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**MANAGING SAFETY RISKS IN INTERNATIONAL  
COMPANIES – ESTABLISHING A PROACTIVE  
SAFETY CULTURE**

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A thesis submitted to the University of Huddersfield in partial  
fulfilment of the requirements for the degree of Masters by  
Research in Business and Management Studies

**THE UNIVERSITY OF HUDDERSFIELD**

September 2016

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## **Abstract**

There is increasing evidence that organisations with a strong safety culture are more effective in managing safety risks. The new ISO 45001 Occupational Health and Safety Management system requires organizations to develop and promote a positive health and safety culture in the organization (BSI, 2016). Therefore, it is important to understand how a proactive safety culture can be developed and supported.

Although many researchers have attempted to explore how to develop a strong safety culture, there is a lack of theoretical frameworks (Nielsen, 2013, Antonsen, 2012) and a lack of empirical data exploring cultural elements and practical approaches. (Ellis, et al, 2001)

This research critically investigates the safety culture in one organization in the UK. It attempts to identify how to assess the safety culture and to identify best practices on how to develop a proactive safety culture. It uses mixed method research to address the three interrelated aspects of safety culture: psychological aspects, behavioural aspects and organizational aspects with a focus on organizational aspects. Data were collected from questionnaires, interviews and participant observations and triangulated to produce a holistic view of the safety culture in the organization.

The major findings indicate that safety culture is strong in the organization with the organization taking a proactive approach to managing safety risks. All key elements of the Safety Management Systems are in place with regular leadership involvement, support and communication on safety as a core company value. There were some small gaps which indicate that some new employees didn't fully understand their safety responsibilities and were inadequately involved. This underlines the importance of engaging employees in the safety management process through improving behaviour safety programs in the organization to better involve employees and increase employees' ownership of safety. Further integration of safety into every aspect of business is needed so that safety is every employee's daily job. By looking at how one organization attempts to foster a proactive safety culture, the research has identified a clear framework and performance path that all organisations should seek to embrace.

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## Abbreviations

BSC	British Safety Council
CE	Centre of Excellence
CCO	Chief Compliance Officer
CDM	Construction Design Management
CI	Continuous Improvement
CIC	Compliance Improvement Coach
CIM	Continuous Improvement Manager
CIT	Continuous Improvement Team
COL	Company of Learning
DTRT	Do The Right Thing
DWYSYWD	Doing What You Said You Would Do
EHS	Environmental, Health and Safety
EU-OSHA	European Agency for Safety and Health at Work
GM	General Manager
H&S	Health and Safety
HSC	Health and Safety Commission
HSE	Health and Safety Executive, UK
HSL	Health and Safety Laboratory, UK
IAEA	International Atomic Energy Agency
INPO	Institute of Nuclear Power Operations (INPO).
IOSH	Institution of Occupational Safety and Health, UK
JSA	Job Safety Analysis
NIOSH	National Institute of Occupational Safety and Health, USA
OHSAS	International Occupational Health and Safety Standards
OHS	Occupational Health and Safety
OSHA	Occupational Safety and Health Administration, USA
PAP	Primary Authority Partnership
PPE	Personnel Protective Equipment
RACI	Responsible, accountable, Consulted, Informed
SEMA	British Trade Association of the Storage Equipment Industry
SMS	Safety Management System
WAGJLL	What a Good Job Looks Like

## **CHAPTER 1: INTRODUCTION**

### **1.1 Introduction**

Health and Safety Executive (HSE) figures show that 27.3 million days (1.5 days per worker) were lost as a result of work-related ill health or injury during 2014/15; 23.3 million days were lost due to work-related ill health and 4.1 million due to workplace injury (HSE, 2015). The cost to individuals and organisations is huge. In addition, poor Health and Safety risk management can have a negative impact on financial, reputational, operational, compliance risks and business continuity (IOSH, 2015). Preventing work-related injury through effective risk management is, therefore, crucially important for employees, industry and society (IOSH, 2009).

Managing Occupational Health and Safety risk is very challenging for companies around the world. Safety management systems provide a systematic approach for managing safety risks. However, on their own, they do not ensure successful health and safety management as the level of success is determined by how organisations live their systems (HSE, 2002). Following the Chernobyl accident in 1986, the concept of safety culture emerged. Although there is still considerable debate in definition, mechanism, methodologies, models and interventions, it is widely recognized that organisations with a strong safety culture are more effective in managing safety (IOSH, 2009). Increasingly, organisations have taken a holistic approach to managing safety risk by adopting a safety culture approach. The new ISO 45001 Occupational Health and Safety Management system requires organisations to develop and promote a positive health and safety culture in the organization (BSI, 2016). However, safety culture remains a challenge and is identified as one of the top priorities for future occupational safety research (PEROSH, 2012, EU-OSHA, 2005). This research attempts to investigate safety culture in an international company. This chapter introduces the research context, questions and objectives and the research method.

### **1.2 Research context**

This research will investigate one multi-site organization in the UK retail industry. Employees in retail establishments suffer high rates of injuries such as slips, trips, and falls (STF), manual handling and workplace transport, (HSE, 2015, NIOSH,

2012) and retail trade has higher average injury rates than for all industries (HSE, 2015). The retail industry is a major employer in the UK employing around 3 million people (HSE, 2015) so the impacts to safety of employees are significant. This indicates the needs to investigate management and employees' safety perceptions, attitudes, behaviours and actual practices of safety management to better manage safety risks in this sector.

A significant amount of research has been conducted on safety culture and the literature includes ambiguous debates, rebuttals and criticisms that have ranged from developing the most accurate definitions of safety culture to how to measure it (Zohar, 2010, Glendon and Stanton, 2000). Few have looked at how to develop practicable approaches to assess and improve safety culture. A notable gap in the current research is the lack of exploration of the elements and facilitators to safety culture development (Jebb, 2015). In addition, there is a lack of theoretical models and frameworks towards safety culture that can be tested and ultimately be finalised (Choudhry et al, 2007, Clarke, 2000, Antonsen, 2012, Nielsen, 2013, Guldenmund, 2000). There is a distinct lack of empirical data showing what characterises a good safety culture, and few studies have been designed to capture all the aspects of safety culture implied in its definition (Ellis, et al, 2001). There is a need to develop theoretical models to outline how safety culture is embedded as a whole within organisations' practices, system structures and employee behaviours (Guldenmund, 2010) and to facilitate safety culture research informing industry practices (Jebb, 2015).

There is a lack of a holistic and multi-method approach to safety culture research. Traditionally, organisational culture has been studied through psychometric frameworks such as questionnaires (Guldenmund, 2000) and much research has tended to focus solely on people's attitudes and perceptions about safety (Cooper, 2000, Silva et al., 2004). However, measuring the attitudes and perceptions of safety climate can be very different to measuring what actually happens within a company (HSE, 2005). Organisational factors influence individual and group behaviours (HSE, 2013) but issues related to organizational factors and people's actual behaviour have tended to be ignored (Mearns, et al, Cooper, 2000). So, a holistic and multi-method

approach should be taken towards measuring safety culture (EU-OSHA, 2011, Guldenmund, 2010).

Cooper (2000) developed a reciprocal safety culture model that covers all three aspects of safety culture discussed above: psychological aspects, behavioural aspects and organizational aspects. It promotes methodological triangulation (Jebb, 2015, Rausand et al, 2004, Guldenmund, 2000) which is critical for investigating multi-faceted constructs of safety culture (Jebb, 2015). This research will attempt to address these research gaps. The study will take a holistic and multi-method approach with the focus on the organizational aspects of safety culture.

### **1.3 Research questions and objectives**

The objective of this project is to investigate how to assess and develop a proactive safety culture in order to effectively manage the safety risks in a selected international company. In light of the research gap and issues discussed above, three research questions have been identified:

1. To investigate management and employees' understanding, perceptions, attitudes, insights and practices of safety management and safety culture in a selected international company
2. To critically investigate how to assess the safety culture in a selected international company
3. To identify the programs / best practices that can foster a proactive safety culture

### **1.4 Research method**

The researcher developed a preliminary conceptual framework based on a systematic literature review and 13 years professional experience in Health and Safety management. It captures some of the more recent developments in the understanding of Safety Culture. Chapter 3 introduces the conceptual framework which sets out the structure and content of the research. It supports and informs the research design, directs the method, data collection and analysis. Considering the multi-methods used in this research, the researcher designed a simply and clear structure for the thesis, it separates the quantitative and qualitative data presentation and analysis and separates the data presentation and data analysis in different

chapters so that it is more clear and reader friendly. Chapter 4 summarizes the general findings of the survey using frequency analysis and chapter 5 further explores survey results using Chi-square tests to see if there is any statistical significance between responses with job roles and length of service. Chapter 6 presents the findings of qualitative research and findings will be discussed under the themes identified in the conceptual framework. Chapter 7 discusses overall findings from both quantitative and qualitative data with the thematic analysis, triangulates the data and engages with the literature to provide a comprehensive understanding of the safety culture in the organization. The findings will be discussed under the themes identified in the conceptual framework from literature review. In chapter 8, the researcher will make conclusions, recommendations and discuss contributions and limitations of research and indicates areas for future research.

## **CHAPTER 2 LITERATURE REVIEWS**

### **2.1 Introduction**

It is a challenge to present the vast and complex literature and research around safety and more specifically safety culture considering resource available and document size limit for a one year Master's thesis. Therefore, this chapter will review literature around safety culture and will focus on key areas which form a robust foundation for the study:

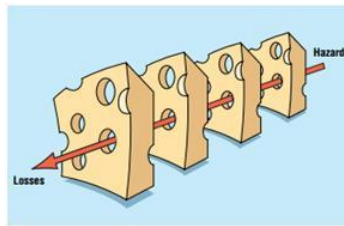
- Key concepts and theories surrounding the safety culture such as incident causation model, managing safety risks, definitions of safety culture and the reciprocal safety culture model
- Key elements of a proactive safety culture and the best practices of safety culture
- How to assessing the safety culture, including different Safety Culture Maturity models

The researcher took a positivistic view and a pragmatic approach, for example, she identified 8 key themes of a proactive safety culture and further broke each key themes down into contributory factors (sub-themes) which provide the nuanced consideration so that the topic can be explored in depth and solutions provided on how to develop a proactive safety culture.

### **2.2 Incident causation model**

One of the recognized models of incident causation in risk management is the Swiss Cheese model (Figure 2.2) which suggests that systemic failures and incidents occur from a series of events at different layers of an organization (Ducut, 2011) . Holes in each layer represent weaknesses in the system, and when holes align, incident or failure occurs (Reason, 2000). The more layers, the less likely an incident is to occur (Ducut, 2011). One single hole will not lead to an incident but if all holes are aligned, incidents can happen.

Figure 2.2



One major criticism of this model is that it is insufficiently specific regarding the nature of the holes (Eurocontrol, 2006), their complex interrelationships and interaction of system components (Dekker, 2006, Hollnagel, 2012, Leveson, 2012, Eurocontrol, 2006). However, other researchers argue that no one model can be universally applicable to all situations. The Swiss-Cheese Model was recognized as assisting in understanding multiple causes in incident causation (Douglas et al., 2003) and thus encourages organizations to consider multiple layers of defences to prevent failure or incident.

### **2.3 Managing safety risks**

Identifying and managing safety risks are at the core of any safety management. The Hierarchy of Controlling Hazards Principle suggests a hierarchy of eliminating, substitution, engineering controls, administrative controls and Personnel Protection equipment (PPE) to manage safety risks in order of effectiveness (OSHA, 2015, HSE, 1999). This is because the elimination or reduction of safety hazards at source is a proactive step to manage safety risks and should be prioritized as reasonably practicable to do so. Fuller et al. (2004) indicate that, facility and equipment should be designed with sufficient integral safety to eliminate hazards at the design stage to cope with operator error. It enables one single unsafe action from employee that will not lead to serious injuries. This concept was supported by past research findings which call for strengthening the prevention culture (EU-OSHA, 2005). This is related to the Swiss Cheese model but indicates that design for safety is the most proactive layer of defence than others.

Mayhew (2007) argued that the hierarchy of controlling hazards does not deal effectively with the entire range of hazards and risks such as those related to human factors and safety culture. This suggests the need to adopt a holistic approach to managing safety risks. Hale (2000) examined how human factors and safety culture

affect risk management and argued that shared attitudes, beliefs and perceptions of people determine how they act and react in relation to risks and risk control systems. This strengthens CCH's findings and suggests that psychological aspects of safety culture determine people's behaviour and effectiveness of controlling risks. Effective risk management partly depends on the behaviour of all those individuals (IOSH, 2009), so managing safety risks should also seek to improve the behaviour aspects of safety culture of organization.

IOSH provide different insights towards safety risk management within wider business risk management. Poor health and safety risk management can have a negative impact on wider financial, reputational, operational, compliance risks and business continuity (IOSH, 2015), demonstrating that health and safety risk management is an integral part of business risk management (IOSH, 2015). This underlines the importance of building links between safety risk management with business and to partner with other functions to integrate safety into business. This again introduces the safety culture concept which is critically important for effective risk management.

#### **2.4 Definitions of safety culture**

There is no universal recognized definition of safety culture (HSE, 2005). Most definitions are related to the safety climate which focuses on people's perceptions, attitudes and beliefs (HSE, 2005). The Advisory Committee on the Safety of Nuclear Installations developed a most widely adopted definition: 'The safety culture of an organisation is the product of individual and group values, attitudes, perceptions, competencies and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management.

Organisations with a positive safety culture are characterised by communications founded on mutual trust, by shared perceptions of the importance of safety and by confidence in the efficacy of preventive measures.'

This definition is comprehensive, specific and applicable to a wider context. It emphasizes safety as a shared value of all stakeholders which is important. In addition, it not only addresses psychological and behavioural aspects of safety, but also recognizes the influence of important organizational factors, preventive



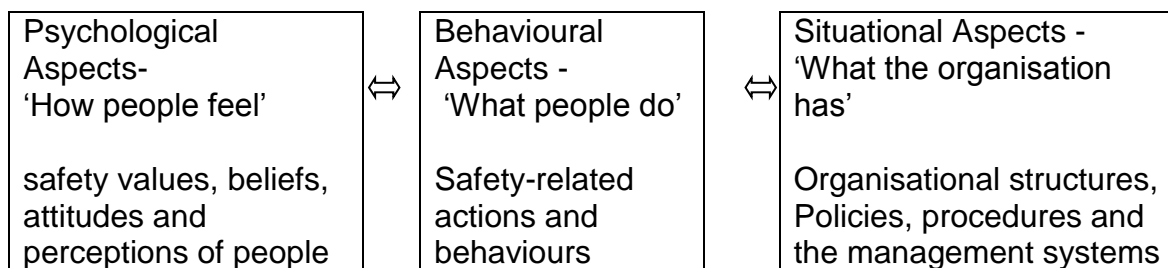
measures on people’s perceptions and behaviours to safety which is holistic and emphasises the proactive nature of safety culture. Also, it defines some key characteristics of safety culture which can guide practicable culture improvement.

A number of studies indicate that safety culture is a subset of and is influenced by organisational culture and that safety culture is affected by external business and societal influences (Cooper, 2000, Cox and Flin 1998). The new ISO 45001 Occupational health and safety management system requires organizations to consider the context of an organization when determining external and internal issues. These findings suggest cultural research should consider broader contexts and influences.

### 2.5 The reciprocal safety culture model

Cooper defines a reciprocal safety culture framework that allows the multi-faceted and holistic nature of the concept to be fully examined by using a triangular methodology approach (Copper, 2001). It identifies three interrelated aspects of safety culture: Psychological Aspects, Behavioural Aspects and Situational Aspects (Table 2.5)

Table 2.5



Subjective psychological aspects are also described as ‘safety climate’ which includes safety values, beliefs, attitudes and perceptions of people. Behavioural aspects are observable, on-going safety related behaviours and the situational aspects are described as ‘organizational’ factors. This framework suggests the interaction between three aspects of safety culture which is helpful for guiding cultural research in a holistic manner. The framework is also applicable to the incident causation chain at all levels of an organisation (Copper, 2001). It addressed

the weakness of the Swiss Cheese model in lacking of the inter-relationships of system components. In addition this model encourages and promotes methodological triangulation (Jebb, 2015, Rausand et al., 2004, Guldenmund, 2000). Methodological triangulation is critical for investigating multi-faceted constructs of safety culture, as each method is necessarily limited in what it can reveal about each facet. (Jebb, 2015)

## **2.6 Safety culture framework**

Reason (1998) suggests that safety culture consists of four main elements: a just culture, a reporting culture, an informed culture and a learning culture. In a just culture people understand the boundary between acceptable and unacceptable behaviours. A reporting culture means people have confidence to report safety concerns without fear of blame. In an informed culture organisations collect and analyse relevant data to stay informed of its safety performance. A learning culture means that the organisation learns from its mistakes and makes changes to unsafe conditions. These elements are interrelated, a learning culture depends on an informed culture and this, in turn, depends upon creating an effective reporting culture that is underpinned by a just culture in which the line between acceptable and unacceptable behaviour is clearly drawn and understood. HSE (2005) developed five indicators of safety culture: leadership, employee involvement, two-way communication, learning culture and attitude towards blame. Learning culture and attitude towards blame share two elements of Reason's (1998) research. But HSE addressed additional elements of leadership, employee involvement and communication which are important because leadership plays a key role in fostering an informed and just culture and in engaging employees in the active safety management process such as the effective two-way communication. IAEA developed a framework for a strong safety culture consisting of five elements of safety culture. 1) safety is a clearly recognized value; 2) leadership for safety is clear; 3) accountability for safety is clear; 4) safety is integrated into all activities; and 5) safety is learning-driven (IAEA, 2011). It shares some common elements with HSE's work, but specifically emphasises safety as a core value, clear accountability and operational integration. These are important aspects of safety culture because safety

management is most effective when everyone is hold accountable for safety and safety is built into the daily routine of work.

Each framework didn't identify all key elements of a proactive safety culture. Although there is no universally recognised model of safety culture, some elements, such as operational integration, leadership and employee involvement, have been identified as critically important. These will be discussed in-depth by cultural element in below section.

## **2.7 SAFETY AS A VALUE**

A firm, shared belief of safety is a core characteristic of positive safety culture. IAEA identified 'Safety is a clearly recognized value' as one of the characteristics of a strong safety culture (IAEA, 2014). This is because safety culture is a set of safety values (ACSNI, 1993) which guide people's decision making and prioritisation, and facilitates behaviours consistent with their values. In addition, Whiting et al., (2003) indicated that safety is a core shared value that gives people confidence to get involved, which in return contributes to a proactive safety culture.

The literature identifies the importance of considering safety in business decision making (OGP, 2013). The IAEA (2014) indicates that a proactive and long-term approach to safety issues in decision-making is important and the strategic business importance of safety should be reflected in business plans. In addition, IAEA indicates that safety conscious behaviour that is socially accepted and supported is a key attribute of safety value.

Evidence in the literature suggests that the belief that 'injuries can be prevented' is a fundamental safety value. Though some argue that preventing injuries is very difficult because humans make mistakes, many safety professionals strongly believe 'injuries can be prevented' and it demonstrates a commitment to zero harm to people (Stewart, 2012). Industrial safety leaders such as DuPont claims safety is a core company value and are strongly convinced that zero injury is attainable (DuPont, 2015). Business benefits from safety is another fundamental safety value which can be an important driver for improving safety performance (OSHA, 2003). Individuals

convinced that safety and production go 'hand in hand' is one attribute of 'safety is a clearly recognized value' (IAEA, 2014). As a result, people are more likely to manage safety the way they manage other aspects of business.

## **2.8 OPERATIONAL INTEGRATION**

For non-manufacturing companies, where incident and injury rates are not generally significant compared to other types of businesses, the challenge is to integrate safety into all management processes (OSHA, 2003) and Whiting et al. (2003) emphasize that integrating health and safety into operational activities was the most highly rated practice for achieving excellent health and safety. NOPSEMA confirms that employees prefer to integrate safety culture improvement strategies within their existing organisational systems rather than something new (NOPSEMA, 2013). The new ISO 45001 Occupational Health and Safety Management system requires organizations to integrate health and safety into business (BSI,2016) which proves that this theme is worth investigation.

Although recognised as important, there is limited research on practicable approaches on how to integrate safety into business. IAEA (2014) agree that 'Safety is integrated into all activities' as one of the characteristics of a strong safety culture and define several attributes - good quality of documentation, procedures and process, and individuals have the necessary knowledge and understanding of the work processes (IAEA, 2014). This is fundamental as it makes things easier for operations to implement process and procedures.

Cross-functional and interdisciplinary cooperation and teamwork are other attributes of operational integration (IAEA, 2014), as they enhance effectiveness and efficiency of safety management. Similarly, proactive partnership with business functions, leverage existing culture, organization and processes, for example, collaborate with HR and operations and include safety in overall performance measurement process is important (Hansell, 2007) because it make safety an integral part of operations and make it easier to do things without introduce additional process.

Hansell (2007) says safety should be integrated into all business processes, such as organizational design, business planning, supplier and contractor selection,

leadership skill development, recognition, performance reviews and so on. Hudson (2013) particularly valued the design process as it is the starting point of safety. Hansell viewed safety function's role as integrating safety into business. DuPont (1999) argued that safety is and must be a fundamental line management responsibility. From a cultural perspective, Whiting et al (2003) indicates that making health and safety a line management responsibility was the most effective way of changing safety culture. This was also supported by HSE (2013) that recognises that making health and safety a line management responsibility is part of the safety culture. These are valuable because line managers directly manage frontline employees who have the necessary resources and greatest influence on employee's safety at work.

## **2.9 LEADERSHIP**

It is widely recognised that leadership plays the most significant role in promoting a proactive safety culture that effectively manages safety risks (IOSH, 2015, EU-OSHA, 2012, HSE, 2005). HSC (2001) highlight key messages of the importance of strong management commitment to safety and to demonstrate this dedication to employees at all levels, as well as to the public. Senior management commitment to safety produces higher levels of motivation and concern for health and safety (HSE, 1999a). Furthermore, the new ISO 45001 Occupational Health and Safety Management System have requirements specific to top management with regards to demonstrating leadership, commitment and promoting a positive occupational health and safety culture (BSI, 2016). However, while there is considerable literature on leadership, very little of this addresses issues of safety (Healey et al, 2012). Also, there is little information about how leaders influence safety culture (Fleming, et al, n.d.)

