and safety interventions, thus contributing positively to the overall occupational health and safety goal of no harm or loss.

6.7. RESEARCH RECOMMENDATIONS

Although numerous endeavours have been made and are still forthcoming to understand and engage employees in managing occupational health and safety, there is not much research that has been undertaken from a South African perspective. The following are recommendations that emanate from the implications of the research findings that South African organisations can utilise in their health and safety programs to effectively reduce the number of injuries at the workplace.

This research improves the understanding of the participative approaches and the use of this engagement process to intervene appropriately in S.H.E. Committees and other S.H.E. forums, providing Blue Collar Workers with a voice and Managers with a source of information. Health and safety interventions that incorporate a high level of employee participation are likely to be more successful (Hall *et al.*, 2006; Raines, 2011; Spath, 2004).

There are different types of participation, namely directed participation, involvement, pro-active participation and ownership that are integrated in making decisions in managing health and safety. The effectiveness of a participative approach can be enhanced by utilising the type of participation that will bring about the most benefit in the occupational health and safety interventions. If the organisation intends to ensure that all employees apply the safety rules, then directed participation is the most suitable approach. Although this process supports little or no employee input, it is instrumental in ensuring the safety of employees, as the consequence of not abiding by certain critical rules can be severe, leading to death or serious injury.

Manufacturing organisations should endeavour to utilise the types of participation with the objective to ensure that ownership is optimally used, whilst still ensuring that the other types of proactive participation, involvement and directed participation are also used appropriately. The implementation of the process of ownership is time consuming, but has more favourable longer term benefits in terms of allowing

employees to take responsibility of their safety, working together to find solutions to safety challenges, and championing the health and safety activities at the workplace. This is also achievable by sharing of knowledge, consulting with each other, and with employees and management jointly working together to create a safe workplace.

The majority of heavy manufacturing environments require employees to work 24 hours a day, seven days a week, which eight hour work cycles that consists of three work cycles per day. Within the heavy manufacturing industries most of the workforce work during office hours. Thus safety interventions and the employee engagement processes are easier to reach the office hour employees than the shift based employees. Organisations should endeavour to make the extra effort to engage “shift based” employees, as these employees are exposed every hour of the day to the hazards and risks at the work front. Generally “office hour” employees are exposed more to the participative processes, thus affording these employees to voluntarily work together to find solutions to safety problems, sharing their knowledge and implementing health and safety interventions more than their “shift based” counterparts.

South Africa boasts one of the most progressive labour laws, promoting equality in all sectors of life. More women will have to be employed within the operational areas of the business. Although this study found that there was no significant difference between males and females in their utilisation of the different types of participation in the decision-making forums and in their influence to create a safe workplace, there is a need to encourage them to participate as young and inexperienced women enter into the manufacturing arena. The results from this study emanating from the relationship between the work experience of employees and the perception of employee participation in decision-making forums and in S.H.E. committees, indicate that the more experience one has the more he or she participates in the decision-making process. In combination, the older an employee, the more they will participate in the decision-making process. It is advisable to have a fair mix of young and old employees in the decision-making forums. More research is required to investigate

the biographical variables such as gender, age and experience to compliment this study is recommended.

The most effective forum to promote injury prevention is the institution of S.H.E. committees. This forum supports the process, where employees are exposed to accidents reported elsewhere and unsafe acts, with the lessons and remedial actions shared with the entire organisation. This mandatory process will give employees the necessary authority to act on their daily problems, encouraging Blue Collar Workers and Management to work together, with the common objective of reducing injuries at the workplace voluntarily. Further research is recommended to explore the physical relationship between the employee participation and the key OHS performance indicators at an operational level, so as to enhance the understanding of the direct impact of employee participation in the decision-making process and the organisation OHS performance.

Employees formed an integral part in safety programs and have the influence to create a safe workplace. Businesses must endeavour to encourage employees to participate and use their influence to refuse to undertake work which is unsafe, to report the unsafe conditions that they encounter at the workplace, to join in the investigation of accidents to prevent similar accidents recurring, and to contribute towards the safety programs positively. The more employees assume full responsibility of their health and safety at the workplace, work together to find solutions to the safety challenges, share their knowledge, and jointly making decisions on issues related to occupational health and safety matters, then the greater is their influence to create a safe workplace.

The manufacturing environment poses many hazards and associated risks. It is essential for organisations to strive to ensure a working environment. The safe workplace encourages employees to participate in safety initiatives, as in a safe workplace the more will employees participate or rather that employees participate more in a safer workplace.

In the final analysis, a clearer picture of the participative approaches that are instrumental to encourage or discourage employees in the improvement of the OHS performance will require more research. The Researcher acknowledges that this study is limited by its sample size, the reliance on information from cement competitors and trade union “representativity”, such that the findings may also not generalize across other national and industrial contexts, although the Researcher suspects that given similar technological, social and economic environments the participation types will be applicable. The opportunity exists in extending this participation processes to the other manufacturing sectors and in the Mining Industry, both locally and internationally.