### **2.9.1 Visible leadership commitment**

Research has identified traditional approaches of leadership such as training, safety meetings and safety inspection (HSE, n.d.). But some approaches stand out as most effective such as ensuring adequate resources, emphasizing concern for worker safety as a company value, safety walks, building trust and suspending work activities pending corrective actions (Whiting et al, 2003). These all demonstrate

genuine leadership commitment, so employees believe safety is a core value and will support the process.

High visibility of management commitment to safety was recognized as important to successful safety leadership (HSE, 2005, DuPont, 2011). Leaders should commit and enforce safety as a core company value and communicate this to employees (EU-OSHA and Quayzin, 2012), for example, by routinely voicing concern for workers' safety and health (Whiting et al, 2003). If managers fail to demonstrate commitment by their actions, they lose credibility. Leaders need to be visible to employees at the worksite and authentic in their safety behaviour and act as role models (O'Dea & Flin, 2001). Increasing management presence in frontline locations through scheduled safety tours is a powerful means for 'walking the talk' (HSE, 1999a, HSE, n.d.). Whiting et al (2003) agrees that doing frequent "walk-around" of the facility is important, but commenting on effective or ineffective safety and health practices observed is important. Furthermore, frequent workplace inspections make a difference (IAEA, 2013, Roughton et al, 2002).

### **2.9.2 Roles, responsibilities and accountabilities**

IAEA identified 'accountability for safety is clear' as one of the characteristics of safety culture (IAEA, 2013). Roles and responsibilities need to be clearly defined, communicated and understood at all levels and there needs to be a high level of compliance with procedures and ownership for safety by all individuals at all organizational levels (IAEA, 2013), so that employees can be held accountable and they have enhanced ownership for safety. Roughton (2002) agrees that employees should be held accountable for not meeting their safety responsibilities or standards and defines essential components of an effective accountability system:

- Establish formal standards of behaviour and performance objectives (IAEA, 2002).
- Provide resources to meet those standards
- Effective performance measurement such as annual performance appraisal and appropriate application of consequences

Such proactive approaches manage the process instead of merely applying consequences when it occurs. Application of consequences should include both

positive and negative, with positive recognition applied if employee meets or exceeds performance expectations or standards (EU-OSHA, 2012, Roughton et al, 2002). Negative behaviours should be treated in a proactive way via training and mentoring (Roughton et al, 2002). Unacceptable behaviours should be dealt with in a consistent, just and fair manner with deliberate violation subject to disciplinary action (Reason, 1998).

### **2.9.3 Effective Risk management**

There is a key role for risk management practices in the development and improvement of safety culture (Aerosafe Risk Management, 2010). Copper (2001) argues that a key indicator of the quality of a safety culture is the presence and efficacy of the risk assessment and control system. McKinnon argues that the key in risk assessment is not what happened, but what could have happened (McKinnon, 2014). This means anticipating, predicting risk and proactively controlling risks thus promoting a proactive safety culture. NIOSH launched a National Prevention through Design Initiative in 2007 to anticipate and design out hazards in tools, equipment, processes, materials, structures, and the organization of work so that occupational injuries could be prevented. The objective is to achieve a cultural change so that designing out occupational hazards is the norm (NIOSH, 2010).

Little research has examined leadership roles in involving employees in risk assessment process to better predict risks. Biggs et al (2008) say leaders should conduct periodic risk assessments and seek employees' participation in job safety analyses (JSA). OGP (2010) share a similar view that, in a mature safety culture, the work team members are involved in completing the JSA as they are the ones most familiar with their job and equipment. JSA is therefore conducted with employees actually performing the job and review key aspects, hazards and related control measures relevant to the job (OSHA, 2002). The JSA can be a valuable tool for training new employees to perform their jobs safely and increases the effectiveness of risk control and ownership of employees because of employee involvement in the process.

#### **2.9.4 Open, trust and no-blame environment**

An open, trusting and no blame environment is an essential characteristic of safety culture (HSE, 2005). Whiting et al (2003) indicate that if people truly trust each other's motives, knowledge will be learned, shared, and acted upon at all organizational levels. This resonates with the earlier discussion that trust is the most important factor of a just culture and a no blame environment is key for a reporting culture (Reason, 1998).

Paul (1997) claims that one way to create an open, trust and no blame culture is to define and communicate safety roles and responsibilities in advance in a respectful atmosphere where individuals are held accountable. He recognises that everyone makes mistakes and must be learned from, something that can only occur in an open, trusting and no blame culture. HSE (2005) and Godier (1996) value the role of incident investigation in creating an open, trust and no blame environment. HSE identified root cause analysis as a means of exploring the reasons and motivations behind actions leading to the incident (HSE, 2005). Godier linked root causes with management systems so that blame wasn't on employees. Learning from all incidents and near misses is also important and this is linked to the interrelated aspects of organizational learning which will be discussed in detail later. Various authors have found leadership characteristics such as respecting people, building trust, credibility and keeping promises help build an open and trusting environment. (INPO, 2013, OPG, 2013, HSL, 2002) Perceptions that management values safety and encouragement of two-way safety communications help promote trust (Healey et al, 2012), Open door policies make it easier for employees to access management and raise issues (HSE, 2005).

#### **2.9.5 Safety recognition**

Krause (2005) found that providing feedback and recognition for individuals and teams is a powerful tool for encouraging safe behaviour and building a stronger safety culture. HSE identified various recognitions ranging from verbal praise to monetary rewards to recognise workers for their contribution to health and safety helped promote safe behaviours, instil trust and respect (HSE, 2012). Such recognition should be timely and significant demonstrating sincerity (Roughton,



2002, Krause, 2005) demonstrating genuine commitment from management. HSE (2012) say recognition should be part of sites' daily routines and integrated to operations. Peer nomination for engaging in good health and safety practices is also a positive policy as it empowers employees and promotes shared values, practices and ownership of safety. Such team behaviour encourages collaboration and team ownership of safety issues (HSE, 2015).

### **2.9.6 Leadership development**

Several researchers suggest that transformational and transactional leadership are associated with better safety performance and safety participation (O'Dea and Flin, 2001; Zohar, 2002, Inness et al., 2010). HSE argue that embracing transformational and transactional leadership styles are crucial for developing a positive safety culture (HSE, 2012). Transformational leadership, for example, acts as a role model, inspiring and motivating employees to work safely. Showing concern for employees' safety, promoting higher levels of employee participation in safety activities encourages compliance with safety rules and procedures (HSE, 2012). Transactional leadership clarifying performance expectations and setting high safety performance standards, recognising and rewarding positive safety behaviours and practices all promote employee participation (HSE, 2012). This suggests safety specific transformational and transformational leadership training can be an effective approach to improving safety culture (Mullen and Kelloway, 2009). IAEA concur and argue that leadership training needs assessment should be conducted with due consideration of their ability to foster strong Safety Cultures. (IAEA, 2013)

### **2.10 EFFECTIVE TWO-WAY COMMUNICATION**

Two-way communication is one of the key indicators to influence safety culture (HSE, 2005) yet existing research focuses more on general communication techniques with few examining core safety issues.

A communication plan, including components such as purpose of communication, audiences, contents, communication channels and schedules is important to ensure systematic and consistent communication, as this provides a systematic way of communication and ensures the consistent message across the organization (ACC, 2015). However, ACC didn't examine other key aspects of communication. A positive

safety culture requires effective channels for top-down, bottom-up and horizontal communication on safety matters (HSE, 2005). This is because Top-down Communication provides successful safety leadership and bottom-up communication is important for employees to raise safety issues or concerns (HSE, 2005). Much of the communication in front line workplaces is horizontal which is vital to enable teams and individuals to do their jobs safely (OGP, 2013). However, HSE (2005) didn't fully consider the importance of horizontal communication, and viewed it as a function to transfer information which is less proactive.

Feedback mechanism is important in communication. Feedback from employees is essential to know employee's opinions and to know information is understood. Feedback from managers increases employee motivation in safety (HSE, 2005). But employees must know that confidentiality will be maintained and that the information they submit will be acted upon, otherwise they will decide that there is no benefit in their reporting (Reason, 1998).

## **2.11 EMPLOYEE INVOLVEMENT**

Employee involvement is one of the indicators to influence safety culture (HSE, 2005).

### **2.11.1 Acceptance of personal responsibility for safety**

Acceptance of personal responsibility for safety is a key feature of positive safety culture (Cooper, 2001, Lardner,2003) and means that everyone feels responsible for safety and pursues it on a daily basis (OGP, 2013). For improved safety performance, an organization's safety culture must promote a sense of shared responsibility for safety through genuine empowerment (French, n.d.).

### **2.11.2 Involve employees in safety management processes**

Active employee involvement in safety fosters increased levels of employee accountability and responsibility for safety (HSE, 2012). Involving employees creates ownership (HSE, 1999a) so safety systems and processes must be structured with

opportunities for employee involvement and designed to facilitate a sense of ownership and personal control (French, n.d.).

HSE (2007) believe employee involvement works most effectively within a strong safety culture where safety is integrated into everyone's roles. Methods include establishing meaningful and reasonable safety performance objectives, tying it to bonuses and merit increases and providing special commendation or other recognition for superior safety performance (Whiting et al, 2003). Other methods include using five whys analysis and safety suggestion schemes with safety circles (HSE, 2008). Job Safety Analysis is particular useful to improve employee involvement (Roughton, 2002, HSE, 2008). In addition, involving employees in developing and reviewing safety procedures and rules are proactive because employees who participate in safety programs development are more likely to support and use the programs (Roughton, 2002). Employees should be involved in all aspects of SMS (OSHA, 2013, HSL, 2001) including giving employees specific health & safety responsibilities, involving them in setting safety objectives, delivering safety messages, delivering and designing training, involvement in problem solving, safety inspections, behavioural observations and incident and near miss investigations (HSL, 2001).

HSE (2005) emphasize that an organisational system should allow all employees to be involved in proactively contributing ideas for improvement. However, research identified gaps of workforce involvement in proposing improvements (IOSH, 2009). Both Lunt et al. (2008) and Roughton (2002) indicate safety suggestion program encourages employees to propose safety improvement, and Roughton argues that timely feedback to employees is important for motivation. The gap in existing research suggests the need to find better ways to involve employees. Williams (2008) suggests wellness programs and community outreach initiatives and other researchers suggest using behaviour based safety programs to better engage employees (HSL, 2001, HSE 2008, DuPont, 2015).

### **2.11.3 Behaviour Safety**

Worker involvement and behaviour change have been discussed separately in the literature and little research has examined their interrelatedness (HSE, 2008).

As discussed in section 2.2, addressing and measuring behaviour aspects of safety provides a tool for proactive health and safety management (IOSH, 2015)., Dejoy argues that culture change and behaviour change complement one another and it makes sense to combine 'culture change' approaches with 'behaviour change' approaches to optimize safety performance (Dejoy, 2005).

Behavioural factors are increasingly recognised as one of the importance influences on incident causation and prevention. The modern Behaviour Based Safety program is built on Heinrich's work which suggests that reducing the number of unsafe behaviours and minor injuries can prevent more serious incidents happening (Heinrich, 1959). Focusing on human error can lead to victim blaming and can hinder basic cause analysis (Hardman, et al, 2008) but discussions in the previous sections suggest that the adoption of a holistic approach can foster an open, trust and no blame culture, that addresses this potential weakness.

The Keith Centre (2000) found behavioural approaches to safety improvement are most effective when technical and systems aspects of safety are performing adequately. IOSH agrees but indicates systems that recognise workers have a genuine interest in their own wellbeing contribute best when they can see that they themselves can influence their own safety (IOSH, 2015). The behaviour safety approach therefore provides employees with opportunities to participate and contribute to safety.

Common features of behaviour safety approach include leading from the top, significant workforce participation, identification and definition of critical behaviours, constructive feedback on undesirable behaviour and praise for desirable behaviour, data collection and data-driven decision-making (IOSH, 2015). Lunt et al. (2008) suggests goal setting in behavioural observation. Frances (2011) argued that employees on the floor see more violations than all the managers combined. So

immediate peer to peer verbal feedback is the most effective way of achieving behavioural change in an industrial setting (Krause et al., 1990). A mature safety culture is characterised by better team work and workforce ownership for safety (DuPont, 2015), so when safety conscious behaviour is socially accepted and supported, peers can encourage and support each other (IAEA, 2014).

## **2.12 PROACTIVE PERFORMANCE MEASUREMENT & REVIEW**

Safety performance measurement not only provides information on how the system operates in practice and provides a basis for continual improvement but also provides feedback and motivation. This section focuses on proactive measures of safety performance because organizations need more proactive or 'up stream' measures of performance (HSE, 2001)

HSE (2001) suggests several levels of measurement. Measuring the outcomes is reactive and is referred to as a lagging indicator, for example, incident rates. Measures of input and process regarding SMS and activities are active and proactive and are known as a leading indicator, for example number of planned safety inspections. Such leading indicators monitor the effects of proactive safety work and provide information to be used in anticipation and development of organizational performance (Reiman, et al, 2010).

There are challenges associated with the selection of leading indicators. Reiman suggests that the needs and critical goals of the organization should be considered in selecting leading indicators. HSE (2001) say that a systematic approach to deriving these measures and how they link to the risk control process is often absent.

## **2.13 ORGANIZATIONAL LEARNING**

Wittingham (2004) argues that an open culture accepts that mistakes are made, and must be reported and learnt from. Reporting is important for a learning culture, but is only effective if organisations learn from them (OGP, 2013). Effective incident analysis for root cause is necessary to prevent re-occurrence of incidents (HSE, 2005), and any repetition indicates a poor learning culture (IAEA, 2013).

Organizations should learn from incidents, near misses, non-compliance, unsafe behaviour and external incidents in other related industries (HSE 2005). Learning from near misses and unsafe behaviours are more proactive because it can predict incidents and thus proactively prevent them. IAEA (2002) further emphasise that every experience is a learning opportunity. Other proactive learning includes schemes which encourage staff to put forward ideas and that provide rewards (HSE, 2005). A learning culture is based on effective communication with provision for feedback and sharing of information (HSE 2005). Similarly, IAEA (2002) indicates a learning culture is linked to effective multi-channel communication.

## **2.14 CONTINUOUS IMPROVEMENT**

Safety culture is continuously evolving and requiring continuous attention to successfully improve, strengthen and sustain it over time (IAEA, 2011).

### **2.14.1 Assessing safety culture**

Assessing safety culture is important to measure key elements of safety culture and identify an organisation's current level of maturity in order to learn and improve (RSSB, 2015).

A holistic and multi-method approach should be taken towards assessing safety culture (EU-OSHA, 2011, Guldenmund, 2010). Most past research has used safety perception surveys of employees' attitudes and perceptions (Cooper, 2000, Silva et al., 2004) to assess safety culture and provide a snapshot of the state of safety in an organisation (HSE, 1999, Mearns et al., 1997). Although organisational factors have a major influence on individual and group behaviour (HSE, 2013) issues related to these factors and people's actual behaviour have tended to be overlooked (Mearns, et al, Cooper, 2000). The next section will discuss how to assess the organizational aspects of safety.

### **2.14.1.1 Safety Culture Maturity models**

Survey results are difficult to translate into improvement actions, but the safety cultural maturity model provides a framework for safety culture improvement (Fleming, 2013).

The Safety culture maturity model enables organizations to assess their current level of safety culture maturity with key elements of safety culture in different stages and develop improvement plans to move to the next maturity level. In addition, the safety culture maturity model also benefits multi-site organisations (Keith Centre, 2000). Several safety culture maturity models have been developed in past decade, but most of the available tools are 'commercial' products, provided by OHS institutions and consultants (EU-OSHA, 2011).

Keith Centre's Safety Culture Maturity models (SCMM) (Keith Centre, 2000) involves five levels of culture maturity: emerging level, managing level, involving level, cooperating level and continuous improving level (Figure 2.14.1a). Each level consists of ten elements of safety culture: management commitment and visibility, communication, productivity versus safety, learning organisation, safety resources, participation, shared perceptions about safety, trust, industrial relations and job satisfaction and training.

Figure 2.14.1a Keith Centre's Safety Culture Maturity models (SCMM)



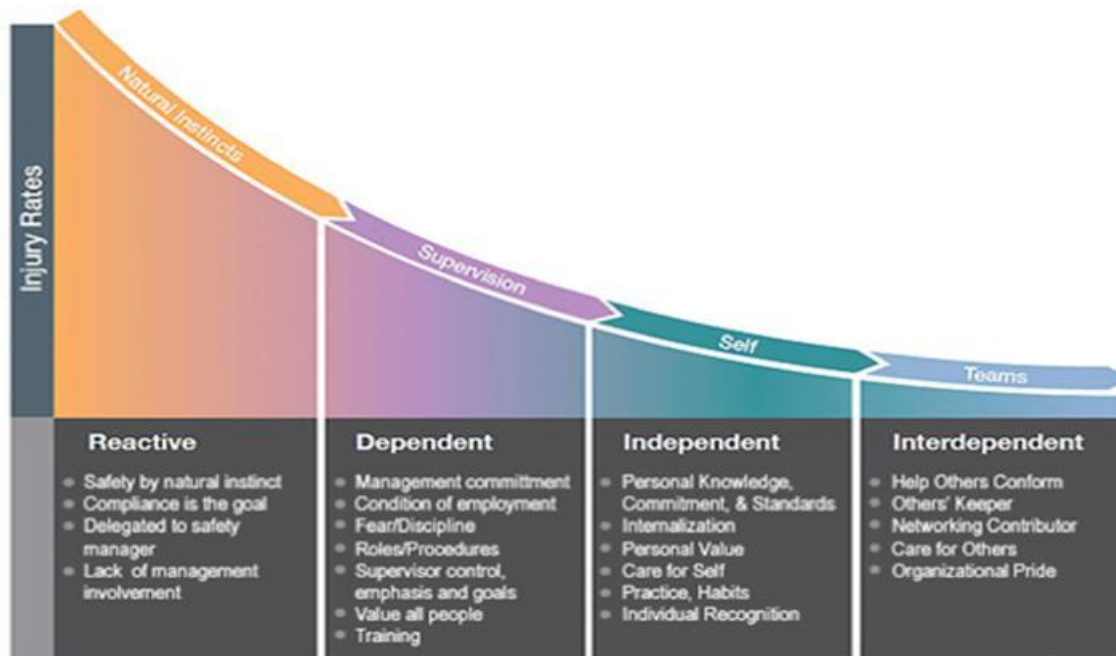
The model emphasises workforce participation in assessing the safety culture which provides an opportunity for staff to learn key elements of safety culture, and their role in its development (Lardner, 2002). However, this model is arguably deficient in several respects, first not all key cultural elements are identified such as operational integration. Second, it doesn't linked to SMS, so the way that safety is organized may be inconsistent, under-resourced and not seen as business driven (Foster, et al, 2013). This is a common gap found in other similar models that safety culture models are seldom integrated into the organisation's SMS (IChemE, 2007). In addition, it needs external expert assistance in assessment and companies need to tailor the model so that it addresses specific risks and needs of the organization.

Another model is the DuPont Bradley Curve which helps organizations assess and benchmark the journey toward world-class safety culture (DuPont, 2015). DuPont developed a four stage cultural maturity model moving from reactive to dependent, independent and finally interdependent. It is based on core safety principles implemented through key elements for achieving safety culture excellence. This model is developed by the organization and is integrated into organization's safety management system (SMS). DuPont identified additional cultural elements such as integrated organizational structure, line management accountability and responsibility, progressive motivation and behavioural observation and audit. These



are important because they enable safety to be integrated into operations and every employee's daily job.

Figure 2.14.1b- DuPont Bradley Curve



Both models share a focus on established cultural levels and sequential progress to improve the culture. Results can be compared between different sites, or at different times. Both models highlight employee acceptance of personnel safety responsibility and ownership for safety at the higher stages.

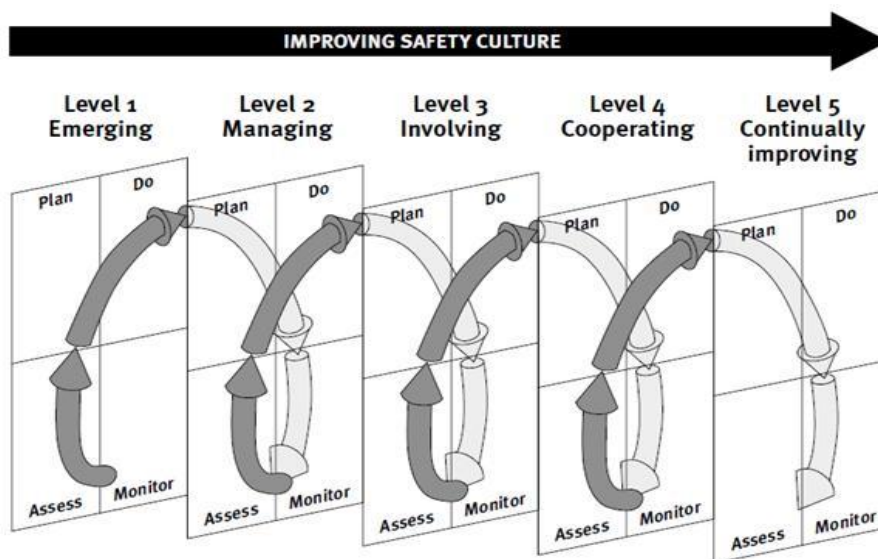
### 2.14.2 Improve the safety culture

The aim of all efforts devoted to safety culture has been to enable organizations to improve their culture (Fleming, 2013). While various researchers have explored the strategies for improving safety culture there has been a lack of a systematic approach (e.g. NOPSEMA, 2013). Further, many measurement tools do not guide the user towards the development of practical improvement actions (HSE, 1999). A common tool for continuous improvement is Deming's Total Quality Management (TQM) cycle or the PDCA cycle (plan – do – check – act (Deming, 1986). The value of the PDCA circle is that it embedded the principle of continuous improvement

(IOSH, 2003). Both OSHAS18001 (2007) and ANSI Z10 (2012) applied PDCA circle in Occupational Health and Safety management which can also be used for the safety cultural improvement. As discussed earlier, Safety Culture Maturity Model provides a framework for safety cultural assessment and improvement. Whatever management model organizations use, it is likely to be based on the principle of PDCA (IOSH, 2015).

The STEP CHANGE model combined the TQM model and the Safety Culture Maturity Model (SCMM) to produce a safety culture improvement process (STEP CHANGE, 2000). It shows TQM process followed throughout each maturity state so that organizations can progress to a higher maturity level (figure 2.14.2). This combined model is more systematic and enables safety integration into the management process.

Figure 2.14.2



IOSH recognised this model because it assesses current levels of maturity, it supports the development and implementation of plans to move to the next level, and monitors the implementation and re-assesses the level of maturity to evaluate success and identify more actions (IOSH, 2015). As a result, organizations continuously improve their safety culture while strengthening and maintaining continuous focus on the key cultural elements.

Based on the cultural maturity assessment results, STEP CHANGE helps organizations to use appropriate tools such as safety leadership development, behavioural interventions, and employee led initiatives to enhance safety. However, organizations need to carefully choose interventions that address their weak areas from the safety culture assessment results and interventions should be appropriate to the level of safety maturity so that they can be effective (STEP CHANGE, 2000).

## **2.15 Conclusions**

The purpose of this review was to examine the existing knowledge and recent development of safety culture. Existing literature demonstrates that there is no universal consensus on a definition, elements and theoretical framework for safety culture. This research therefore attempts to fill these gaps. The research will develop a conceptual framework to explore how safety culture is integrated into organisation's processes, practices and employee behaviours. The study will take a holistic and multi-method approach to examine interrelated aspects of safety culture, develop practicable approaches and will identify industry best practices to guide the improvement of safety culture.

As safety culture is affected by external business and societal influences (Cooper, 2000, Cox and Flin, 1998), future research can examine the meaningful ways of external stakeholder engagement to improve the process and safety culture in organizations. The next chapter will discuss the research method designed to address the research objectives.

## CHAPTER 3 RESEARCH METHOD

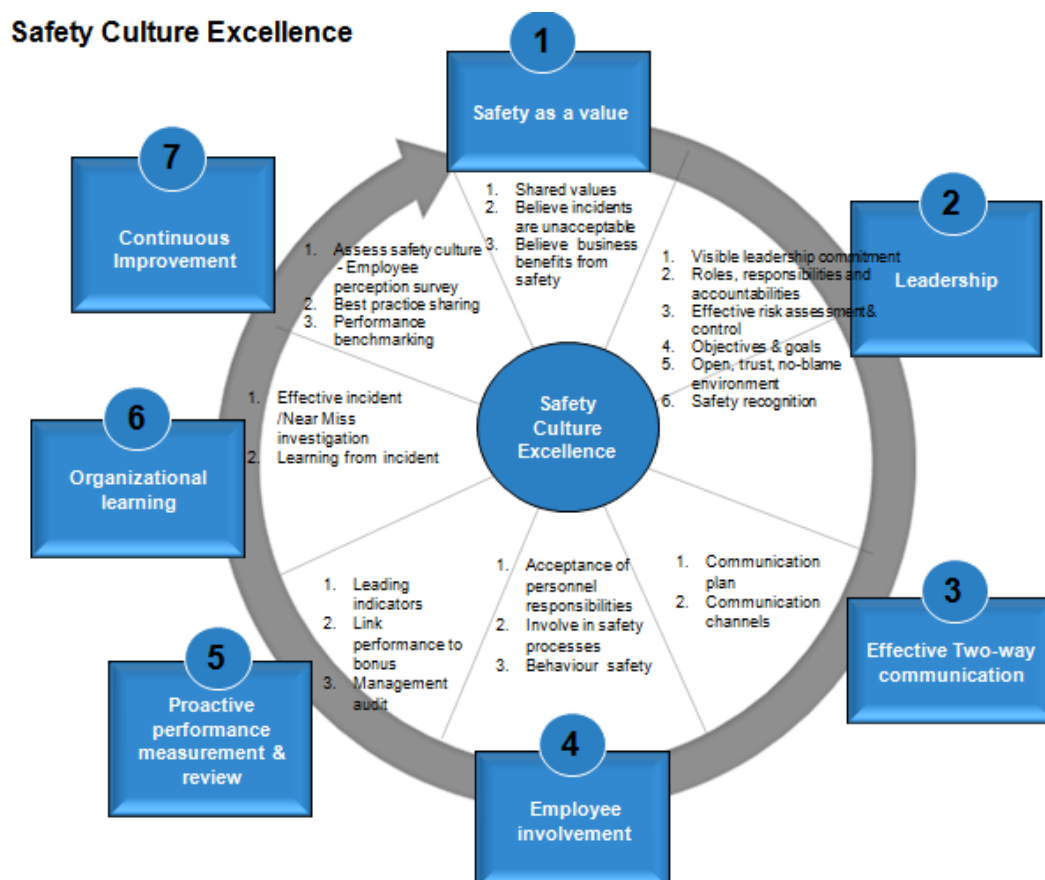
### 3.1 Introduction

A mixed methods approach combining both quantitative and qualitative approaches was chosen to address the research questions:

- To investigate management and employees' understanding, perceptions, attitudes, insights and practices of safety management and safety culture in a selected international company
- To critically investigate how to assess the safety culture in a selected international company
- To identify the programs / best practices that can foster a proactive safety culture

The above research objectives, informed by the literature review led to the development of the conceptual framework (Diagram 3.1)

Diagram 3.1- Conceptual framework



The conceptual framework visually presented the main things to be studied – the key factors and presumed relationship among them (Miles et al., 1994). This framework

constructed key theories that constitute 8 key elements of safety culture: safety as a core value, operational integration, leadership, effective two-way communication, employee involvement, proactive performance measurement and review, organizational learning and continuous improvement. One of the research questions is to investigate management and employees' perceptions, attitudes, insights and practices of safety and safety culture, therefore, the conceptual framework informed the questionnaire design to include these key elements to gain people's perceptions and insights of safety culture. Another research question concerning how to assess the safety culture will be answered by the qualitative research of interviews, also linked in to the conceptual framework. The qualitative research was conducted in the second stage with interviews and participant observations to further explore actual practices and issues surround the key elements of safety culture and their interrelatedness based on the conceptual framework. This answered the questions on how to identify the programs / best practices that can foster a proactive safety culture in the organization. The final conceptual framework will be presented in chapter 8, following the analysis of empirical data. Data was collected via a questionnaire survey, semi-structured interviews and participant observations so that a comprehensive understanding of the safety culture in the organization could be achieved.

This chapter will first present the conceptual framework, second, it will discuss and justify the selection of the research method; third, it will discuss the data collection process, sampling population and sampling methods; fourth, it will discuss approaches of data analysis including the statistical analysis; finally, it will discuss issues surrounding the research including the ethics and the limitations of the research.

### **3.2 Justification of choice of research approaches**

Safety culture is multi-dimensional construct in nature (Piers et al., 2009, NEB, 2013), which suggests single methods will not provide a holistic view of safety culture in an organization. Because the research objectives involve the investigation of people's perceptions, attitudes, behaviours and organizational aspects of safety culture, a mixed method of quantitative and qualitative research is appropriate.

Accordingly, a review was conducted for commonly used methodologies and approaches such as questionnaires surveys, interviews, participant observations, action research, case studies, ethnography and mixed methods. In addition, a review of research method in safety culture research was conducted to investigate its relevant application in the safety area.

Quantitative research such as questionnaires have several strengths; first, it is cost and time effective and can reach a large number of participants; second, it is structured and can be conducted in more controlled conditions; third, findings can be generalised and it allows easy comparison of results between groups; fourth, data can be analysed for statistical significance (Monfared et al., 2014). However, quantitative research can be superficial and narrow (Monfared et al., 2014) and in this research it has been used to address one objective - to understand people's perceptions, attitudes, values and beliefs.

Qualitative research allows in-depth understanding of respondents' viewpoints in a more holistic way and can further explain results from quantitative data (Monfared et al., 2014). For example it can be broad and in-depth and can facilitate the identification of patterns, categories, and themes (Monfared et al., 2014). Similarly, qualitative research also has weaknesses, for example, it is time and resource consuming and the sample size is often small. Most importantly, it can only address some aspects of safety culture.

A mixed methods design is useful to capture the best of both quantitative and qualitative approaches (Creswell, 2003, Listyowardojo, 2014, Von Thaden, et al, 2008) and so such an approach was adopted for this study. Previous research in safety culture also used this approach for triangulation purposes (EU-OSHA, 2011, Listyowardojo, 2014, Von Thaden, et al, 2008, Guldenmund, 2010, Glendon and Stanton, 2000)

### **3.3 Research design-planning of the research**

The case study organization is a subsidiary of a large corporation with multi-site operations in its UK market. As the former Health and Safety Compliance Subject Matter Expert (SME) in its China market, the researcher got the permission from Compliance Department in the UK market for this research. The research design, the time length and the resources needed were discussed with the organisation. It was agreed to conduct the research in the week of 23th, March, 2015 because of scheduled safety related activities including the annual Compliance meeting, Health and Safety Compliance team meeting, 2015 Construction Design Management (CDM) regulation meeting before it take effect in May, 2015, planned site visits, a continuous improvement audit and a community outreach activity. These enabled the researcher to participate in a range of safety management activities in a natural setting. The project coordinator worked with the researcher to create a detailed visit schedule which included planned activities, target times and meetings with managers and employees. The activities enabled the researcher to investigate various management events and connected her to the right people in the business to allow her to understand people's opinions, attitudes, behaviours and experiences, and to understand and experience the practices and standards in the organization.

#### **3.3.1 Quantitative research - questionnaire design and data collection**

The questionnaire will be adopted to provide a snapshot of the safety culture in the organization and to investigate people's attitudes and perceptions as well as to obtain insights on safety practices from managers. The questionnaire was developed from the conceptual framework which was informed by the literature review and the researcher's prior knowledge and expertise from 13 years experience in health and safety. In addition, it also considers recent developments in the field, including benchmarks and best practice, for example, the Conference Board report (Whiting et al., 2003) funded by the Occupational Safety and Health Administration (OSHA). The questionnaire was designed with a total of 50 questions. Unlike other questionnaires that only focus on employee's perceptions, this questionnaire addressed psychological aspects, behavioural aspects and organizational aspects of safety culture and employees have the opportunity to express their opinions. It covers key

elements of safety culture, for example, leadership, effective two-way communication and employee involvement. Forty six used Likert scale questions with a five-category scale (strongly disagree, disagree, Neither Agree or Disagree, Agree, Strongly Agree). Three other questions used ranking and multiple choice and one question was open ended.

All questionnaires have limitations. For example, the accuracy of the answers can be challenged because employees often answer positively. So the researcher designed questionnaires clearly, provided the introduction at the beginning of questionnaire which includes the statement of the purpose, researcher objectives, conditions of research and confidentiality and piloted them to enhance the likelihood that employees would provide honest and accurate answers.

### **3.3.2 Pilot study**

The questionnaire was piloted by the Health & Safety Compliance colleague in the participating organization and a few other safety professionals. The purpose is to review, for example, the timing, length, clarity of questions, and to check if respondents are able to understand and respond accurately (Cohen et al., 2007). After the pilot, it became necessary to revise a few questions so that one question was asked at one time to avoid any ambiguity. In addition, layout of questionnaire was improved so that it is more reader friendly and encouraged participation. The questionnaire was distributed by the compliance department to participants and returned to the researcher by mail.

### **3.3.3 Population and sampling**

A total of 80 questionnaires were sent to one store and 46 returned. Nine managers and 37 employees were surveyed. Random stratified sampling was utilized.

Management in different levels such as senior managers, managers, supervisors and Line leaders were sampled because management at all levels need to be committed to health and safety. New and old employees in different positions such as forklift truck drivers, customer delivery drivers, security colleague, checkout operator, section operators, produce colleagues, and deli colleagues were all



sampled so that the sample can be more representative and valid. Clear guidance was provided and employees from different positions in different departments were invited to participate so that the sample could be more representative to represent managers and employees at all levels of organization.

Ideally, it is better for the researcher to personally give out the questionnaire to employees to increase the reliability of the research. However, employees worked at different time, for example, day shift and night shift and might not be readily available if researcher needs to meet them, so the management gave out the questionnaire for completion which can cover all shifts. But the researcher took every opportunity to engage with the respondents in workshops, for example informal conversations so that she can get accurate and deeper information. She have did everything she could to minimise the potential bias.

### **3.3.4 Qualitative research - Interview design and data collection**

Interviews were used to get in-depth information about safety culture and were conducted sequentially following the questionnaire survey so that questions from the survey results could be further explored.

Twenty interviews were conducted. Questions were informed by the literature review and the researcher used semi-structured interviews consisting of open-ended questions concerning key aspects of safety culture. Semi-structured interviews provided a suitable balance between ensuring comparability across participants, and a scope for more in depth exploration of specific practices (HSE, 2008). Adopting the semi-structured interview allows some flexibility to probe details with participants. In addition, it allows effective two-way communication and engages deeper discussion. The questions were based on the key issues identified in the literature review (Chapter 2), including defining safety culture, key factors for a positive safety culture, and barriers to creating and maintaining safety culture. The interviews were carried out in the interviewees' workplaces in headquarters and operations sites.

#### **Population and sampling**

The researcher conducted semi-structured interviews with 1 senior compliance director, 6 compliance safety managers and colleagues, 1 site safety manager, 6

operations managers and 6 employees. The interviewees were selected based on their roles in safety management. The headquarters Compliance Team was interviewed to gain the insights and best practices for safety management and safety culture. As safety is a line management responsibility and employees also play an active role, they were interviewed to check the actual implementation and safety culture in the company. The fieldwork lasted for five days which consisted of stays in the headquarters, participation in management meetings, site visits, a continuous improvement audit, and informal discussions at break times.

Twenty-eight people were involved in participant observations, semi-structured interviews or informal conversations (table 3.3.4). 10 (32%) were employees and 20 (68%) were managers.

**Table 3.3.4 - Sample profile**

<b>Business format/Function</b>	<b>Position</b>
Headquarters Compliance Team (CCO, Sr. Director, Compliance Managers)	8
Store A (quantitative and qualitative research) GM/Managers/supervisors /section leaders	4
Employees	3
Store B	2
Distribution Centre(DC) C GM /Line managers	2
Safety manager	1
Employees	3
Distribution Centre(DC) A GM /Line managers	2
Employees	3
Total	28

At the beginning of interviews the researcher explained the purpose of the interview and assured responses of confidentiality. Each interview lasted approximately 45 minutes. The researcher built rapport and created a comfortable atmosphere at the beginning of interview so that the interviewees became more engaged and felt free to provide valuable information. Interviews were recorded by taking notes and

managed immediately after the fieldwork so that important information was not missed.

### **3.3.5 Qualitative research - participant observations design and data collection**

Assessments were most successful when a variety of data collection methods were employed. HSE suggests that behavioural observations should be used in conjunction with employee interviews and questionnaires (HSE, 2005). The researcher therefore conducted focused observations in one store and 2 DCs (Distribution Centres) during normal work hours collecting information on safety processes, safety practices, decision making, communication channels as suggested by EU-OSHA (2001). The observations last for 4 hours in store and DC. In addition, the researcher observed management and employees' behaviours related to safety. A Behaviour Safety Observation protocol/checklist (appendix 10) was developed based on the industrial best practices from the literature review and the researcher's prior knowledge and experience in the subject matter in retail industry. The behavioural safety observation focussed on critical safety related behaviours relevant to the specific risks in retail industry such as manual handling, slips, trips and falls and adherence to process. The researcher followed the behaviour safety observation process, first she observed colleagues undertaking their routine jobs, then she understood if they are working safety or unsafely, next, she communicate with colleague about what they are doing on whether it is safety or unsafe. If it is a good job, she thanks the colleague, if it an unsafe act, coaches them to do the job better. At last, she completed the form to record conversations and share the findings with management. Data were compared with the survey and interview results for triangulation.

### **3.4 Data analysis**

#### **3.4.1 Quantitative data analysis**

Frequency analysis will be conducted using SPSS software to summarise the data and provide an overview of the results. Research has indicated that employee's safety perceptions are associated with job roles and length of service (Lqbal, 2010, Ward et al, 2008). Therefore, chi-square tests will be conducted using SPSS software to examine if the job roles and length of service have any significant impact to safety perceptions of employees. The null hypothesis is that there is no significant difference with regard to job roles and length of service. So the null hypothesis would be rejected if the p-values resulting from the tests were  $\leq 0.05$ . The quantitative data will be further analysed to identify themes and patterns.

#### **3.4.2 Qualitative data analysis**

Thematic analysis will be used. The coding framework is mainly pre-defined. The initial codes derive from the 8 key themes from the conceptual framework and the researcher's prior knowledge and expertise of the subject matter. There are a few set of codes that emerged from analyzing the data. For instance, the proactive stakeholder engagement emerging as a sub-theme under the theme of continuous improvement which is important to add depth and insight to this research. The findings of qualitative data will be analysed under the themes identified in the conceptual framework. Three stages will be followed: data reduction, data display and data conclusion (Miles, et al, 1994).

First, the research will organize the data and prioritize and select key information. Second, the researcher will present the data under the themes identified in the conceptual framework using a variety of techniques such as figures, tables, graphs, charts and quotations (Yin 2010). Finally, the researcher will analyse and discuss the data under the themes, tri-angulated the quantitative data and re-engage with the literature to provide a comprehensive understanding of the safety culture in the organization.

### **3.5 Ethics of research**

Research ethics is an integral part of research from beginning to end and ethical compliance is pivotal to achieve real research excellence. (EU, 2013). The researcher followed general ethical principles and the ethical codes of both the University and the participant organization. The research got the permission for this research from the organization. Contacts at the organization were provided with the information of purpose of research, objective of the research and the research plan. Each questionnaire was accompanied by a statement of the purpose, objectives, conditions of research and confidentiality. The researcher will protect the anonymity of all respondents involved in the research. All documents, data and responses will be treated as confidential.

### **3.6 Limitations of research**

Most researchers have to consider the potential bias in their research. The researcher will reflect objectively on the results to avoid an unintentional biased interpretation of research findings. In addition, the design and maintenance of research procedure should have minimised bias (Grimshaw, 2012), and the pilot helped to ensure there was no unambiguous or leading questions.

### **3.7 Conclusions**

In conclusion, the research will use a mixed methods approach combining both quantitative and qualitative research to address the research questions and explore the multi-facets of safety culture. Data from a questionnaire survey, semi-structured interviews and participant observations was collected to provide a holistic understanding of the safety culture in the organization and to enable data triangulation. Frequency analysis and Chi-square tests will be conducted to quantitative data using SPSS software to provide both an overview of the results and to examine in detail if the selected variables have any significant impact to safety perceptions of employees. The qualitative data will be analysed by themes so that patterns can be identified. Issues surround the research such as ethics are addressed also. In summary, the research method is well designed to enable the accuracy, reliability, validity and success of the research.

## CHAPTER 4: GENERAL FINDINGS OF QUANTITATIVE DATA (FREQUENCY ANALYSIS)

### 4.1 Introduction

This chapter summarizes the general findings of the questionnaire survey. The survey was conducted in one store between March 2015 and 6 June 2015. Eighty questionnaires were distributed and 46 were returned representing a 57.5% response rate. Of the 46 respondents, 37 (80%) were employees and 9 (20%) were managers including first line supervisors and section leaders from a single store. 2 (4%) respondents had less than 6 months length of service, 12 (26%) between 6-12 months of service, 31(67%) between 1-5 years of service and just one respondent had been with the company for over 10 years. All managers have been working in the company for at least one year while, in contrast, only 23 (62.2%) employees had worked there for between 1-5 years. The sample profile is displayed in Table 4.1.

**Table 4.1 - Sample profile**

Variable	Number	percentage	Remark
<b>1.Job positions</b>			
- Managers (managers, supervisors and section leaders)	9	20%	
- Employees	37	80%	
<b>2. Length of service</b>			
1-6 months	2	4%	all are employees
6-12 months	12	26%	all are employees
1-5 years	31	67%	8 are managers, 23 are employees
10 years	1	2%	Manager

The results will be discussed hereafter using the conceptual framework as the structure, key themes include safety as a core value, operational integration, leadership, effective two-way communication, employee involvement, proactive performance measurement and review, organizational learning and continuous improvement.

## 4.2 Values and Beliefs

Three statements relate to the values and beliefs underpinning the health and safety culture of the organization. The frequency tests (table 4.2) show that over 80% of respondents have positive perceptions of safety values and beliefs. Only 4.3% (2) respondents disagreed with these statements and less than 16% (7) respondents neither agreed nor disagreed with these values. Although these represent only minimal dissent, these responses are less positive compared with responses to other statements in the survey. Such discrepancies might indicate that the safety culture in the organization is less mature than it should be since safety culture is a set of common safety values that stakeholders should all share. (IOSH, 2015)

**Table 4.2**

Statements	Strongly disagree	Disagree	Neither agree nor Disagree	Agree	Strongly agree	Total % of agreement
<b>1. Values and beliefs</b>						
1.1 All injuries can be prevented		4.3% (2)	15.2% (7)	54.3% (25)	26.1% (12)	80.4%
1.2 Safety can have a positive impact on overall business		4.3%(2)	13.0%(6)	50.0% (23)	32.6% (15)	82.6%
1.3 I believe that continuous improvement of our safety performance is important for a successful company		4.3%(2)	10.9%(5)	50.0% (23)	34.8% (16)	84.8%

## 4.3 Safety management system integration

One statement was directly concerned with the integration of safety management systems. Table 4.3 shows that 89.2% respondents agreed that safety is integrated into every aspect of business in their company. 11% either had no strong opinion or disagreed with the statement while this is low it is of concern and could mean that Health and Safety is not wholly regarded as an integral part of the business processes and operational practices, and consequently could be less effective for managing safety risks in the organization.

**Table 4.3**

Statements	Strongly disagree	Disagree	Neither agree nor Disagree	Agree	Strongly agree	Total % of agreement
<b>2. Safety management system integration</b>						
2.1 Safety is integrated into every aspect of business		2.2% (1)	8.7% (4)	45.7% (21)	43.5% (20)	89.2%

#### 4.4 Leadership

Sixteen statements were presented related to the role of leadership commitment in underpinning health and safety culture. Table 4.4 indicates that respondents perceived leadership commitment to be strong in the company. The total percentage of agreement ranged from 89.1% to 95.7%. Six statements received very positive responses with over 95% agreement. The responses indicated strengths of leadership in safety responsibility and accountability, awareness of the importance of safety cultural, safety inspections and two-way communications. Other statements revealed some gaps and opportunities for improvement. Although these represent a minority view they could potentially be indicative of some problems. Responses to Statements 3.4 for example, may indicate that the company need to address the safety committee functions.