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ANNEXURE A: THE COMMUNICATION TO CEO
GENERAL LETTER TO EXECUTIVE DIRECTOR

Natal Portland Cement Company (Pty) Ltd,

The Executive Director,

Attention:

Sir/Madam,

Research Project: “An analysis of employee participation in occupational health and safety activities in a cement manufacturing organisation in South Africa.”

Currently the student, Mathura Brijlall is researching in order to obtain a Doctoral Degree from the University of South Africa (UNISA), titled: “An analysis of employee participation in occupational health and safety activities in a cement manufacturing organisation in South Africa.”

This study seeks to explore the participative role of employees in the management of occupational health and safety (OHS) at the Natal Portland Cement manufacturing organisation and to investigate the impact of employee participation on the decision making processes that create a safe workplace.

If any verification is required, please contact the research promoter, Professor A. Okharedia (Director Academic, Graduate School of Business Leadership) Telephone number (011) 652 0375, {email: aokharedia@sbleds.ac.za}.

The Cement Manufacturing Organisations operate within the South African legislature that applies both to the Mining sector and the Manufacturing sectors of the economy. Both the Mining and the Manufacturing Industries have been notorious in their health and safety performance. To this end, a study into this manufacturing sector will benefit both the South African Cement Manufacturing Sector as well as the Manufacturing Industry, in ascertaining a greater understanding into employee participation of Occupational Health and Safety activities. Your support into this research is much appreciated.

The research is in the form of a questionnaire that will require a maximum of 20 minutes to complete. It is aimed at the Blue Collar Workers (Engineering and Production Personnel), the First Line Supervisors, the S.H.E. Officer/Practitioners, Engineering Technicians and Engineers. All responses will be treated with confidentiality (i.e. respondents remain anonymous). The responses from these questionnaires will have a positive impact and contribution to the Occupational Health and Safety endeavour in South Africa.

The participants are kindly requested to complete the questions in the attached questionnaire. No name or any other identification is mandatory.

Furthermore, if there are any other relevant or pertinent issues that you wish to enquire about, pertaining directly to the study, kindly contact the student or the Promoter as per the contact information below:

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Mathura Brijlall	Date
Tel: (+2731) 450 4486	Fax: +27865352711
	Cell: +2783 703 1625

ANNEXURE B: THE QUESTIONNAIRE

Before completing the survey, could you please provide the following information so that the Researcher can correctly analyse the responses. It must be stressed that this information does not mean that you will be personally identified. **Your responses are confidential and your anonymity is guaranteed.** Your responses will be coded and inputted anonymously into a statistical program to test your participation in health and safety activities at NPC.

Responses with open-ended questions can be written out. Please complete the questionnaire diligently, as your responses are critical in ensuring the quality of the research.

Thanking you, Mathura Brijlall.

=====

Please indicate your choice with a cross (X) in the appropriate box.

1. Current Position: _____
2. Indicate your gender: 2.1 Male 2.2 Female
3. Does your job entail:
3.1 Full time day 3.2 Shift-work 3.3 Other
4. Are you a member of the bargaining unit?
4.1 Yes 4.2 No
5. Indicate the group that best describes the number of years you have worked at N.P.C.
5.1 0 – 5 yrs. 5.2 6 – 15
5.3 16 – 25 yrs. 5.4 Greater than 26
6. Age: _____ years.

Use the following rating scale. **Circle your choice in the rating column.**
Employee participation in the decision making process.

Not at all	Once in a while	Sometimes	Fairly often	Frequently. If not always	Rating	
0	1	2	3	4		
1.	I perform inspections as described by the Company's procedures.	0	1	2	3	4
2.	Employees have no say in formulating the safety golden rules.	0	1	2	3	4
3.	Employees undertake tasks strictly as per the isolation procedure.	0	1	2	3	4
4.	Management excludes employees in the decisions at continuous forums.	0	1	2	3	4
5.	I use the existing financial justification process to get funding for safety.	0	1	2	3	4
6.	Management involves employee in setting safety objectives and targets.	0	1	2	3	4
7.	I make suggestions and Management decides which suggestion is best.	0	1	2	3	4
8.	Employees identify hazards with Management assesses the risks.	0	1	2	3	4
9.	Management share and consult with employees on safety matters.	0	1	2	3	4
10.	All employees work together to prevent the recurrence of accidents.	0	1	2	3	4
11.	In my workplace, employees share information about safety matters.	0	1	2	3	4
12.	Employees and Management work together to make the workplace safe.	0	1	2	3	4
13.	My safety and that of others is my responsibility.	0	1	2	3	4
14.	Employees encourage each other to try out new ideas.	0	1	2	3	4
15.	At NPC, employees take ownership in implementing safety ideas.	0	1	2	3	4
16.	Employees take full responsibility in the safety activities at NPC.	0	1	2	3	4

Employee Participation in Safety, Health and Environmental committees.