**Table 4.4:**

Statements	Strongly disagree	Disagree	Neither agree nor Disagree	Agree	Strongly Agree	Total % of agreement
<b>3. Leadership</b>						
3.1 The company has well established safety values			4.30% (2)	47.8% (22)	47.8% (22)	95.60%
3.2 Leaders routinely emphasize safety as a core company value		4.3% (2)		45.7% (21)	50% (23)	95.70%
3.3 Visible leadership commitment is demonstrated to build a proactive safety culture		4.3% (2)		45.7% (21)	50% (23)	95.70%
3.4 The safety committee meets regularly to discuss goals, performance and progress on initiatives			10.9% (5)	28.3% (13)	60.9% (28)	89.20%
3.5 Roles and responsibilities are clearly defined for all employees			4.3% (2)	32.6% (15)	63% (29)	95.60%
3.6 All employees are held accountable for safety			4.3% (2)	37% (17)	58.7% (27)	95.70%
3.7 Leaders conduct frequent 'Safety Walks' of the work site		2.2% (1)	4.3% (2)	37.0% (17)	56.5% (26)	93.50%
3.8 Safety Culture is of vital importance for the effective implementation of safety management systems			4.3%(2)	39.1% (18)	56.5% (26)	95.60%
3.9 An open, trusting and blame-free environment exists where employees are able to report unsafe conditions/behaviours, near misses or incidents		4.3% (2)	6.5% (3)	39.1% (18)	50.0% (23)	89.10%



3.10 All incidents are thoroughly investigated			6.5% (3)	47.8% (22)	45.7% (21)	93.50%
3.11 Incident learning are shared with all affected employees		2.2% (1)	4.30% (2)	50.0% (23)	43.5% (20)	93.50%
3.12 Management recognize safe behaviour of employees		2.2% (1)	4.3% (2)	56.5% (26)	37.0% (17)	93.50%
3.13 Safety inspections are undertaken at planned intervals			4.3% (2)	34.8% (16)	60.9% (28)	95.70%
3.14 Comprehensive safety training is conducted at all levels of the organization		2.2% (1)	4.3% (2)	47.8% (22)	45.7% (21)	93.50%
3.15 Effective two way communication is conducted on a daily basis			4.3% (2)	50.0% (23)	45.7% (21)	95.70%
3.16 Management recognize employees who contribute to safety performance			6.5% (3)	41.3% (19)	52.2% (24)	93.50%

#### 4.5 Programmes and Tools

Twelve statements related to safety programs and tools that can foster a proactive safety culture were included. Table 4.5 shows that respondents have less engagement with safety management programmes. Respondents have confidence in the effectiveness of process simplification, risk assessment and change management, but responses to 9 statements revealed the gaps that could potentially present safety risks to the company. Responses to statement 4.5, for example, may indicate that safety performance was not wholly regarded as an integral part of the general performance appraisal process or that employees don't understand how safety performance relates to bonuses.

**Table 4.5:**

Statements	Strongly disagree	Disagree	Neither agree nor Disagree	Agree	Strongly Agree	Total % of agreement
<b>4 Programs and Tools</b>						
4.1 Simplified safety policies and procedures are in place				91.3% (42)	8.7% (4)	100.00%
4.2 An effective risk assessment process is in place				78.3% (36)	21.7% (10)	100.00%
4.3 A Management of Change process is in place for the introduction of any new processes/equipment				71.7% (33)	28.3% (13)	100.00%

4.4 Safety performance objectives and goals are established for all employees.		2.2% (1)	4.3% (2)	56.5% (26)	37.0% (17)	93.50%
4.5 Bonuses, merit increases, and or promotions for employees are affected by their safety performance			26.1% (12)	30.4% (14)	43.5% (20)	73.90%
4.6 Programmes are in place to encourage employees to suggest safety improvement opportunities			13.0% (6)	39.1% (22)	47.8% (18)	86.90%
4.7 A Behaviour Safety Observation Programme is in place to modify employees' safety behaviour		2.2% (1)	10.9% (5)	37.0% (17)	50.0% (23)	87.00%
4.8 Leading indicators (e.g.: inspections, training hours, etc.) are adopted besides the lagging indicators (e.g.: injury rate)			17.4% (8)	41.3% (19)	41.3% (19)	82.60%
4.9 Robust safety audit processes tailored to organizational needs are in place			4.3% (2)	47.8% (22)	47.8% (22)	95.60%
4.10 A Best Practice Sharing Programme is in place to review, identify and adopt Best Practices			6.5% (23)	39.1% (18)	54.3% (25)	93.40%
4.11 The incentive programmes are in place to motivate employees for safety			8.7% (4)	30.4% (14)	60.9% (28)	91.30%
4.12 The company benchmarks other locations within the corporation for safety performances			2.2% (1)	41.3% (19)	56.5% (26)	97.80%

## 4.6 Employee Involvement

Thirteen statements related to employee involvement underpinning the health and safety culture of the company indicated that respondents perceived employee involvement to be stronger in the company, compared with leadership support (Table 4.6 compared to Table 4.4). This is curious since if leadership commitment is less strong, it is less likely to have a positive impact on higher employee involvement. However, the total percentage of agreement for most statements is over 90% with 4 statements (5.5, 5.8, 5.11 and 5.12) receiving 100% agreement. This indicated the strengths in safety hazards awareness, employee involvement in procedure review and employee empowerment in the company.

There was minimal dissent, statement 5.1, for example, may indicate that some employees don't accept their personnel responsibility for safety.

**Table 4.6:**

Statements	Strongly disagree	Disagree	Neither agree nor Disagree	Agree	Strongly Agree	Total % of agreement
<b>5. Employee participation</b>						
5.1 Safety is about me, for me and safety starts with me			15.2% (7)	39.1% (18)	45.7% (21)	84.80%
5.2 I can make a positive impact to safety in my company			4.3% (2)	50.0% (23)	45.7% (21)	95.70%
5.3 I am clear on the safety goals, expectations and performance in this company			4.3% (2)	63.0% (29)	32.6% (15)	95.60%
5.4 I am clear on what my responsibilities are for safety			4.3% (2)	63.0% (29)	32.6% (15)	95.60%
5.5 I understand safety hazards and control measures associated with my job				43.5% (20)	56.5% (26)	100.00%
5.6 Safety procedures and rules are always followed here		2.2% (1)	4.3% (2)	47.8% (22)	45.7% (21)	93.50%
5.7 Employees are involved in the Job Safety Analysis (JSA)			6.5% (3)	43.5% (20)	50.0% (23)	93.50%
5.8 I am involved in the review of the safe work instructions				56.5% (26)	43.5% (20)	100.00%
5.9 The major cause of injuries in this company is unsafe behaviours			4.3% (2)	60.9% (28)	34.8% (16)	95.70%
5.10 I am taking care of my own and other peoples' safety during my work			4.3% (2)	63.0% (29)	32.6% (15)	95.60%
5.11 I will tell others if they have inadequate safety control measures and are putting anyone's safety at risk				54.3% (25)	45.7% (21)	100.00%
5.12 I am empowered to stop any work activities that I think have safety risk				54.3% (25)	45.7% (21)	100.00%
5.13 Off-the-job safety is a part of my company's safety programme		2.2% (1)	2.2% (1)	52.2% (24)	43.5% (20)	95.70%

#### 4.7 management and employees' understanding, perceptions and insight of safety management and safety culture

Three questions were concerned with the general perceptions of respondents towards safety culture in the company and indicated that respondents' have a good understanding of safety culture in the company (Table 4.7a, 4.7b, 4.7c).

There were some interesting observations, table 4.7a, for example, shows that legal compliance is relatively low in order which might indicates that legal compliance was well addressed and was not a risk in the company. Question 4.7b, for example, shows that 'acceptance of personal accountability and responsibility for safety' and 'Shared values of safety' are relatively low in order which might indicates safety is not wholly regarded a shared value and responsibility with all stakeholders.

Table 4.7a:

		Responses		Percent of Cases
		N	Percent	
What do you think are the TOP FOUR benefits from effective safety management in your company? (question 6)	Legal compliance	22	12.6%	47.8%
	Reduce costs	31	17.8%	67.4%
	Improve safety performance	31	17.8%	67.4%
	Increase efficiency and productivity	29	16.7%	63.0%
	Improve employee morale	32	18.4%	69.6%
	Build a proactive safety culture	21	12.1%	45.7%
	Ensure business continuity	8	4.6%	17.4%
Total		174	100.0%	378.3%

Table 4.7b:

		Responses		Percent of Cases
		N	Percent	
What are the TOP FOUR essential characteristics for excellent safety culture? (statement 7)	Shared values of safety	21	11.9%	45.7%
	Visible leadership commitment	28	15.9%	60.9%
	Safety is integrated into business	40	22.7%	87.0%
	Acceptance of personal accountability and responsibility for safety	17	9.7%	37.0%
	Active employee involvement	33	18.8%	71.7%
	A blame-free environment /climate	26	14.8%	56.5%
	Effective two-way communication	8	4.5%	17.4%
	Learning and Continuous Improvement	3	1.7%	6.5%
Total		176	100.0%	382.6%

Table 4.7c:

		Responses		Percent of Cases
		N	Percent	
What are TOP THREE	Develop robust leadership tools to keep the focus high	8	5.9%	17.8%

challenges for building a proactive safety culture? (statement 8)	<b>How to better involving employees</b>	29	21.3%	64.4%
	Inconsistent communication	6	4.4%	13.3%
	<b>Assessing safety culture</b>	37	27.2%	82.2%
	<b>Safety training/ communication</b>	35	25.7%	77.8%
	programmes and tool for continuously improving the safety culture	15	11.0%	33.3%
	Sustaining the safety culture	6	4.4%	13.3%
Total		136	100.0%	302.2%

## 4.8 Conclusion

In conclusion, the frequency analysis of questionnaires indicates a strong corporate awareness of health and safety issues. The organizational aspects of safety culture with regard to safety management system are strong in the company. Some small gaps, for example, safety committee function, safety suggestion programme and performance measurement might need to be addressed. However, the psychological aspects of safety culture are less strong, for example, safety values and beliefs and acceptance of personnel responsibilities for safety. This indicates the need to address these weaker areas because a sustained improvement in safety performance comes from working on the weaker areas of the culture (DuPont, 2010). Further analysis will be explored in the next chapter to examine if job positions and length of service have any impact on respondents' perceptions.

## CHAPTER 5: EXPLORING THE DATA (CHI-SQUARE TEST)

### 5.1 Introduction:

The data was explored using Chi-square tests to see if there was any significant difference between responses to the statements and a) whether respondents were employees or managers and b) how long they had worked for the company (length of service). These two variables were important because previous research has indicated that employee's safety perceptions are associated with job positions and length of service ( Lqbal, 2010, Ward et al, 2008). There were 20 significant results for role in the company and 20 for length of service, and these are discussed below.

### 5.2 Role in the company and responses

These results (table 5.2) suggest that managers have a greater understanding and engagement with safety than employees. This was particularly apparent with regard to safety values and beliefs, operational integration, leadership, organizational learning and employee involvement. These were linked to five of the eight key themes of the conceptual framework.

Some responses, for example, statements 8, 3.7 and 4.2, were not significant, but suggested a possible relationship that might be revealed with a larger survey. The full tables of the significance tests are included in Appendix 3 and 4, and these help to indicate the relationships uncovered by the tests.

Interestingly, a few statements indicated that employees have stronger safety perceptions compared to managers. For example, employees have more positive responses to statement 3.4 with regard to safety committee functions than managers which might indicate that employees were better involved in safety committee activities than managers (table 5.2). These results are of interest and the reasons will be further explored in qualitative research.

**Table 5.2** Summary of significant Chi-square test results by roles

Statements	Value	df	Asymp. Sig. (2-sided)
<b>Management and employees' understanding, perceptions and insight of safety management and safety culture</b>			

7. In your opinion, what are the TOP FOUR essential characteristics for excellent safety culture? (questionnaire 7)	17.84	8	.022 <sup>a,*,c</sup>
8. In your opinion, what are TOP THREE challenges for building a proactive safety culture? (questionnaire 8)	12.29	7	.091 <sup>a</sup>
<b>Safety as a core company value</b>			
1.1 All injuries can be prevented	15.920 <sup>a</sup>	3	.001
1.2 Safety can has a positive impact on overall business	10.904 <sup>a</sup>	3	.012
1.3 I believe that continuous improvement of our safety performance is important for a successful company	20.980 <sup>a</sup>	3	.000
<b>Operational integration</b>			
2.1 Safety is integrated into every aspect of business	7.813 <sup>a</sup>	3	.050
<b>leadership</b>			
<b>Visible leadership commitment</b>			
3.4 The safety committee meets regularly to discuss goals, performance and progress on initiatives	6.411 <sup>a</sup>	2	.041
3.7 Leaders conduct frequent 'Safety Walks' of the work site	7.514 <sup>a</sup>	3	.057
3.12 Management recognize safe behaviour of employees	13.725 <sup>a</sup>	3	.003
4.1 Simplified safety policies and procedures are in place	18.011 <sup>a</sup>	1	.000
<b>Effective Risk assessment and control</b>			
4.2 An effective risk assessment process is in place	3.391 <sup>a</sup>	1	.066
4.3 A Management of Change process is in place for the introduction of any new processes/equipment	4.112 <sup>a</sup>	1	.043
<b>Objectives and goals</b>			
4.4 Safety performance objectives and goals are established for all employees.	13.725 <sup>a</sup>	3	.003
<b>Open, trust and no-blame environment</b>			
3.10 All incidents are thoroughly investigated	10.295 <sup>a</sup>	2	.006
<b>Organizational learning</b>			
3.11 Incident learning are shared with all affected employees	11.010 <sup>a</sup>	3	.012
<b>Employee involvement</b>			
<b>Acceptance of personal responsibilities</b>			
5.3 I am clear on the safety goals, expectations and performance in this company	10.445 <sup>a</sup>	2	.005
5.4 I am clear on what my responsibilities are for safety	10.445 <sup>a</sup>	2	.005
5.10 I am taking care of my own and other peoples' safety during my work	10.445 <sup>a</sup>	2	.005
<b>Involvement in safety management process</b>			
5.8 I am involved in the review of the safe work instructions	5.357 <sup>a</sup>	1	.021
<b>Behaviour Safety</b>			
5.9 The major cause of injuries in this company is unsafe behaviours	12.356 <sup>a</sup>	2	.002
<b>Employee empowerment</b>			
5.11 I will tell others if they have inadequate safety control measures and are putting anyone's safety at risk	4.654 <sup>a</sup>	1	.031
5.12 I am empowered to stop any work activities that I think have safety risk	4.654 <sup>a</sup>	1	.031

5.13	Off-the-job safety is a part of my company's safety programme	13.222 <sup>a</sup>	3	.004
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Table 5.2a- Chi-square test result

			Crosstab	
			Position	
			Manager	Employee
The safety committee meets regularly to discuss goals, performance and progress on initiatives	Neither Agree or Disagree	Count	3	2
		Expected Count	1.0	4.0
		% within Position	33.3%	5.4%
	Agree	Count	1	12
		Expected Count	2.5	10.5
		% within Position	11.1%	32.4%
	Strongly Agree	Count	5	23
		Expected Count	5.5	22.5
		% within Position	55.6%	62.2%
Total	Count	9	37	
	Expected Count	9.0	37.0	
	% within Position	100.0%	100.0%	

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.411 <sup>a</sup>	2	.041
Likelihood Ratio	5.420	2	.067
Linear-by-Linear Association	1.807	1	.179
N of Valid Cases	46		

### 5.3 Length of Service Results

Although the tests (table 5.3) suggest that there are some differences between length of service and health and safety awareness, this seems down to a handful of employees whose responses consistently suggest poor engagement. These results are of interest but because of the low sample size it is difficult to make concrete recommendations on these results. However they suggest this is an area worthy of further exploration.

The Chi-square test indicated statistical significance with regard to operational integration, leadership, organizational learning and employee involvement and performance measurement which were linked to the themes of the conceptual framework.



Table 5.3 Summary of significant Chi-square test results by length of service

Statements	Value	df	Asymp. Sig. (2-sided)
<b>Management and employees' understanding, perceptions and insight of safety management and safety culture</b>			
6. What do you think are the TOP FOUR benefits from effective safety management in your company? (questionnaire 6)	34.523	21	.032 <sup>*,b,c</sup>
8. In your opinion, what are TOP THREE challenges for building a proactive safety culture? (questionnaire 8)	49.268	21	.000 <sup>*,b,c</sup>
<b>Operational integration</b>			
2.1 Safety is integrated into every aspect of business	53.850 <sup>a</sup>	9	0.000
<b>Leadership</b>			
<b>Visible leadership commitment</b>			
3.7 Leaders conduct frequent 'Safety Walks' of the work site	58.248 <sup>a</sup>	9	0.000
3.12 Management recognize safe behaviour of employees	55.793 <sup>a</sup>	9	0.000
3.14 Comprehensive safety training is conducted at all levels of the organization	54.683 <sup>a</sup>	9	0.000
<b>Roles, responsibilities and accountabilities</b>			
3.6 All employees are held accountable for safety	12.841 <sup>a</sup>	6	0.046
<b>Objectives and goals</b>			
4.4 Safety performance objectives and goals are established for all employees.	55.793 <sup>a</sup>	9	0.000
<b>Open, trust and no-blame environment</b>			
3.10 All incidents are thoroughly investigated	25.729 <sup>a</sup>	6	0.000
<b>Safety recognition</b>			
3.16 Management recognize employees who contribute to safety performance	21.496 <sup>a</sup>	6	0.001
4.11 The incentive programmes are in place to motivate employees for safety	18.018 <sup>a</sup>	6	0.006
<b>Organizational learning</b>			
3.11 Incident learning are shared with all affected employees	58.042 <sup>a</sup>	9	0.000
<b>Employee involvement</b>			
<b>Acceptance of personal responsibilities</b>			
5.3 I am clear on the safety goals, expectations and performance in this company	15.301 <sup>a</sup>	6	0.018
5.10 I am taking care of my own and other peoples' safety during my work	15.301 <sup>a</sup>	6	0.018
<b>Involvement in safety management process</b>			
5.8 I am involved in the review of the safe work instructions	11.554 <sup>a</sup>	3	0.009
<b>Behaviour Safety</b>			
4.7 A Behaviour Safety Observation Programme is in place to modify employees' safety behaviour	55.091 <sup>a</sup>	9	0.000
5.6 Safety procedures and rules are always followed here	56.322 <sup>a</sup>	9	0.000
<b>Employee empowerment</b>			
5.13 Off-the-job safety is a part of my company's safety programme	48.540 <sup>a</sup>	9	0.000
<b>Proactive performance measurement</b>			

<b>Performance measurement</b>			
4.5 Bonuses, merit increases, and or promotions for employees are affected by their safety performance	19.724 <sup>a</sup>	6	0.003
<b>Continuous improvement</b>			
4.12 The company benchmarks other locations within the corporation for safety performances	19.197 <sup>a</sup>	6	0.004

## 5.4 Conclusion

In conclusion, this chapter explored 3 aspects of safety culture in the organization. The results suggest that the psychological aspects of safety culture are less strong. The Chi-square tests focusing on roles found that managers have stronger understanding and engagement with safety compared with employees. However, with regard to length of service, although the tests suggest that there are some differences between length of service and safety awareness, results found no clear patterns for most of the statements and this seems down to a handful of employees whose responses consistently suggest poor engagement. These results are of interest but because of the low sample size it is difficult to make concrete recommendations on these results. However they suggest this is an area worthy of further exploration. In addition, the small sample size might suggest that the significant relationships identified in Chi-square test are only tentative so the findings need to be treated carefully. The results highlighted four particular aspects of the conceptual framework that are showing differences between employees' perceptions and length of service: operational integration, leadership, organizational learning and employee involvement. (Appendix 5)

## CHAPTER 6: EXPLORING THE QUALITATIVE DATA

### 6.1 INTRODUCTION

This chapter presents the overall findings of the qualitative study. The qualitative study employed a mixed-method design using semi-structured interviews and participant observations conducted in March, 2015. The headquarters Compliance Team was observed to gain insights and understanding of safety practices. Various business formats of the organization were investigated (Table 6.1-a). The researcher participated in a series of events scheduled for that week such as management meetings, 3 site visits, a compliance continuous improvement audit and a community outreach event (Appendix 6). Thirty people were involved in the participant observations, semi-structured interviews or informal conversations. 10 (33%) were employees and 20(67%) were managers.

**Table 6.1-a - Sample profile**

<b>Business format/Function</b>	<b>Position</b>
Headquarters Compliance Team (CCO, Sr. Director, Compliance Managers, Compliance staff)	8
Store A GM/Managers/supervisors /section leaders	5
Employees	3
Store B	2
DC(Distribution Centre) C GM /Line managers	2
Safety manager	1
Employees	3
DC(Distribution Centre) A GM /Line managers	2
Employees	3
CE (Centre of Excellence) Manager	1
Total	30

The results will be discussed with regard to the conceptual framework (safety as a core value, operational integration, leadership, effective two-way communication, employee involvement, proactive performance measurement and review,

organizational learning and continuous improvement). Specific findings that suggest problem areas or issues that might need addressing are highlighted in red.

## 6.2 SAFETY AS A CORE COMPANY VALUE

The organization use their “Don’t Walk By” policy (diagram 6.2-a) for embedding safety as a core value in their business. It is formally incorporated into the corporate safety policy underpinning the company values of Respect for People, Act with Integrity and Strive for Excellence.

Observations and findings identified the following key points:

- Employing the right people with the right values
- Health and Safety is a core company value
- Visually communicated throughout the organization
- Safety goal was included in Corporate Board objective
- A proactive and sustainable approach to safety
- Provided ‘Don’t Walk By’ Toolkits in DCs
- Annual Corporate Awards including ‘Don’t Walk By’, ‘Act with Integrity Award’, ‘First Aid’ and ‘Excellence in Community Leadership’ Nominations
- **Managers had greater engagement than other employees**
- **Some inconsistent behaviours from employees was observed**

Table 6.2-a: Don’t Walk By safety value



### 6.3 OPERATIONAL INTEGRATION

The company identified the leadership role as core to integrate safety into the business. They have integrated safety into key business processes such as design and construction.

Interviews and observations identified the following key approaches and points:

- Strategic corporate direction for integrating safety into business
- Effective Safety Management System (SMS) is in place which is the foundation for operational integration.
- The Five Pillars of Health and Safety compliance program: consistency, risk based approach, sustainability, efficiency and effectiveness (Appendix 7) enables business goals and ensures long-term safety success
- Process simplification: simplified safety policies and procedures such as the visual 'What a Good Job Looks Like' (WAGJLL)
- Integration of safety into core beliefs both on and off the job, involving associates, families, suppliers and customers and communities
- Proactive partnerships with other key business process owners

- Safety is a line management responsibility in the organization and line managers felt safety is part of their job (but store B didn't timely solve a fire safety issue, and that the Compliance team helped them to resolve the situation eventually is of some concern)

## 6.4 LEADERSHIP

The company identified leadership as one of the six building blocks/cultural elements (leadership, standards and controls, risk assessment, training, communication, monitoring and response) of their Safety Management System (SMS): Seniors leaders and operations managers demonstrated strong leadership commitment and lead by example in the company.

Interviews and observations identified the following key points:

### 6.4.1 VISIBLE LEADERSHIP COMMITMENT

- Effective Safety Management System (SMS) in place which addressed the six building blocks (leadership, standards and controls, risk assessment, communication, training, monitoring and response) of the SMS
- Leading by example and model positive examples (e.g.: Value Star recognition)
- Emphasized safety as a value via 'tone from the top' communications
- Invested in people, process and technology to enable business (Appendix 8)
- Supportive H&S Compliance team
- Dedicated Environmental, Health and Safety (EHS) managers in DCs
- Implemented planned safety inspections (e.g.: fire alarm test observed)
- Documented daily safety sweeps once per shift in DC A and DC C
- Safety walk around the facility from frontline managers
- Feedback to employees on their work practices
- New colleagues received Best Welcome Guide, company Academy e-learning and job specific safety training in their first 12 weeks
- Unionized safety committee with GMB representative to provide independent advice and support in each site. But participation was not broad to cover every frontline leader in store A

- Demonstrated transformational leadership skills (e.g.: leading by example, inspiring 'Story Telling' and transactional leadership skills (e.g.: rewarding and recognition)
- Established the off-the-job safety programme
- Building proactive external partnerships and actively leading community outreach activities

#### **6.4.2 Roles, responsibilities and accountabilities**

- Defined general safety roles and responsibilities for managers and employees in corporate safety policy statement.
- Used visual RACI (Responsible, Accountable, Consulted, Informed) chart to define clear ownership, collaborating and communication responsibilities.
- Implemented the new Global H&S Accountability Statement to hold people accountable - *When asked of her understanding of the accountability statement, the GM indicated, managers should take actions if employees breach the safety rules, but actually she took other proactive measures such as coaching employees. This suggests the GM had inadequate understanding of this new safety program.*

#### **6.4.3 Effective Risk assessment and control**

The company identified risk assessment as one of the six building blocks/cultural elements of their Safety Management System (SMS). Risk assessment is a strength in the company.

- Integrated safety into design process (e.g.: Design Safety Review)
- Design and build facilities safe and right initially by effectively applying the general principles of prevention and control safety hazards at source
- Criteria used to preview new equipment and building design was part of design process
- Proactively addressed changes in 2015 Construction Design Management (CDM) regulation cascade meeting before the CDM 2015 take effect

- Using Centre of Excellence (CE) to set safety standards and trail safety improvement projects
- Proactive partnership with SEMA - working upstream with suppliers on safe equipment design and efficiency of protection systems is proactive to manage safety risks
- Effective engineering controls and administrative controls
- Security leader timely responded to a simulated emergency situations observed
- Implemented the in-country safety risk assessment in 2014 to gather detailed information to identify weaknesses, help guide safety programme initiatives and the allocation of resources. The risk impact criteria considers wider financial, reputational, operational, compliance risks and business continuity
- Conducted Job specific risk assessment to high risk tasks and communicated the results with affected employees, for example, store delivery task. But formal Job Safety Analysis (JSA) approach was not adopted

#### **6.4.4 Objectives and goals**

- Developing a culture of compliance started from 2013.
- Strategic annual planning for safety (3 year H&S improvement plan, annual H&S goals and improvement plan)
- 2014 Board objectives include the plan of fire watch programme improvement

#### **6.4.5 Open, trust and blame-free environment**

Interviews and observations identified the following key points:

- Open door policy
- Supported by company values and four colleague pledges (Fairness at work, Opportunity for all, Respect for each other, Pride in the company)
- Key expectation of 'build transparency' from CCO
- Encouraging and rewarding for raising safety concerns
- Leadership traits of DWYSYWD (Doing What You Said You Would Do), Empower Others, team and Humility
- Policy and procedures encourage reporting of safety issues
- Incident investigation focuses on the root cause of management system
- Incident investigation explores human factor



- Engaging in two-way communication
- Recognition and reward for good safety performance
- Promoted company brand such as 'Building trust', 'TNT'(Tiny Noticeable Things)
  - do small things that can make a big impact
- Safety suggestion programme were visible in DCs with active employee participation and management feedback, while it is less visible and active in store A

#### 6.4.6 Safety recognition

- Various recognition programmes in place ranging from monetary reward to management commendations
- Annual Corporate Awards
- Prize for great safety suggestions in DC A and DC C
- Reinforce the desired safe behaviours by rewarding
- Celebrating for success observed
- Say 'Thank you' to employees to recognise their work
- Company STAR recognition programme utilizing social media represents an opportunity for peer recognition in safety
- Employees in DC C suggested management also celebration in small ways for a job well done suggesting an opportunity for improvement

#### 6.4.7 Leadership development

- Leadership development events observed, for example, trained managers on 'Eight key leadership traits' in SPARK Cascades
- CIO coached line managers in Continuous Improvement Audit
- Learned from incidents and unsafe condition/behaviours in CDM meeting observed
- Leadership development in the Company Academy (continues learning centre)
- Trial new H&S initiatives in 'Company of Learning' (COLs) and encouraged feedback

- Small gaps might indicate that some front line managers can be provided additional safety training to manage safety more effectively such as fire safety issue resolution and behaviour feedback

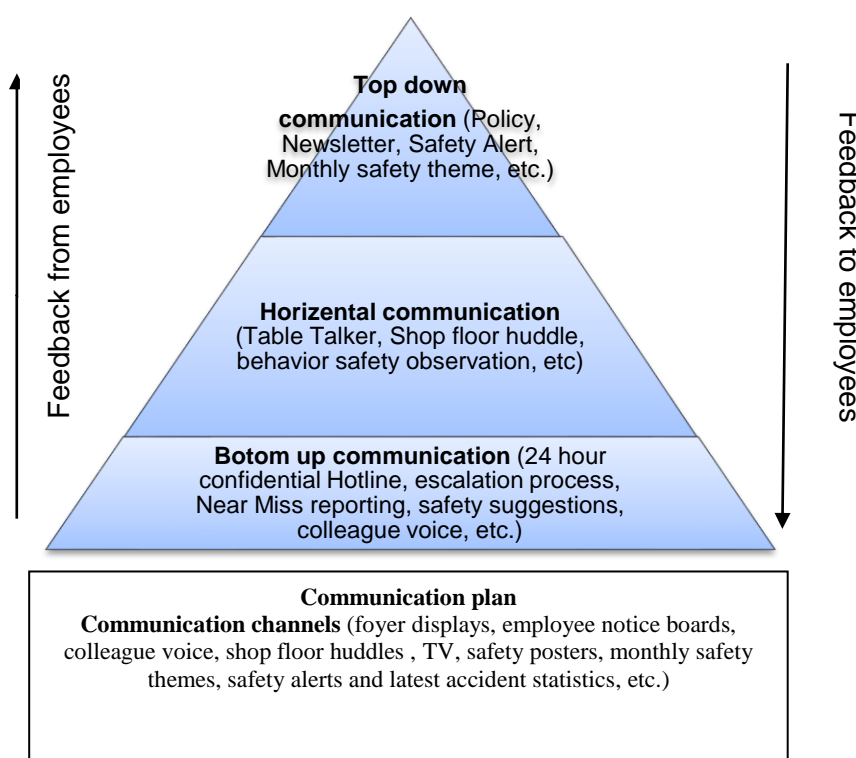
## 6.5 EFFECTIVE TWO-WAY COMMUNICATION

The company identified communication as one of the six building blocks/cultural elements of their Safety Management System (SMS). There was effective two-way communication in the company.

Interviews and observations identified the following key points:

- Established communication plan and various communication channels and provided feedback mechanism (Diagram 6.5)
- Using top down, bottom up and horizontal communications, **but employees can be provided more opportunities on horizontal communications, for example, peer feedback on employees' behaviours**
- **Some inconsistent communication observed between different sites, for example, incident learning and monthly safety theme.**

Diagram 6.5 Communication in the organization



## 6.6 EMPLOYEE INVOLVEMENT

Employee involvement was less strong compared with leadership commitment in the company. Interviews and observations identified the following key points:

### 6.6.1 Acceptance of personal responsibilities is fundamental

- Managers have better sense of safety responsibility than employees
- Some new employees didn't fully understand their personal responsibility for safety –indicative by unsafe behaviours observed, for example:
  - Leave a pallet in sales floor unattended
  - Unsafe manual handling practice observed
  - A rubber pad in one step ladder missing without reporting in store A

### 6.6.2 Employee involvement in safety management process

- Explore why people doing things wrong and provide processes, tools, training, sufficient time and management focus and reward to do the job safely
- Focusing on colleague's attitudes, job fit and their competencies
- Frontline managers knew major risks in their workplaces
- Employees understood safety hazards and control measures associated with their work
- Providing adequate safety training helped employees to take greater responsibilities for safety
- Involved in multi-skills training to support job rotation and reduce ergonomic risks
- Using training buddy system to provide shadowing to new colleagues
- Employee representative in GMB Trade Union to participate safety activities
- Involved in procedure review
- Involved in the pre-start up safety checks for safety critical equipment
- Conducted annual 'Colleague Voice' employee perception survey and safety is integrated. Four colleague pledges were created in respond to colleagues feedback: Fairness at work, Opportunity for all, Respect for each other, Pride in the company

- Implemented 'Local Colleague Voice' programme. All colleague voice were acted on, tracked with progress and visually posted by 'You Said', 'We Listened' in the bulletin board
- Employees had inadequate involvement in safety suggestion program
- Employees had inadequate involvement in behaviour safety observations
- Employees had inadequate engagement with continuous improvement

### 6.6.3 Behaviour Safety

The organization implemented behaviour safety observation programme in DCs but not in stores. Interviews and observations identified the following key points:

- Unsafe behaviour was a major contributing factor of injuries in the company
- Address psychological and behavioural aspects of safety
- Each manager has a goal to complete minimum 5 PATs each week.
- Observations category focus on following procedures, manual handling, slips & trips, material handling equipment, defective equipment and PPE using
- DC A visually communicated the behaviour observation results.
- Implement formal behaviour safety programme in DCs but stores not
- Following safety procedures always was a challenge
- Employees didn't participate in behaviour observation in DCs
- Behavioural feedback to employees was less frequent. E.g.: GM in store A put the unattended pallets in designated area, but didn't provide timely feedback to employees
- Some unsafe conditions and unsafe behaviours observed in store A

### 6.6.4 Employee empowerment

Employee empowerment was visibly demonstrated in compliance team activities. Interviews and observations identified the following key points:

- Fostered 'Empowering Others' as a key leadership trait in SPARK Cascades.
- Fostered 'Team' as a key leadership trait which empowers employees to care for each other's safety
- Visual 'STOP if you are unsure' safety rule poster in store A

- Recognized that every employee can make a positive impact to safety via 'Power of colleagues who create stories' story telling
- The receptionist in DC C felt empowered that she was assigned safety responsibility to coordinate the emergency response activities
- Company STAR recognition empowers employees to live company value
- Employees felt that Off-the-job safety programme empowered them to live safety a way of life
- 'Community Life' encouraged employees to deliver the difference in their local communities

## 6.7 PROACTIVE PERFORMANCE MEASUREMENT

Performance measurement:

- Internal safety audit in DCs to self-monitor the performance
- 3rd party annual fire safety assessment in DCs
- 'Weekly Compliance Summary' review in store A

Leading indicators

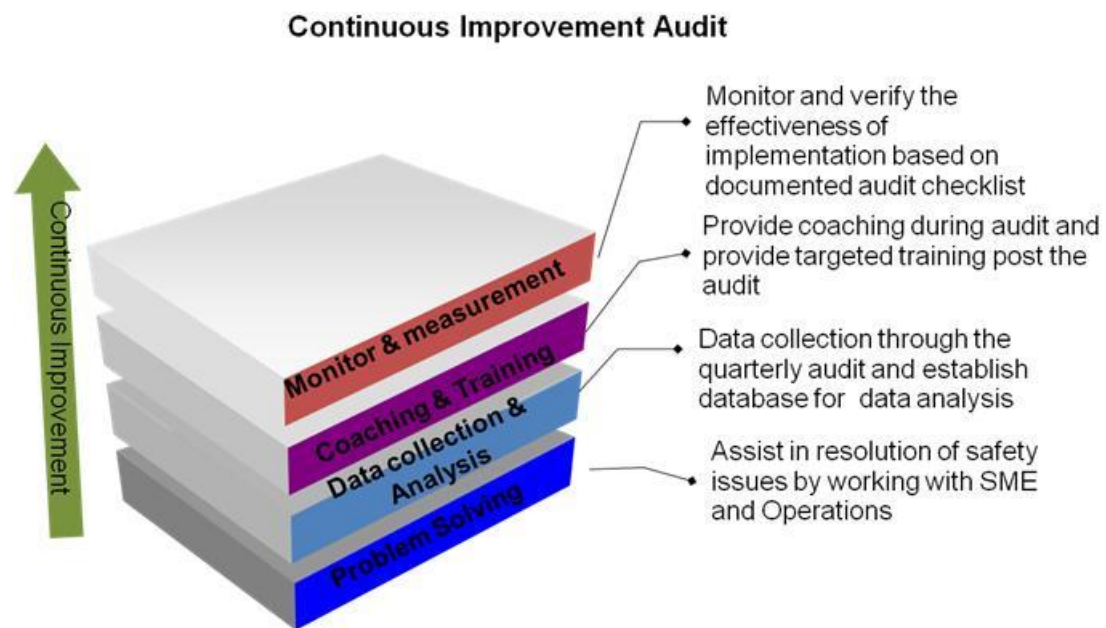
- Used lagging indicators, for example, injury rate
- Adopted some leading indicators such as the Continuous Improvement Audit compliance rate, more leading indicators might be adopted
- Employees have inadequate understanding of leading indicators
- Store A visually communicated the performance results of operations and service but no safety performance results

Continuous Improvement Audit

The Compliance continuous Improvement Team (CIT) performed management level audit to all operations in the UK every 6 months (diagram 6.7)

Interviews and site observations identified the following key points:

Diagram 6.7



- Using CI audit pass rate as a leading indicator to measure safety for all sites
- Proactive measurement and provide process oriented actions for improvement
- Audit results showed improvement in safety performance in store A
- **Some unsafe conditions and unsafe behaviours were observed**

## 6.8 ORGANIZATIONAL LEARNING

The organization learned from a wide range of safety issues. Interviews and observations identified the following key points:

Encourage reporting of safety issues

- Clear policy, procedures and training
- Effective communication channels (e.g.: 24 hour confidential reporting Hotline)

Effective investigation

- Procedures and tools support (Incident Investigation Grab Bag, My Don't Walk By Toolkit, IPAD application)
- Weekly incident review meeting to track the completion of corrective actions.

Learning from safety issues

- Learned from incidents, Near Misses, unsafe behaviours, fire drills, design deficiencies, audit results, and so on.
- Action plans for improvement, databases (e.g.: incident data and tracking system)
- **Inconsistent learning observed- recent Safety Alert was shared in DCs, but not visible in store A**

Sharing information and learning externally:

- Provided local council a monthly safety report of the legal compliance of each sites

## **6.9 CONTINUOUS IMPROVEMENT**

Continuous improvement is underpinned by the company value of 'Strive for excellence'. Appendix 9 summarized the continuous improvement process in the organization which follows a PDCA cycle.

### **6.9.1 Assessing safety culture**

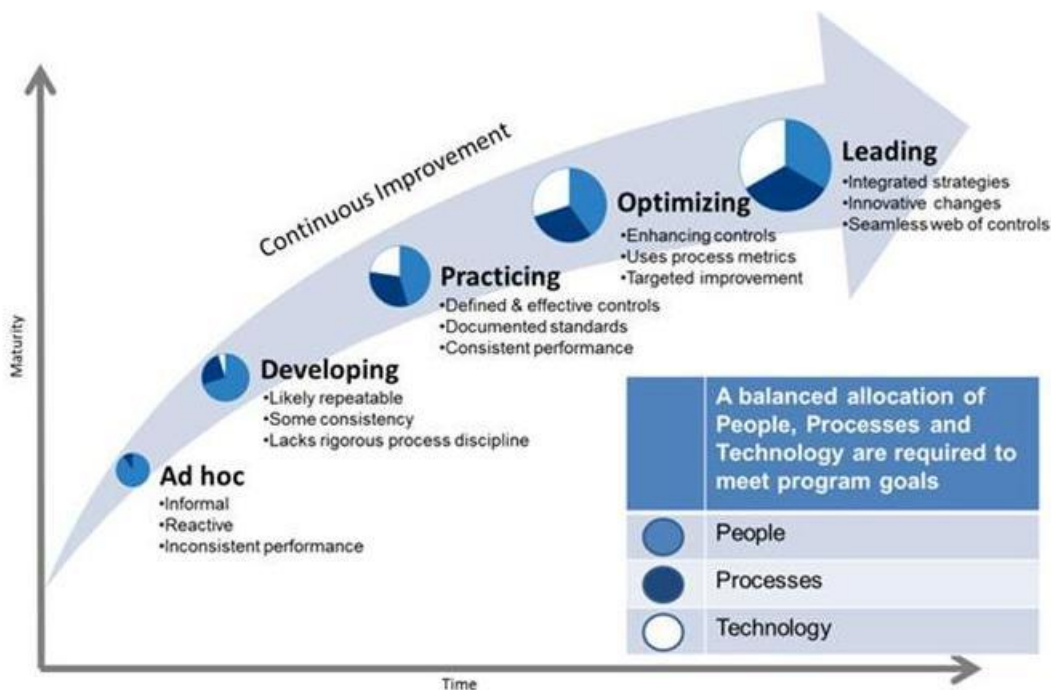
The organization conducted the Compliance cultural assessment by a consulting company in 2012. But results were theoretic and difficult in using it to improve safety. The organization established the 3 year compliance improvement plan which includes developing a culture of compliance starting from 2013. They conducted the safety culture maturity assessment focusing on the organizational aspects of safety culture leading by their internal experts in 2014. Interviews and observations identified the following key points:

#### **6.9.1.1 Measuring the organizational aspects of safety culture**

- Instilled safety culture into SMS
- Using Safety Management System maturity model (chart 6.9.1) to assess safety culture maturity
- Defined the detailed standards of each maturity level which was more effective to guide practical implementation

- Conducted in two stages, the first stage involves survey and workshops with key stakeholders. The second stage involves market calibration with international Subject Matter Experts (SME) and other international team
- Current SMS maturity level of the organization is Practising (2014)
- Employee involvement was not written included in existing safety cultural elements though it is actually addressed in practice

Chart 6.9.1 –Compliance Management System maturity model



### 6.9.1.2 Measuring the psychological aspects of safety culture

- Conducted annual Colleague Voice employee perception survey and safety is integrated, a small concern that safety is not very focused as this survey covers all aspects of business
- Implemented the Local Colleague Voice programme which serves as the ongoing employees survey for safety

### 6.9.1.3 Measuring the behavioural aspects of safety culture

- Implemented Behaviour Safety programmes in DCs which can be used to measure the behavioural aspects of safety culture



## 6.9.2 Improve the safety culture

- Established three year Health and Safety improvement plan
- Based on the safety culture maturity assessment results, they established annual Health and Safety improvement plan addressing the six building blocks / key cultural elements
- Set goals and improvement plans to move the maturity level to Optimizing in 2015
- Conducted Compliance Continuous Improvement Audit to all stores and DCs to measure the effectiveness of improvement
- H&S Compliance team meeting reviewed the progress of top 3 continuous improvement projects observed
- A number of safety improvement initiatives observed, for example:
  - The improvement of the Ammonia Emergency Response procedure in DC C
  - Fall protection Kaizen improvement in headquarters
- **Employees had less engagement with the continuous improvement process**

### 6.9.2.1 Best practice sharing

- A number of best practices observed, for example:
  - Ergonomics monitoring – Visual Job Rotation Tracker
  - Physical Training Pass Card to authorize trained colleagues to operate safety critical equipment such as forklift trucks in DCs
  - Visual Store Delivery Information Card
- Shared best practices and benchmarking performance within UK and with international locations
- **Inconsistent best practices adoption observed (e.g.: Visual Job Rotation Tracker is implemented in DC C but not visible in DC A)**
- **The organization might want to establish an online best practice sharing database to better share the best practices**

### 6.9.2.2 Stakeholder engagement

- Built constructive external partnership to enhance safety processes and achieve the continuous improvement, such as GMB union, Primary Authority Partnership,

Local Authorities, SEMA (British Trade Association of the Storage Equipment Manufacturers Association, Community Life and British Heart Foundation (BHF)

- Signed 5 Primary Authority Partnership (PAP) with local authorities to improve their safety processes. The Primary Authority under the Better Regulation Delivery Office (BRDO) of the Department for Business Innovation & Skills, act as the point of contact and resource centre for regulatory and policy advice, to ensure that local regulation is consistent at a national level and sufficiently flexible to address local circumstances (Better Regulation Delivery Office, 2015).