17. Do you think that there is a relationship between the **participation in safety committees** and the **number of injuries** that is experienced?

Yes

No

Kindly explain your choice above:

Use the scale below to rate the extent to which you agree or disagree with each statement. **Circle your choice in the rating column.**

Strongly Disagree	Disagree	Somewhat Disagree	Neutral or don't know	Somewhat agree	Agree	Strongly Agree	Ratings					
1	2	3	4	5	6	7						
18.	Here employees participate in SHE committees because it reduces injuries.					1	2	3	4	5	6	7
19.	At NPC, employees are made aware of the safety risks at the safety meetings.					1	2	3	4	5	6	7
20.	The SHE meetings help to increase safety awareness about injuries.					1	2	3	4	5	6	7
21.	At the safety meetings remedial actions are used to eliminate injuries.					1	2	3	4	5	6	7
22.	Safety meetings are necessary to prevent injuries.					1	2	3	4	5	6	7
23.	Accidents are discussed at safety meetings.					1	2	3	4	5	6	7
24.	Attendance at safety meetings is compulsory at NPC.					1	2	3	4	5	6	7
25.	Unsafe acts are causes of injuries.					1	2	3	4	5	6	7
26.	Unsafe acts are highlighted at safety meetings to prevent injuries.					1	2	3	4	5	6	7
27.	Near miss reporting at the safety meetings helps to reduce injuries.					1	2	3	4	5	6	7
28.	Solving safety problems prevents injuries.					1	2	3	4	5	6	7
29.	Safety meetings are used to solve problems related to unsafe conditions.					1	2	3	4	5	6	7

The influence of employees to create a safe workplace.

30. Do you think that employees play a significant role in safety programs?

Yes

No

Kindly explain your choice above:

Use the scale below to rate the extent to which you agree or disagree with each statement. **Circle your choice in the rating column.**

Strongly Disagree	Disagree	Somewhat Disagree	Neutral or don't know	Somewhat agree	Agree	Strongly Agree	Ratings					
1	2	3	4	5	6	7						
31.	If I make a mistake in my job, my safety and that of others are at risk.					1	2	3	4	5	6	7
32.	Sometimes I depart from safety requirements for the sake of production.					1	2	3	4	5	6	7
33.	I have the right to refuse to undertake work which is unsafe.					1	2	3	4	5	6	7
34.	By reporting unsafe conditions, I make my workplace safe.					1	2	3	4	5	6	7
35.	Here employee work together to create a safe workplace.					1	2	3	4	5	6	7
36.	At NPC, employees remind each other to work safely.					1	2	3	4	5	6	7

37.	We participate in emergency drills to be ready to any unforeseen emergency.	1	2	3	4	5	6	7
38.	We identify hazards and assess risk to prevent accidents.	1	2	3	4	5	6	7
39.	We investigate accidents to stop a recurrence of similar accidents.	1	2	3	4	5	6	7
40.	Continuous review of safety procedures updates our knowledge.	1	2	3	4	5	6	7
41.	Employees contribute to the success of the safety (N.O.S.A.) program.	1	2	3	4	5	6	7
42.	At work, employees correct other employee's unsafe behaviour.	1	2	3	4	5	6	7

Employee Participation within a safe workplace.

43. Do you obey the safety rules because this makes the workplace safe?

Yes
 No

Kindly explain your choice above:

Use the scale below to rate the extent to which you agree or disagree with each statement. **Circle your choice in the rating column.**

Strongly Disagree	Disagree	Somewhat Disagree	Neutral or don't know	Somewhat agree	Agree	Strongly Agree	Ratings					
1	2	3	4	5	6	7						
44.	NPC is a safe workplace.					1	2	3	4	5	6	7
45.	Employees feel safe at the workplace.					1	2	3	4	5	6	7
46.	A safe workplace assists in the investigation of accidents.					1	2	3	4	5	6	7
47.	In a safe workplace few near-miss accidents are reported.					1	2	3	4	5	6	7
48.	We inspect equipment as the machines are adequately guarded.					1	2	3	4	5	6	7
49.	The good performance at safety audits shows that the workplace is safe.					1	2	3	4	5	6	7
50.	Alcohol testing assists in ensuring zero injury at work.					1	2	3	4	5	6	7
51.	We experience few injuries because the workplace is safe.					1	2	3	4	5	6	7
52.	A safe workplace is the result of employees reporting unsafe work conditions.					1	2	3	4	5	6	7
53.	We welcome visitors in our plants as the workplace is safe.					1	2	3	4	5	6	7
54.	The reporting of unsafe acts prevents an unsafe workplace.					1	2	3	4	5	6	7
55.	It is everyone's duty to follow safety rules even though the workplace is safe.					1	2	3	4	5	6	7
56.	A safe workplace encourages employees to participate in safety programs.					1	2	3	4	5	6	7