## **6.10 Conclusion**

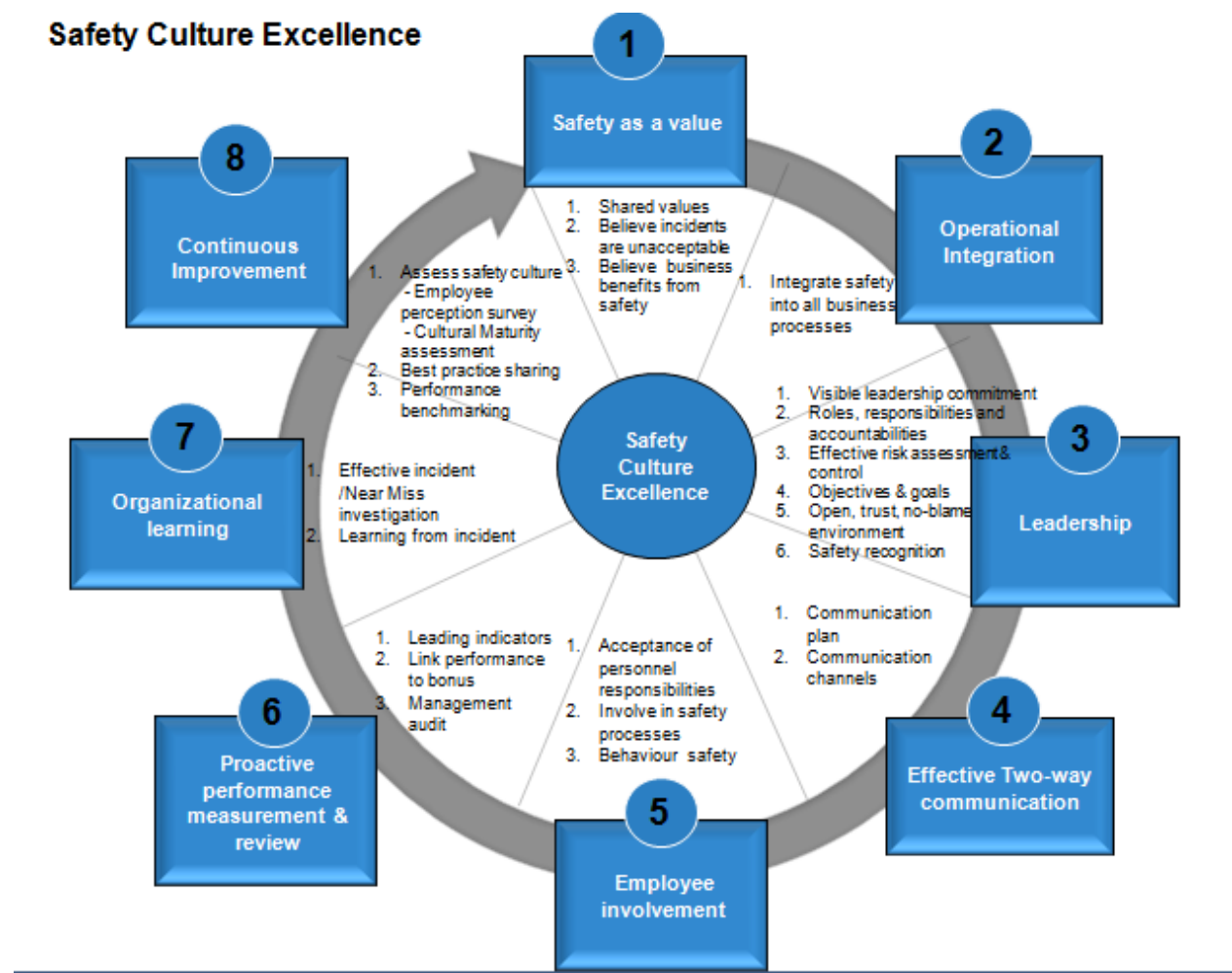
In conclusion, the overall findings of the qualitative study were presented under the themes identified in the conceptual framework. The qualitative findings provided in-depth understanding of safety perceptions, behaviours and organizational aspects of safety culture in the organization. Generally, safety culture is strong in the organization. The organization takes a proactive approach to managing safety risks and strives to integrate safety into business. All key elements of safety culture are in place with regular leadership involvement, support and communication on safety as a core company value. The organization assessed the safety culture and established plans to continuously improve the safety culture by addressing key cultural elements. However, some gaps might need to be addressed, for example, employees' ownership to safety are less adequate which might indicate that safety wasn't always seen as part of every employee's daily job. This suggests there are still opportunities to better engage employees. Some programs, for example, the behavioural safety program were identified useful for enhancing employee's involvement and ownership for safety. The next chapter will discuss the overall findings from quantitative and qualitative data to provide a comprehensive understanding of the safety culture in the organization.

## CHAPTER 7: DISCUSSION OF OVERALL FINDINGS

### 7.1 Introduction

This chapter discusses overall findings from quantitative and qualitative data presented in chapters 4, 5 and considers the findings with regard to the themes identified in the conceptual framework (Diagram 7.1).

Diagram 7.1 - conceptual framework



### 7.2 SAFETY AS A VALUE

Safety as a core company value shared with all stakeholders is one of the characteristics of a positive safety culture (ACSNI, 1993).

Questionnaire responses indicated that most managers and employees believe that business benefits from good safety management and that all injuries can be prevented. This confirms discussions in the literature that argue that these are fundamental safety values which demonstrate commitment to zero harm to people and are key drivers for the continuous improvement (Stewart, 2012).

The qualitative research concurs with other research in the literature that a proactive and long-term approach to safety issues in decision-making is important (IAEA, 2014), but it also provided additional insights. The 'Don't Walk By' safety value in the organization encouraged employees to take personal ownership to proactively identify and eliminate safety hazards. It translates the abstract safety value into observable behaviours by setting behavioural expectations to all.

The recognition of desired safety values and behaviours through corporate annual awards encourages employees to live the safety value every day. This strengthens evidence in the literature that recognition of safety conscious behaviour and peer encouragement is important to nurture safety conscious behaviour (IAEA, 2014).

However, safety values in the company were held much more strongly by managers than employees. It indicates that safety culture in the company is less mature than it should be because safety values were not shared with all stakeholders. Safety values and beliefs determine commitment to safety and without involvement from all employees, safety management can be less effective. The gaps indicated that a small number of employees may not fully understand the importance of these safety values and suggests that more effort is required in order to fully embed it.

### **7.3 OPERATIONAL INTEGRATION**

Integrating safety into business is the most effective method for a successful culture because it makes it easier for people to do the right things when safety is built into daily routines (Hansell, 2007). It strengthens the cultural element of 'safety as a value' because when safety is integrated into daily operations, safety is seen by employees as a core company value rather than an additional job.

The survey indicated that both managers and employees agree that 'integrating safety into businesses' is the top characteristic for excellent safety culture, confirming findings in the literature. (Whiting et al., 2003)

The qualitative research found that the organization proactively integrated safety into key business processes such as design and construction. However, both the survey and qualitative results found that safety was not integrated into every aspect of business, which can undermine effective management of safety risks. For example, a Chi-square test indicates employees had less engagement with this process than managers which might suggest that safety wasn't always seen as part of every employee's daily job.

Safety is considered a line management responsibility in the organization and all line managers felt safety is part of their job, concurring with the literature (Hansell, 2007, DuPont, 1999). However, observations found a small gap which indicates front line leader's problem solving skills with regard to fire safety can be improved (page 58). The qualitative research identified various best practices which add knowledge to existing research.

Proactive partnership with business functions. The Chief CCO said, 'Compliance is the competitive differentiator of business, it should be proactive and predictive, collaborative and an enabler for business'. This concurs with the literature that partnerships with business functional owners is very important for successful integration. (Hansell et al., n.d.)

Process simplification: All managers and employees fully agreed that 'Simplified safety policies and procedures are in place' which confirmed the qualitative results that management strives to continuously simplify the process to make things easier for operations. The visual WAGJLL (What a Good Job Looks Like) is a best practice. Simplified work processes and procedures can avoid introducing risks through unnecessary complex operational requirements (Network rail, n.d.) The findings confirm previous research that found quality documentation is important (IAEA, 2014) but provided approaches on how to achieve this.

## **7.4 LEADERSHIP**

It is recognised that leadership is important in the creation of a culture that supports and promotes a strong health and safety performance (SAFETY MATTERS, n.d.). The research found that, overall, leadership was strong in the organization and leaders instilled a culture of safety in their management activities.

### **7.4.1 Visible leadership commitment**

The survey indicated that both managers and employees perceived 'visible leadership commitment' as one of the top 4 characteristics for excellent safety culture. This was consistent with interviews and concurred with literature that found a high visibility of management commitment to safety promotes a positive safety culture (Cooper, 2001).

One way to demonstrate visible leadership is to commit and enforce safety as a core company value and communicate this to employees (EU-OSHA, 2012, Quayzin, 2012). The empirical research found that compliance leaders frequently emphasized 'safety as a core company value' and also showed how leadership has a role in fostering other cultural elements to maximum the cultural improvement effort, for example by engaging employees in effective two-way communication.

Doing frequent safety walks around the facility is a powerful way to demonstrate visible leadership. The EHS manager in DC C said: 'leadership presence from the senior managers on site across all shifts helps promote a positive safety culture'. The HSE (2005) agree that safety tours are a powerful means to demonstrate visible leadership commitment as they provide two-way communication, motivations and problem solving so that employees believe safety is a core value in the business.

Observations found that the safety compliance team commented and discussed safe or unsafe behaviours with managers and employees during the site tour which modelled a positive example. However, minimal dissent from two new employees may indicate that these sorts of efforts should be undertaken on a regular, frequent basis.

The HSL (2002) argue that supporting health and safety committees demonstrated visible leadership commitment. This research found that employees had better engagement with the activities of the safety committee than managers. Interviews found that employees were provided with opportunities to get involved in safety committee activities via the GMB union. However, participation did not engage all frontline leaders so their responses were less positive. As front line leaders play a key role in safety leadership, inadequate involvement can lead to ineffective management of safety.

#### **7.4.2 Roles, responsibilities and accountabilities**

The chi-square tests showed dissent from 2 newish employees with regard to statement of roles and responsibilities which indicated some concern that not all new employees understood their role. Although the company implemented an accountability management system to hold people accountable (Roughton et al, 2002), this research found that some opportunities for improvement could be identified. For example, the general manager in one company seemed to have inadequate understanding of the new global accountability statement (page 60) which might indicate the need for more training and communication.

#### **7.4.3 Effective Risk assessment and control**

The survey and the qualitative data found that all respondents were in full agreement that they have robust risk assessment processes. The company proactively engineered out risks in building design which was consistent with pillars (appendix 7) of Safety Management System (SMS) that requires getting things done the right way the first time, and being proactive (McKinnon, 2014).

However statistical significance with regard to job positions indicated that employees had less engagement with the risk assessment process. This suggests there are still opportunities to better involve employees. The interviews explored opportunities for this and found that the company didn't formally adopt the Job Safety Analysis (JSA) programme. As risk assessments are best carried out involving people who are

actually doing the job (NASBM, n.d) the company can consider adopting formal JSA programme and better engaging employees in the risk assessment process.

#### **7.4.4 Open, trust and blame-free environment**

An open, trust and no blame environment enables employees to raise safety issues without fear of blame or punishment (Whiting et al, 2003). This can increase reporting, information sharing and learning.

The qualitative research provided strong evidence that the company value of respect for people, building trust, DWYSYWD (Doing What You Said You Would Do) and the open door policy helps to build an open and trust environment (HSE, 2005, INPO, 2013, OPG, 2013, HSL, 2002). Also, the key expectation of 'build transparency' from CCO demonstrated the on-going leadership commitment. In addition, incident investigation focused on the root cause of management systems and explored human factors of why people doing things wrong are important which concurs with literature (HSE 2005, Godier, 1996). The company engaged in effective two-way communication which helps to promote trust. (Healey et al, 2012)

Organisations should encourage or even reward reporting (HSE, 2015), and the empirical study provided some good practices for this:

- Policy and procedures encourage reporting of safety issues is fundamental.
- Recognition and reward for good safety performance and behaviours encourage employees to provide safety related information
- Empowering employees enables them to take ownership for safety and openly raise safety issues

However, feedback to safety suggestions in store A was found to be lacking, although deemed important in the literature (HSE, 2005). This could influence employee's perceptions to leadership commitment and motivation for safety.



#### **7.4.5 Safety recognition**

The qualitative research showed that the company used various recognition programmes ranging from monetary reward to management commendations such as annual corporate awards and prizes for safety suggestions in DC A and DC C. One of the suggestions from an employee in DC A was that management celebrate in small ways for jobs done well. This is consistent with literature that argues recognition should be consistently applied (Roughton, 2002, Krause, 2005) and be part of site daily routine (Healey et al, 2012). This indicated that on-going recognition with management commendation is important to employees and can motivate employees by constantly recognizing when they have done their job safely.

Statistical significance with regard to safety recognition indicated new employee's perceptions were less strong than older employees, again suggesting the need to better motivate new employees.

#### **7.4.6 Leadership development**

A number of researchers examined the general leadership development theories but there is a lack of evaluation regarding their appropriateness to safety. The company recognized the importance of leadership development for improving safety culture, despite little evidence in the literature to support this. The empirical study indicated that the company utilized various methods to build the capacity of managers, such as meetings, training, continuous improvement audits, Company Academy (page 62) and the Company of Learning (COL).

Transformational and transactional leadership skills were demonstrated during the research. For example, management acts as role models and inspiring 'story telling' were all identified, confirming the literature on transformational leadership (Healey et al, 2012). Recognising and rewarding positive safety behaviours and practices were also observed, again confirming findings in the literature of transactional leadership. (Healey et al, 2012)

Literature indicates that leaders require coaching in order to demonstrate the behaviours required to create and drive a positive safety culture (NOPEMA, 2013).

Observations showed that auditors coached operations managers in Continuous Improvement Audit which provided a practical approach to develop leadership safety skills via coaching.

The research identified innovative approaches for leadership development and witnessed some unique innovations. For example, they have 16 Company of Learning (COL) across the UK. A COL is a typical company of the Centres of Excellence recognized by the region aimed to train new managers. The safety compliance team took the initiative to integrate safety into COLs, a positive behaviour that indicates a strong management dedication to safety (HSC, 2003).

Interviews and observations indicated some small gaps of safety knowledge and skills of frontline managers such as behaviour safety feedback and fire safety issues resolution (page 58, 65). This suggests the need to continuously build the capacity of frontline leaders so that they can manage safety more effectively.

## **7.5 EFFECTIVE TWO-WAY COMMUNICATION**

HSE (2005) identifies two-way communication as essential characteristics of safety culture and all managers and employees indicated that communication was one of the top three challenges for building a proactive safety culture in the company. However they also indicated via the questionnaire that the company already conducted effective two-way communication. The company established various communication channels and engaged top down, bottom up and horizontal communications. This conforms to HSE that a positive safety culture requires effective channels for these three level communications (HSE, 2005).

However, some inconsistent communications were observed between sites on incident learning, monthly safety theme and shop floor huddle. These gaps need to be addressed because inconsistent communication can weaken the overall safety management efforts. Another inconsistency is that, DC A and DC C have good feedback mechanisms but the store A was less effective. (page 62, 65)

## **7.6 EMPLOYEE INVOLVEMENT**

Employee involvement is one of the indicators that influence safety culture (HSE, 2005). This is because employee involvement in safety not only shares responsibility with management but also results in greater awareness of safety issues and better management of safety risks. The survey indicated that employee involvement was one of the top three challenges for building a proactive safety culture in the company. As discussed in previous sections, managers have a greater understanding and engagement with safety than employees. So it is necessary to explore ways to improve employee involvement.

### **7.6.1 Acceptance of personal responsibilities**

Every employee should take responsibility for their actions and actively play their part to build a strong health and safety culture (HSE, 2013). The survey showed that some new employees aren't fully aware of their responsibilities. Unsafe behaviours observed also suggest inadequate ownership of safety from some employees. This suggests managers need to train new employees on their safety responsibilities and hold them accountable. This should produce high level of compliance with procedures and enhances ownership of safety by all individual at all organizational levels (IAEA, 2014).

### **7.6.2 Involving in safety management process**

Providing employees with opportunities to participate in the safety management process is an important way to involve employees because it results in a stronger commitment to implementing actions (HSE, 2013).

Employees were involved in the safety committee, safety procedure review, pre-start up safety check, and the Colleague Voice initiative (page 65). Frequency analysis indicated all managers and employees agreed with the statement 'I am involved in the review of the safe work instructions'. Interviews confirmed the survey responses that colleagues were able to be involved in safety committee activities through the GMB union such as the procedure review, safety communication and training.

However, areas for improvement were identified. As discussed earlier, involving employees in Job Safety Analysis (JSA) process is critical important because employees will better control safety risks by being actively involved. In addition, employees can be better involved in the safety suggestion programme and continuous improvement process, identified as a gap in the literature (IOSH, 2009). Another possibility is to provide employees with opportunities for peer observation so they can provide their co-workers supportive feedback on their behaviours. This will be discussed in detail in section 7.6.3.

### **7.6.3 Behaviour safety**

Cooper (2000) indicates that behaviour is one of the three inter-related aspects (psychological, behavioural, and situational) of safety culture. So addressing behavioural aspects of safety promotes a positive safety culture.

Frequency tests indicated that behaviour safety programme is a weaker area in store S. Interviews found that the company didn't formally implement the behaviour safety observation program. This might resonate with the results of the survey and interviews that found unsafe behaviour were a contributing factor of injuries in store S. As the technical and systems aspects of safety are performing adequately in this organization, management should focus on engaging and involving all employees in identifying and eliminating unsafe conditions and unsafe behaviours so that employees are willing to take ownership in achieving this. Improving the behavioural aspect of safety could further improve the Health and Safety management. This also agrees with IOSH (2015) that management should focus on programs that recognise workers have a genuine interest in their own wellbeing contribute best when they can see that they themselves can influence their own safety (IOSH, 2015). The behaviour safety approach therefore provides employees with opportunities to participate and contribute to safety. The previous chapters addressed other interrelated aspect, the organizational aspect of safety which influences employee's safe behaviour at work, management should also focus on the behaviour aspect of safety culture and take an active role in driving the behaviour change of employees.

Statistical significance with regard to length of service indicated that some new employees didn't fully appreciate safety procedures and rules, something confirmed by observations. Although this represents minor deviation from the corporate policy, it could be of concern and could mean employees may put themselves and co-workers at risks. Interviews with several managers indicated that consistently following safety procedures was a challenge in the company and that they have taken some initiatives to address this, for example, the 'I Tell You Why' campaign.

Although DCs implemented a formal behaviour safety observation programme and set observation goals for managers confirming with the literature (HSE, 2008), the programme didn't involve employees in the active observation process. This is important because the literature indicates that behaviour safety programmes need full engagement of the workforce (IOSH, 2015). Also it is a missed opportunity for employees to look after each other's safety, provide supportive feedback to their co-workers on their behaviours and foster the shared safety values and safety behaviours.

#### **7.6.4 Employee empowerment**

OSHA (2003) suggests fostering the ownership of safety by all employees —moving from “involvement” to “empowerment”. This is important because by empowering employees, employees do not just follow procedures, but also take ownership.

However, there is little empirical research that explores the role of employee empowerment in safety culture or the ways to achieve this.

The survey indicated that all managers and employees felt empowered to stop any at risk work and to tell others if they have inadequate safety control measures and are putting anyone's safety at risk. This is very positive. The qualitative research explored reasons for good employee empowerment in the organization. For example, the company safety rules require that colleagues must report immediately any safety issues and 'STOP if you are unsure', thus providing employee's with the power to stop thus reducing the consequence of taking risks. The researcher participated in the meeting that promoted the leadership trait of 'empowering others', this improves

manager's safety leadership skills enabling them to effectively engage with employees. An off-the-job safety programme (page 66) and the community outreach (page 57,60,66) empowered employees to live safety as a way of life so that safety is a core value and integrated into every aspect of employees' lives.

As discussed in earlier sections, visible leadership commitment, operational integration, open, trust and no blame environment, safety recognition, effective two way communication all promote active employee involvement. These themes are interrelated and strengthen each other.

## **7.7 PROACTIVE PERFORMANCE MEASUREMENT**

Safety performance measurement not only provides information on how the system operates in practice but also provides feedback and motivation (HSE, 2001).

### **7.7.1 Leading performance indicators**

Measuring the outcomes of safety management for example, incident rates are reactive and are referred to as a lagging performance indicator (HSE, 2001). Measuring the input and process of safety management, for example training hours are proactive and are known as a leading performance indicator (HSE, 2001).

However, the survey indicated that both managers and employees had inadequate understanding and engagement with leading performance indicators compared to other themes in the survey. Interviews found that the company adopted lagging indicators, for example, injury rate and provided inadequate information to guide future action for improvement (Reiman, et al, 2010, HSE, 2001). The organization adopted some leading indicators such as continuous improvement audit compliance rate but suggested the need to establish additional leading indicators to address the weaker areas such as behaviour safety. This resonates with the literature that suggest selecting leading indicators should consider the critical goals of the organization and be linked to risk control process. (Reiman, et al, 2010, HSE, 2001). The research found a small gap that store A visually communicated the performance results of operations but no safety performance results which indicated the needs to

periodically communicate safety performance to employees so that employees will be better informed and involved in safety management process in store A.

#### 7.7.2 Linking Bonuses, merit increases, and promotions to safety performance

Establishing safety performance objectives tied to bonuses, merit increases, and promotions is viewed as the most effective strategy for gaining employee involvement (OSHA, 2003). The chi-square test indicated a statistical significance with regard to this practice. Perceptions of both managers and employees were less positive compared to other statements in the survey. Managers had better engagement than employees which indicates that this practice was not fully adopted or employees don't understand how safety performance relates to such rewards.

#### 7.7.3 Continuous Improvement audit

Both the quantitative and qualitative results indicate that the company has strengths in the safety audit process. The Continuous Improvement audit to all sites is good practice. Unlike the traditional audit, the CI audit provided coaching to line management and engaged people in two-way communication and problem solving. It proactively measures safety performance of all facilities and provides input for continuous improvement. The CIA compliance rate is process oriented and can drive future improvement across UK operations. This provided a practicable approach for proactive performance measurement and added value to existing research.

### **7.8 ORGANIZATIONAL LEARNING**

Organizational learning is one of largest influences on safety culture (HSE, n.d.) since learning from safety issues not only helps to prevent similar issues re-occurring but also promotes continuous improvement.

#### **Encourage reporting:**

The company encouraged reporting of safety issues via clear policy, procedures, training and reporting channels. This supported the literature that a positive safety culture requires effective reporting of safety issues and problems (SAFETY MATTERS (n.d.)).

### **Effective investigation:**

The company provided procedures and tools to undertake robust incident investigation, a key tool for incident learning (HSE, 2005). However, evidence from the survey on this topic showed some minimal dissent which indicates that there are still opportunities to better investigate incidents. This might indicate that incident investigation skills of operations managers were less adequate than expected.

### **Learning from safety issues**

The company learn from incidents, near misses, unsafe behaviour, design deficiency, fire drills and audit findings, as suggested by the literature (IAEA, 2002). However, survey evidence indicated that employees had inadequate engagement with incident learning. This was of concern because every incident is an opportunity to learn and improve, and any learning opportunity missed means that an incident is more likely to be repeated (Stewart, 2012). The interviews and observations confirmed the questionnaire results, with learning not consistently being implemented at different sites. This suggests the needs to enhance the learning at operations level.

The above findings also suggested that organizational learning is linked to an open, trust and no blame environment because it encourages reporting and investigation of safety issues so that lessons can be learned.

## **7.9 CONTINUOUS IMPROVEMENT**

Continuous improvement is a key characteristic of safety culture (IOSH, 2015c) and an effective safety culture should always seek to promote continuous improvement (HSE, 1999). Continuous safety improvement is unpinned by the company value of 'Strive for excellence'. The company established a 3 year Health and Safety improvement plan and annual improvement plan which support the strategic long-term safety objectives. This also builds upon the improvement made in the previous year's plan thus enabling the organization to achieve continuous improvement.



A chi-square test indicated that although all managers believe continuous safety improvement is important for a successful company, not all employees shared the belief. This indicated employees were not fully aware of their role and were less engaged in the continuous improvement process, which concurred with the interviews. This indicates the needs to further involve employees so that safety improvement efforts will be sustainable.

### **7.9.1 ASSESSING SAFETY CULTURE**

Continuous improvement of safety culture starts with the understanding of the current safety culture in the organization. Assessing safety culture is important to measure key elements of safety culture (RSSB, 2015). However, the survey indicated that assessing safety culture was one of the three challenges for building a proactive safety culture in the company. So the research explored ways to assess safety culture.

A holistic and multi-method approach should be taken towards measuring safety culture (Guldenmund, 2010, EU-OSHA, 2011). The company assessed its safety culture via annual 'Your Voices' employee perception survey and safety culture maturity assessment but behavioural assessment is less adequate. This section will focus on the organizational aspects of safety culture because it has more influence on the safety culture. (Mearns, et al, 2003, Cooper, 2000)

#### **7.9.1.1 Employee perception survey**

The company conducts an annual 'Your Voices' colleague perception survey to every employee. This helps to increase employees' involvement and provide the opportunity for issues or concern to be raised (HSE 2005). The survey covers every aspect of business, so is not specifically focused on safety. However, the Local Colleague Voice programme was used for an on-going survey of safety which is a best practice because it encourage those on the front line to come forward with alternative (better) solutions (IOSH, n.d.). This is valuable because safety is not the one off activity, but a continuous effort.

### **7.9.1.2 Behavioural assessment**

As discussed in the employee involvement section, the company implemented formal behaviour safety observation programmes in DCs which provided opportunities to assess behavioural aspects of safety culture. However, they didn't formally implement the behaviour safety observation programmes in DCs. This suggests opportunities for improvement because measuring the behavioural aspects of safety culture reveals more about what is shaping the culture (HSE, 2005).

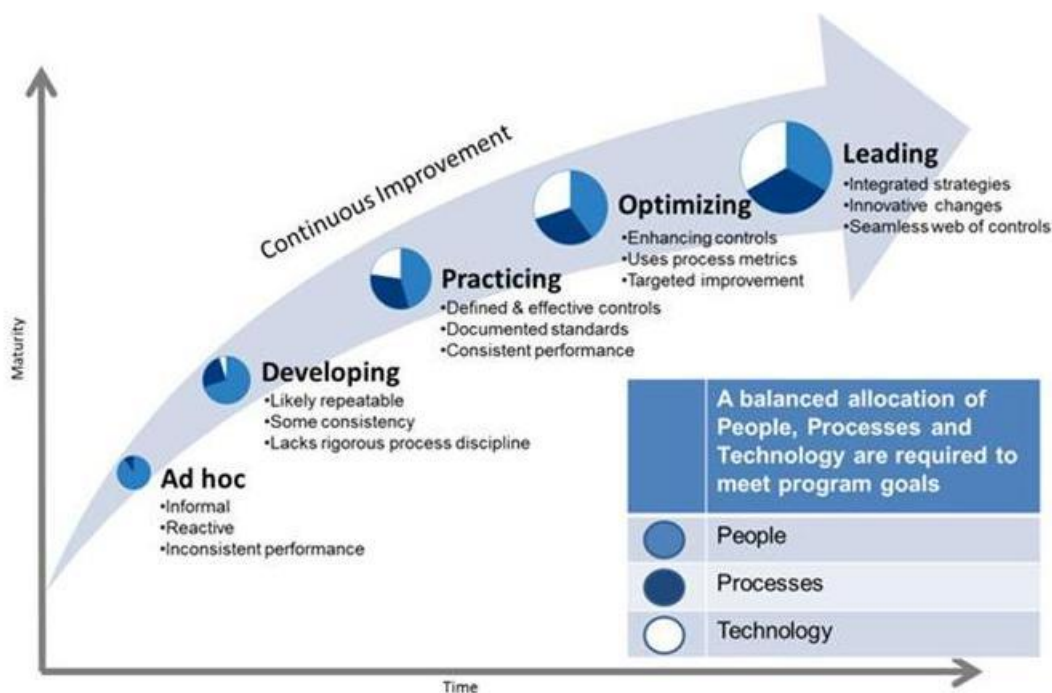
### **7.9.1.3 Safety cultural maturity assessment**

The literature indicates that assessing safety culture based on safety cultural maturity model is an effective way to improve the safety culture (Keith Centre, 2000) because it simplifies and communicates a complex concept into distinct dimensions in order to support its understanding and assessment (NEB, 2015).

The company developed a SMS Maturity Model (Table 6.9-Simplified SMS maturity model) which has five levels of maturity from ad hoc to leading level and each level consists of 6 key cultural elements / building blocks (leadership, standards and controls, risk assessment, communication, training and monitoring and response). This model is similar to other safety culture maturity models in the literature which define several cultural levels with each level consisting of several key elements of safety culture. The company conducted the Safety Culture Maturity Assessment based on the SMS Maturity Model. They aimed to enhance the safety culture through the improvement of SMS maturity level because safety culture was instilled in the SMS, unlike other models that have been criticized for not being fully integrated into organization's SMS (IChemE, 2007), and for being 'commercial' products, provided by OHS institutions and consultants (EU-OSHA, 2011). In addition, it defined the detailed standards of each maturity level which was more effective to guide practical implementation but was missing in existing models. For example, at the highest 'Leading' level, it defines 6 standards, for example, the 'seamless integration of the SMS into business functions driven from all levels' and 'established safety culture with regular positive safety engagement surveys – actively caring both on and off the job' addresses the key elements of safety culture of

operational integration and employee involvement and defines specific performance expectations. The standard of 'periodic reviews of leading metrics and use of innovative methods to analyse health and safety procedures, policies and controls to proactively address potential points of failures' again demonstrated the proactive approaches towards safety. For some standards, they have already started the journey, for example, proactive partnerships with regulators and communities enhancing safety processes and working upstream with suppliers on safe equipment design and efficiency of protection systems. The compliance team lead safety culture maturity assessment workshops with key stakeholders which resulted in participants suggesting solutions to the issues they identified - a strength identified in the literature (Lardner, 2003).

Table 6.9 – Simplified safety culture maturity model

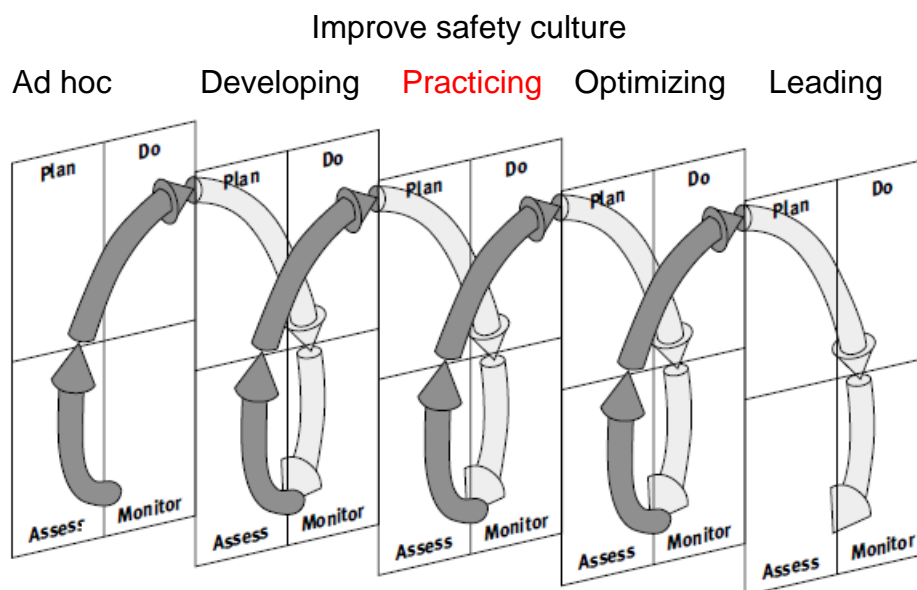


### 7.9.2 Improve the safety culture

The company combined the PDCA cycle and its safety culture maturity model to produce a safety culture improvement process (table 7.9.2) - identified a best practice by the literature (IOSH, 2004, STEP CHANGE, 2000). The SMS maturity assessment suggested that the existing maturity level is 'Practising' in the

organization. The company developed and implemented the annual safety improvement plan by addressing the six key cultural elements, an approach recommended in the literature that argues management of the safety culture maturity improvement process should be integrated into annual and rolling long-term plans (Step Change, 2000).

Table 7.9.2 Safety culture improvement process



The company monitored the plan via the continuous improvement audit and applied the best practices (Appendix 9 Continuous improvement) which provided practical examples, adding value to existing research. They progress sequentially through the five levels suggested by the literature (Keith Centre, 2000). The company will re-assess its safety culture annually to review progress.

One small gap was identified. Although in practice, the company addressed all the key elements of safety culture with emphasis on visible leadership drive, employee involvement was not included in existing safety cultural elements, suggesting that this element can be specifically addressed and employees can better contribute to the safety improvement process.

### 7.9.3 Best practice sharing

The company strive for continuous improvement by sharing best practices and benchmarking performance with other locations. This conforms to IChemE (2004) that argues good safety performance is associated with adopting best practices. One example is that, existing leadership development processes such as the Company of Learning (COL) and Centre of Excellence (CE) are unique in the industry and demonstrate proactive leadership.

### 7.9.4 Stakeholder engagement

One key theme emerging from the empirical study is stakeholder engagement. Stakeholder engagement is important and the research evidenced that stakeholder engagement maximised the continuous safety improvement effort in the company. The Primary Authority Partnership (PAP) is particularly valuable because as a multi-site retailer the delivery of better regulation and consistent implementation of safety procedures is important to enhance safety processes and achieve continuous improvement. An example of PAP partnership is that, the company openly shared company risk information and safety procedures via the online Primary Authority Register website. This enhanced best practice sharing with external parties, and means local authority safety inspections can be more effective. This concurs with the literature that safety culture is also affected by external business and societal influences and businesses and government agencies should work together to ensure that regulations play a positive role in the creation of focused safety and health management systems (Cooper,2000, OSHA, 2003).

In addition, the partnership with SEMA, working upstream with suppliers on safe equipment design and efficiency of protection systems is proactive which exemplifies McKinnon's view that effective risk assessment and control is proactive, predicative safety (McKinnon's, 2014)

## 7.10 Conclusion

The findings of this research have been analysed using the conceptual framework. Data from different data sources have been triangulated and considered with regard to the literature. The qualitative results were mainly consistent with the quantitative

results, and explored in depth the physiological aspects of safety culture and provided further insights and best practices for each theme. The multi-method approach provided a holistic view of safety culture and addressed three interrelated areas, the physiological, behavioural and organizational aspects, by questionnaire survey, interviews and participant observations. Organizational aspects are more important to driving safety culture which influence employees' safety perceptions and behaviours, so it was more focused in the research.

The following chapter will provide a summary of findings for each of the research objectives. The revised conceptual framework will be discussed which made a contribution to existing research. Recommendations will be made for future actions. Finally, the researcher will indicate ideas and areas for further research.

## **CHAPTER 8: CONCLUSIONS AND RECOMMENDATIONS**

### **8.1 INTRODUCTION**

This chapter draws conclusions from the data collected and makes recommendations for further research.

A proactive safety culture is of vital importance for effectively managing safety risks and improves organization's safety performance. The research questions have been addressed and will be discussed in the following sections.

1. To investigate management and employees' understanding, perceptions, attitudes, insights and practices of safety management and safety culture in a selected international company
2. To critically investigate how to assess the safety culture in a selected international company
3. To identify the programs / best practices that can foster a proactive safety culture

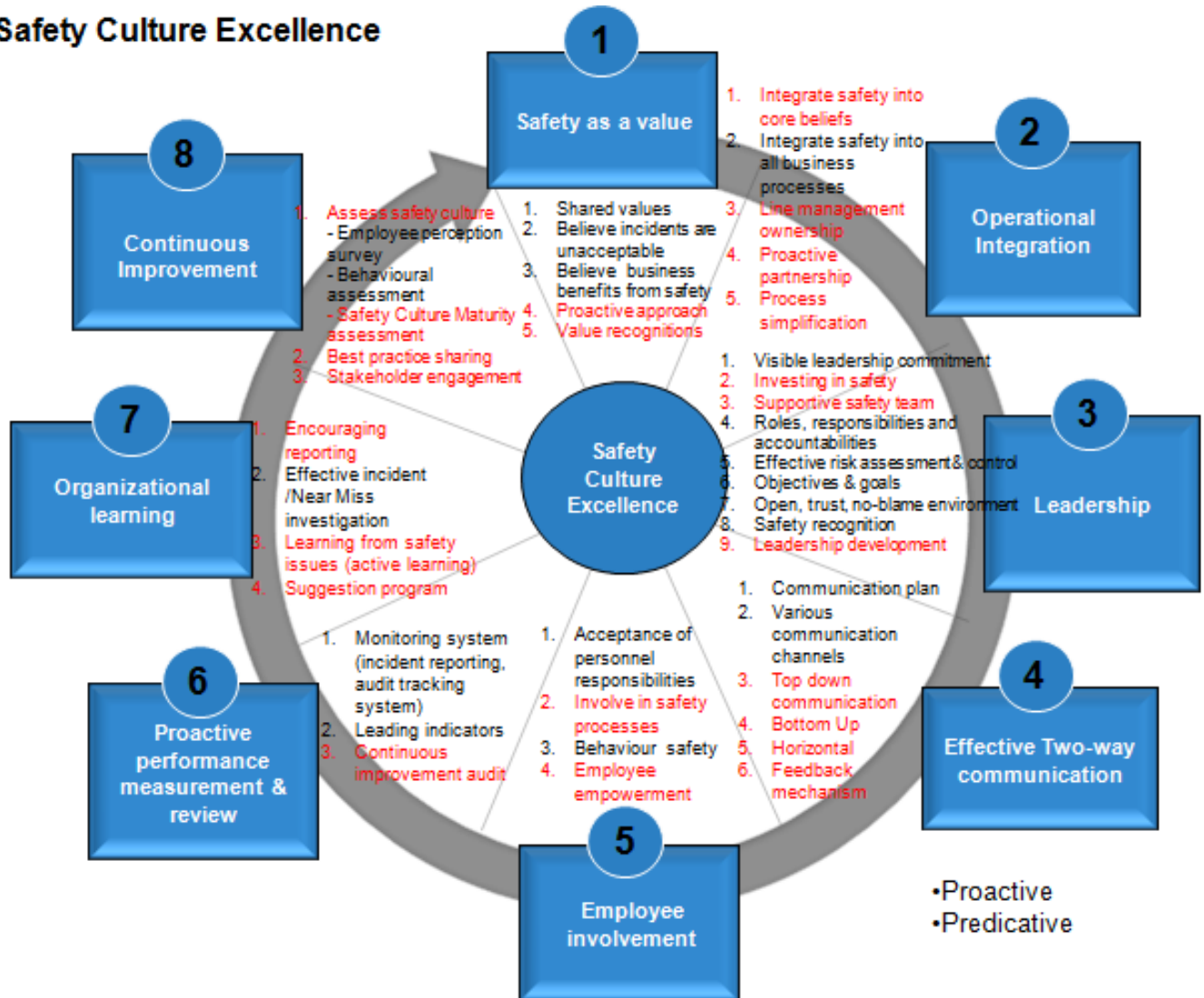
### **8.2 The improved conceptual framework**

To fulfill the objectives of the research, the researcher established an initial conceptual framework which identified key elements of safety culture. The empirical study tested the framework, helped to develop understanding of the issues, and subsequently contributed to overall understanding by a) creating a tested model in an area that has been criticized for a lack of theoretical framework (Choudhry et al, 2007, Clarke, 2000, Antonsen, 2012, Nielsen, 2013) and b) generating empirical data that explores practical approaches (Ellis, et al, 2001). The research has resulted in the addition of important themes and best practices, as highlighted below (diagram 8.1). For example, the proactive stakeholder engagement is a key emerging theme which improved the safety process and maximized the continuous safety improvement effort in the organization. The empirical study identified practical approaches and best practices on how to address the key cultural elements identified as gaps in the literature (Guldenmund, 2010) and outlined how safety

culture is integrated into organization’s processes, practices and employee behaviors.

Diagram 8.1 Revised conceptual framework

### Safety Culture Excellence



### 8.3 Research objective 1

The empirical study indicated a strong corporate awareness of health and safety issues in the organization. Employees felt strongly that they were provided with simplified and effective safety processes, procedures and programs to do their job safely. They felt leadership to be strong in the organization and were empowered to do their job safely and were provided with opportunities to be involved in safety management processes. Managers embraced their safety leadership role and took a



proactive approach managing safety risks. They lead by example to engage employees and built constructive internal and external partnerships to continuously improve safety in the organization. This research has therefore achieved this research objective.

#### **8.4 Research objective 2**

In accordance of the second objective of the research, the company conducted safety culture maturity assessment based on SMS Maturity Model and continuously improved its safety culture maturity level embedding its SMS, unlike other models that have been criticized for not being fully integrated into the organization's SMS (IChemE, 2007). The study has constructed a comprehensive safety culture framework and a safety performance improvement path that all organisations should seek to embrace. This research filled the research gaps and thus achieved this research objective.

#### **8.5 Research question 3**

The literature indicates that existing research is not always linked to theoretical frameworks of safety culture (Choudhry, et al, 2007, Clarke, 2000, Antonsen, 2012, Nielsen, 2013) and that there is a lack of exploration of the elements of safety culture (Jebb, 2015) and how safety culture is embedded within organisation's practices, system structures and employee behaviours (Guldenmund, 2010). This research therefore addresses these gaps. The researcher developed the conceptual framework and explored practical application in the organization. The organization embedded safety culture in various management activities during the research week such as annual compliance meeting, continuous improvement audit and community outreach activities. This provided a snap shot of their proactive and long term approaches to safety in the organization, demonstrating safety as a core company value. The proactive and innovative safety approaches demonstrated leadership in striving for safety excellence. These also exemplified how leadership influences safety culture and filled the research gap. Despite some inconsistent implementation between different sites, the company strived for continuous improvement and the

continuous improvement audit, stakeholder engagement and working upstream with other stakeholders are best practices and provided practicable examples.

The empirical research identified employee empowerment as a key theme inadequately explored in past research. All managers and employees surveyed felt empowered to stop any at risk work and to speak up if their colleagues work unsafely. The research identified practical approaches to achieve this, filling the gap of existing research and responding to OSHA that suggests fostering the ownership of safety by all employees —moving from “involvement” to “empowerment” (OSHA, 2003). This has great implications because by empowering employees, employees do not merely follow company safety procedures, but also result in greater awareness of safety issues and enhanced ownership of safety issues and solutions which will create a big step change in managing safety risks.

## **8.6 RECOMMENDATIONS**

Fleming (2013) indicates, from an industry stakeholder perspective there was a growing concern that safety culture studies were adding little value. Research reports identified problems but with no potential solutions available.

Therefore, this section proposed appropriate recommendations with practicable solutions:

### **8.6.1 Improve safety committee function**

Though the organization established effective safety committee with GMB support, a small gap indicates the need to review the safety committee structure in store A to ensure broad-based participation involving front line supervisors. This is important because frontline leaders take an important role in directly engaging participation from front line employees.

### **8.6.2 Building the capacity of frontline managers**

Continuous improvement requires not just implementing safety requirements but also needs front line leaders to actively engage the workforce and proactively identify

improvement opportunities. Therefore, continuously building safety capacities for frontline leaders are important. This can be done via leveraging existing processes, for example further integrating safety into Company of Learning (COL) leadership development programme by sharing best practices and providing targeted training such as safety leadership skills, Behaviour Safety, Job Safety Analysis and new safety programs to operations managers (STEPCHANGE, 2000). The annual safety continuous improvement audit can be focused on store B to coach operations managers to solve fire safety issues more effectively.

### **8.6.3 Further enhance the employee involvement**

Although management led safety initiatives and took a strategic view of the importance of safety in the business, a very small minority of new employees weren't fully aware of their safety responsibilities and ownership for safety is less adequate than desired. Therefore enhanced involvement of employees in the safety management process is necessary.

#### **8.6.3.1 Implement the Job Safety Analysis (JSA) process to better involve employees**

Adopting formal Job Safety Analysis (JSA) programme in order to better involve employees in the risk assessment process and enhance employee's ownership for safety is required. This is because employees are those who are most familiar with their job and equipment, so risk assessments are best carried out involving people who are actually doing the job (OGP, 2010)

#### **8.6.3.2 Improve the safety suggestion programme to encourage employees to suggest safety improvement opportunities in store A.**

Motivating employees to suggest safety improvements to management and involving them in implementing them can potentially enhance safety. In addition, feedback mechanisms for reviewing them is needed to better engage employees because employees will know their opinions are valued and acted on.

#### 8.6.3.3 Improve the behaviour safety observation programme in the organization

As behaviour safety was a weaker area in store A. they might want to implement formal behaviour safety observation programmes and learn from DCs of their best practices. This can foster safety behaviours and increase employees' ownership of safety. Although DCs implemented formal behaviour safety programme, there is a need to improve existing behaviour safety programmes to involve employees in the active observation process in DCs, so that employees can look after each other's safety, and provide supportive feedback to their co-workers. In addition, there is a need to enhance the behavioural feedback to employees by positive recognition to reinforce the desired safe behaviours and coach employees to improve their unsafe behaviours to better motivate employees in store A.

#### 8.6.3.4 Improve the safety performance measurement of employees

The organization established leading indicators such as the safety compliance continuous improvement audit pass rate. They might want to establish additional leading indicators that are appropriate to their current culture maturity level to address the weaker areas of safety management, for example, numbers of behaviour safety observations. In addition, store A visually communicated the performance results of operations but not safety performance results. This suggests the need to periodically communicate safety performance to employees in the workplace so that employees will be better informed and involved in safety management processes.

#### 8.6.3.5 Improve safety recognition for employees

Employees in DC C suggested that management also celebrate in small ways for a job done safely. This suggests operations managers can recognize employees for their job done safely or safe behaviours observed.

#### **8.6.4 Further integrate safety into all business processes and employee's daily job.**

Operational integration is a strength in the organization, however, more seamless integration of safety into every aspects of business is needed to achieve safety excellence. This can be achieved by partnership with key business function owners such as HR and Operations and leverage existing processes so that safety is wholly regarded as part of every employee's daily job. For example, safety could be integrated into existing company recognition programmes to provide ongoing recognition to employees and provide peer recognition for a job safely done.

#### **8.7 FUTURE RESEARCH**

Due to the small sample size, the significant relationships identified in Chi-square test are only tentative so the findings need to be treated carefully. Also, the chi-square test results shows no clear patterns of the relationship between employee's perceptions and length of service in this research, thus it is difficult to make concrete recommendations on these results. This suggests the need to include bigger sample size in future research.

The senior management of Operational functions at headquarters were not interviewed. Ideally this would have helped to understand safety attitudes and perceptions and how these determine corporate policy. Future research could focus specifically on such managers in key positions.

In addition, as integrating safety into business plays a key role in embedding safety into daily operations, future research can specifically explore this in more depth.

As informed by the literature, future research can develop the proactive partnership with educational institutions, industries and industrial associations to leveraging resources and better integrate theory into practices.

Considering the time and resources available and document size limit for a one year Master's research, this research has its limitations. Therefore, it was not possible for

the researcher to use complex sampling methods or conduct a comprehensive research. However, the researcher has carefully designed the research, prioritized and included critical themes to form a robust foundation for the research. The research used a multi-methods approach so that the limitation of one approach such as questionnaire can be compensated with other approaches such as interviews and participant observations to make the research reliable and valid.

## **8.8 CONCLUSION**

In conclusion, a proactive safety culture is very important to effectively manage safety risks. This research took a holistic and multi-methods approach to examine the interrelated aspects of safety culture with a focus on the organizational aspects of safety culture in one organisation.

The research established a conceptual framework and further developed it via the empirical research. It is clear that leadership plays a key role in developing a strong safety culture and engaging employees in safety management processes in the organization. Integrating safety into business and employees' daily routines makes it easier for people to work safely.

The organisation's approach regarding safety culture maturity assessment integration into SMS produced a continuous safety improvement process. While little research has emphasised the importance of stakeholder engagement, it is likely to be effective in leveraging external resources and maximizing the safety performance in the organization. Cultural elements integrate, interact and strengthen each other. By adopting a holistic approach to safety management and annually assessing the culture maturity level, the organization is likely to drive continuous improvement and achieve safety excellence. This research identified practicable approaches and industry best practices to guide the improvement of safety culture, and has filled research gaps and integrated theories and industrial practices.

Health and safety need to improve in every organization in order to eliminate harm to people, business, and communities. By looking at how one organization attempts to deal with this, the research has identified a clear framework and performance path that all organisations should seek to embrace. Clearly the characteristics of

companies and their operations will all differ but core elements are common to all policies. The conceptual model identified in this research can serve as a starting point for new initiatives as well as being an assessment tool for those with existing policies and practices.

Due to the changing business environment and the multidimensional and dynamic nature of safety culture, continuous research should be conducted on safety culture to provide the cutting-edge knowledge and practical approaches in the future.

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## APPENDIX:

### Appendix 1 - Research Timetable

<b>Project Plan</b>	<b>Progression Milestone</b>	<b>Target Completion Date</b>	<b>Status</b>
Define the research topic and agree with my main supervisor		28 JAN, 2015	Completed
Define the research objectives and questions with my main supervisor		05 FEB, 2015	Completed
Design the survey questionnaire, interview questions, research methods and review with my main supervisor		27 FEB, 2015	Completed
Conduct the skills audit		28 FEB, 2015	Completed
Complete the research proposal	Submit the research plan	28 FEB, 2015	Completed
Communicate with the organization to solicit their feedback on my research plan		02 MAR, 2015	Completed
Improve my research plan as needed	Research plan completed	05 MAR, 2015	Completed
Project design		05 MAR, 2015	Completed
Pilot study	Start implementation	15 MAR, 2015	Completed
Start to implement the project and collect data		21 MARCH, 2015	Completed
Writing the literature review		30 MAY, 2015	Completed
Complete the data collection	Data collected	15 JUNE, 2015	Completed
Writing the method		25 JULY, 2015	Completed
Presenting and analysing data	Data analysis complete	15 NOV, 2015	Completed
Writing recommendations and conclusion	Complete Writing up	15 DEC, 2015	Completed
Proofreading		30 DEC, 2015	Completed
Submitting the research paper		04 JAN, 2016	Completed

## Appendix 2 - Safety culture survey questionnaires and interview questions

### INTRODUCTIONS

Thank you for taking time to complete this survey. This survey aims to explore management and employee's understanding, perceptions and insights of safety and safety culture and will help me investigate best practices for establishing safety cultures in international companies. Results of the survey will be used for my own research work at the University of Huddersfield. Your answers will be treated completely anonymously and all survey results will be kept confidential. This survey should take about 10 minutes to complete. Please review and select (✓) the answers that best describe your own opinions. Please complete the questionnaire and return it to Sandy Lu through my personnel email: (deleted in this dissertation for confidentiality reason). Your support is highly appreciated!

What is your position? Please choose the most appropriate one below:

Executive                       Safety Manager                       Line Manager                       Employees                       Other: \_\_\_\_\_

How long have you served the company?

1-6 months                       6-12months                       1 – 5 years                       5-10 years                       > 10 years

Please indicate the extent to which you agree or disagree with statements below with regard to your company by putting a tick (✓) in the appropriate box below.

Questions	Strongly disagree	Disagree	Neither agree or Disagree	Agree	Strongly agree
<b>1. Values and beliefs</b>					
All injuries can be prevented					
Safety can has a positive impact on overall business					
I believe that continuous improvement of our safety performance is important for a successful company					
<b>2. Safety management system integration</b>					
Safety is integrated into every aspect of business					

Please indicate the extent to which you agree or disagree with statements below with regard to your company by putting a tick (√) in the appropriate box below.

Questions	Strongly disagree	Disagree	Neither agree or Disagree	Agree	Strongly agree
<b>3. Leadership</b>					
The company has well established safety values					
Leaders routinely emphasize safety as a core company value					
Visible leadership commitment is demonstrated to build a proactive safety culture					
The safety committee meets regularly to discuss goals, performance and progress on initiatives					
Roles and responsibilities are clearly defined for all employees					
All employees are held accountable for safety					
Leaders conduct frequent 'Safety Walks' of the work site					
Safety Culture is of vital importance for the effective implementation of safety management systems					
An open, trusting and blame-free environment exists where employees are able to report unsafe conditions/behaviours, near misses or incidents					
All incidents are thoroughly investigated					
Incident learning are shared with all affected employees					
Management recognize safe behaviour of employees					
Safety inspections are undertaken at planned intervals					
Comprehensive safety training is conducted at all levels of the organization					
Effective two way communication is conducted on a daily basis					
Management recognize employees who contribute to safety performance					

Please indicate the extent to which you agree or disagree with statements below with regard to your company by putting a tick (√) in the appropriate box below.

Questions	Strongly disagree	Disagree	Neither agree or Disagree	Agree	Strongly agree
<b>4. Programs and Tools</b>					
Simplified safety policies and procedures are in place					
An effective risk assessment process is in place					
A Management of Change process is in place for the introduction of any new processes/equipment					
Safety performance objectives and goals are established for all employees.					
Bonuses, merit increases, and or promotions for employees are affected by their safety performance					
Programmes are in place to encourage employees to suggest safety improvement opportunities					
A Behaviour Safety Observation Program is in place to modify employees' safety behaviour					
Leading indicators (e.g.: inspections, training hours, etc.) are adopted besides the lagging indicators (e.g.: injury rate)					
Robust safety audit processes tailored to organizational needs are in place					
A Best Practice Sharing Program is in place to review, identify and adopt Best Practices					
The incentive programs are in place to motivate employees for safety					
The company benchmarks other locations within the corporation for safety performances					

Please indicate the extent to which you agree or disagree with statements below with regard to your company by putting a tick (√) in the appropriate box below.

Questions	Strongly disagree	Disagree	Neither agree or Disagree	Agree	Strongly agree
<b>5. Employee participation</b>					
Safety is about me, for me and safety starts with me					
I can make a positive impact to safety in my company					
I am clear on the safety goals, expectations and performance in this company					
I am clear on what my responsibilities are for safety					
I understand safety hazards and control measures associated with my job					
Safety procedures and rules are always followed here					
Employees are involved in the Job Safety Analysis (JSA)					
I am involved in the review of the safe work instructions					
The major cause of injuries in this company is unsafe behaviours					
I am taking care of my own and other peoples' safety during my work					
I will tell others if they have inadequate safety control measures and are putting anyone's safety at risk					
I am empowered to stop any work activities that I think have safety risk					
Off-the-job safety is a part of my company's safety program					

5. What do you think are the TOP FOUR benefits from effective safety management in your company? (Please put ticks (√) in the appropriate boxes below).

- Legal compliance
- Reduce costs
- Improve safety performance (reduce risks, prevent and reduce incident, etc.)
- Increase efficiency and productivity
- Improve employee morale
- Build a proactive safety culture
- Ensure business continuity
- Others, please specify \_\_\_\_\_

6. In your opinion, what are the TOP FOUR essential characteristics for excellent safety culture? (Please put ticks (√) in the appropriate boxes below).

- Shared values of safety
- Visible leadership commitment
- Safety is integrated into business
- Acceptance of personal accountability and responsibility for safety
- Active employee involvement
- A blame-free environment /climate
- Effective two way communication
- Learning and Continuous Improvement
- Others, please specify:

7. In your opinion, what are TOP THREE challenges for building a proactive safety culture? (Please put ticks (√) in the appropriate boxes below).

- Develop robust leadership tools to keep the focus high communication
- Assessing safety culture
- Programs and tool for continuously improving the safety culture
- How to better involving employees
- Safety training/ communication
- sustaining the safety culture
- Inconsistent
- Others, please specify:

8. Do you have any other sharing around the safety culture topic? (Please describe below)

## **Interview questions to managers:**

### **Structured questions:**

1. What's your view of safety culture? Or what do you think the key elements of an excellent safety culture? Why?
2. How safety is integrated into the company core values and processes?
3. Do your company use a safety cultural maturity model? How does this model work? Is this process effective?
4. What's the current stage of the maturity level in your company in your most recent assessment, when was the assessment conducted?
5. Have you established and implemented the improvement actions as the result of the safety cultural survey? What are the key areas of improvement? Do you have any successful stories want to share with me?
6. In your view, what are challenges for building the safety culture? How do you try to overcome them?
7. Are there effective two-way communication channels about safety?
8. From your experience, how do you encourage the employee participation? What programs/ tools you have used? Could you please give me some examples?
9. Do you plan to or have introduced the Behaviour Safety Program as an intervention for safety cultural improvement? What works well and what did not work well?
10. How do you measure the safety performance? What safety performance indicators do you use to measure the safety performance? Follow up question: do you use the leading indicators? What are they?
11. Does your company learn from safety issues such as incident and Near Miss? Do employees feel confident in reporting incidents or unsafe conditions?
12. Does your company have a best practice sharing program? How does it work?
13. Have your company developed and leveraged external partnerships and networks (e.g.: regulators, other companies to maximize the achievement of safety goals?
14. Could you please introduce me to how the local regulators support the safety continuous improvement process in your company?

**Unstructured questions will be asked based on the survey results.**



## **Interview questions to employees:**

### Structure questions

1. What are your roles and responsibilities of safety in your department?
2. What's the safety hazards associated with your job? What safety control measures you should take to protect your safety?
3. How often do you make safety suggestions to your supervisor? Have you got the feedback?
4. What safety training have you received in the past 12 months? Do you think the safety training you received meet your needs? Why or why not?
5. Do you participate in inspections for potential safety hazards?
6. What would you do in case of an emergency?
7. Can you give me some examples on how you are involved in safety management? (give them some hint if they have some question)
8. Can you give me an example of successful story about safety improvement you lead or participated? What actions you took and what are the results achieved?
9. What suggestions do you have for improving the safety in your company?

Unstructured questions will be asked based on the survey results.

### Appendix 3 - SPSS Chi-square test results by job positions



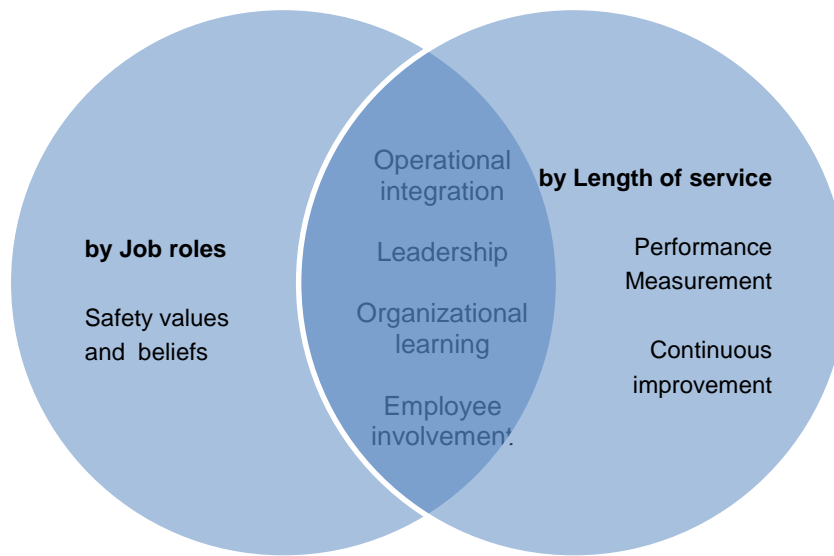
attachment  
3\_Chi-square test

### Appendix 4 - SPSS Chi-square test results by length of services



attachment  
4\_Chi-square test

### Appendix 5 - Results related to particular themes of the conceptual framework:



### Appendix 6– Research activities

Activities	Who	Related Themes of Conceptual Framework							
		Values and beliefs	Operational Integration	Leadership	Operational Learning	Effective Two-way communication	Employee involvement	Proactive performance measurement	Continuous Improvement
Compliance induction	Compliance colleague	X		X		X	X		
Headquarters Tour	Compliance colleague	X		X		X	X		
Induction by Compliance team	(Sr. Director, Compliance Managers)	X	X	X		X	X	X	X
2015 CDM Regulation Cascade	Key business functions, Compliance	X	X	X	X	X	X	X	X
Evening Social Event	All Compliance Colleagues	X		X		X	X		
2015 SPARK Cascade	CCO and all Compliance Colleagues	X	X	X	X	X	X	X	X
Community Event	All Compliance Team	X		X		X	X		
HSE Project Update	All HSE Team	X		X	X	X	X	X	X
CE (Centre of Excellence)Tour	Compliance Manager, CE Manager	X		X	X	X	X		X

Store B follow up visit	Compliance colleague	X		X	X	X	X		X
Site Visit (DC C)	Compliance Manager, local management in DC C	X		X	X	X	X	X	X
Site Visit (DC A)	Compliance Manager, local management in DC A	X		X	X	X	X	X	X
Compliance Continuous Improvement Audit in store A	Continuous improvement coach, local management	X		X	X	X	X	X	X

## Appendix 7 Five Pillars of Compliance Program:

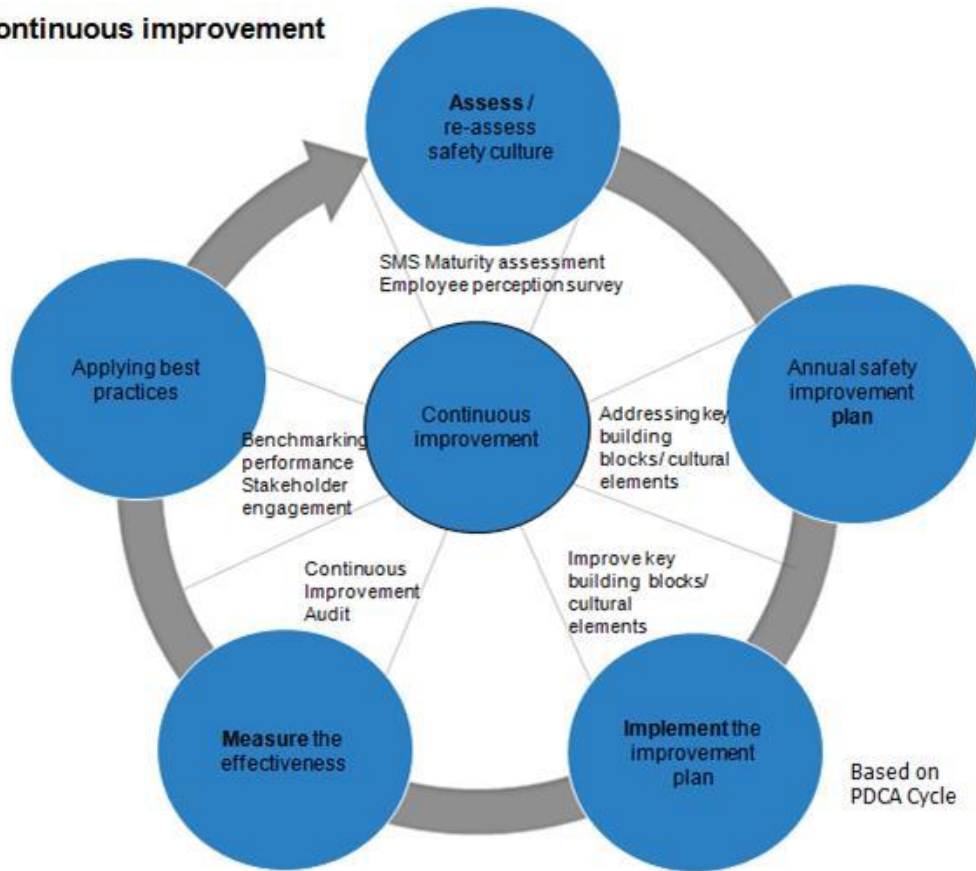
Consistency	Risk based approach	Sustainability	Efficiency	Effectiveness
<ul style="list-style-type: none"> <li>•Consistency across markets, avoids isolated initiatives.</li> <li>•Collaboration</li> </ul>	<ul style="list-style-type: none"> <li>•Utilize resources efficiently and effectively through a risk based approach.</li> </ul>	<ul style="list-style-type: none"> <li>•Three Year plan</li> <li>•Annual improvement plan</li> <li>•Embed program in company culture</li> <li>•Do the right thing on a daily basis instead of creating project.</li> </ul>	<ul style="list-style-type: none"> <li>•Company's DNA.</li> <li>•Getting things done the right way the first time, e.g.: design safety review.</li> </ul>	<ul style="list-style-type: none"> <li>•Exercise due diligence to detect and prevent compliance failures and promote a culture that encourages ethical conduct.</li> </ul>

## Appendix 8 Invest in Compliance

People	Process	Technology
<ul style="list-style-type: none"> <li>•CCO(Chief Compliance Officer)</li> <li>•SML</li> <li>•SME (Subject Matter Expert)</li> <li>•Talent Development</li> <li>•CIT (Continuous Improvement Team)</li> <li>•Line management</li> <li>•Develop business partners and external stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>•Risk Assessment</li> <li>•Walk through</li> <li>•GFSI</li> <li>•Fire watch</li> <li>•Effectiveness</li> <li>•Escalation process</li> <li>•Management System Maturity Assessment</li> </ul>	<ul style="list-style-type: none"> <li>•GLM</li> <li>•SPARK</li> <li>•ARCHER</li> <li>•Learning Portal</li> <li>•Ipad application</li> <li>•Online communication channel</li> </ul>

## Appendix 9 Continuous improvement

### Continuous improvement



Appendix 10 Behaviour Safety Observation Form

**Behaviour Safety Observation Form**

<b>Your Name:</b>		<b>Date:</b>
<b>Location:</b>		<b>Time:</b>
<b>Colleague Name:</b>		
<b>Safety Category:</b>		
<input type="checkbox"/> Manual Handling	<input type="checkbox"/> Slips, Trips & Falls	<input type="checkbox"/> Manual Handling Equipment
<input type="checkbox"/> Adherence to Process	<input type="checkbox"/> Defective Equipment	<input type="checkbox"/> PPE
<b>Risk</b> (Please tick in the space provided below)		
<b>No Action Needed</b>	<b>Minor Action Needed</b>	<b>Major Action Needed</b>
<input type="checkbox"/> Positive Recognition	<input type="checkbox"/> Colleague to Agree Actions	<input type="checkbox"/> Stop Action Immediately
<b>Actions agreed with colleague:</b>		
Your name:		
Colleague's signature:		