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Exploring perceptions of accountability in the mining
industry: A critical component in safety management

By

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in partial fulfilment of the requirement of the degree of Master of Business
Administration

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DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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CHAPTER 2: LITERATURE REVIEW

2.1 Definition of Accountability

Accountability is of “strategic importance” for organizations as without it, coordinated activities could be difficult and individuals would act without regard for consequences (Hall, Frink, & Buckley, 2017; Romzek, 2015, p. 27). It is a “foundational social force” (p.63) for regulating individual behavior (Brees & Martinko, 2015). Accountability has been described as an elusive, expansive and contextually bound phenomenon (Bovens, 2010; Mansouri & Roney, 2014; McKernan, 2012; Willems & Van Dooren, 2011). Accountability takes on a unique form depending on the context or environment in which it originates (Cordery, Baskerville, & Porter, 2010). The multi-faceted features of the concept often makes implementation and measurement challenging and it is “more readily identified when it is absent than when it is present” (Cordery et al., 2010; Mansouri & Roney, 2014).

Despite the popularity of the term within organizations, there is still no consensus on an exact definition (Mansouri & Roney, 2014; Romzek, 2015). Literature contains multiple views and definitions, thus emphasizing the complexity of the construct. Some refer to accountability as a virtue, encompassing values such as transparency, equity, efficiency, responsiveness, responsibility and integrity (Bovens, 2010; Mansouri & Roney, 2014). Conceptually, accountability consists of a “wide array of phenomena” inclusive of attitudes and behaviours enacted throughout the hierarchy of an organisation (Royle, 2017, p. 20; Busuioc & Lodge, 2017).

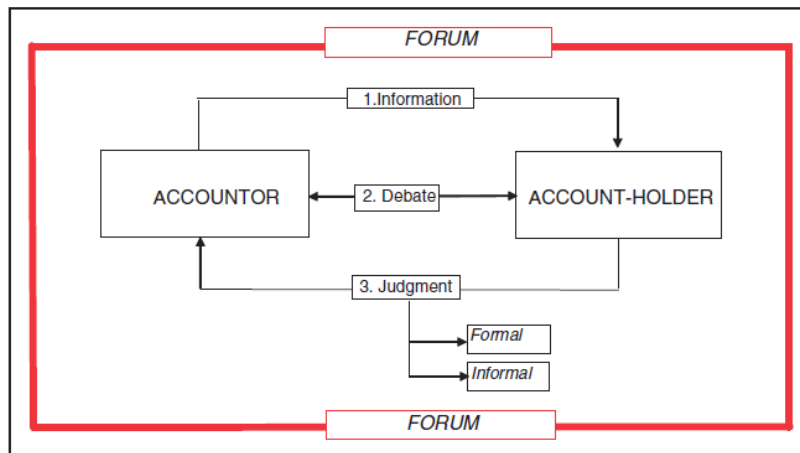
The term is often associated with responsibility, as there are close resemblances between the two concepts. It has been suggested that accountability is dimension of responsibility (Bovens, 2010; McKernan, 2012). Accountability is seen as a form of passive responsibility, looking backwards to seek answers to the question “Why did you do it?” (McKernan, 2012, p. 260) While, responsibility is concerned with the future, seeking to answer “what is to be done?” (McKernan, 2012, p. 260).

Alternatively, it is viewed to be relational construct or social mechanism, based on an interdependent relationship between an account-holder and an account-giver (Busuioc & Lodge, 2017; Hall & Ferris, 2011).

Accountability as a mechanism is defined as the “perceived expectation that one’s decisions or actions will be evaluated by a salient audience and that rewards or sanctions are believed to be contingent on this expected evaluation” (Hall & Ferris, 2011, p. 134). Figure 1 is a graphical representation of the definition of accountability.

Furthermore, the concept of accountability has to do with the management of expectations between account-holders and account-givers. Conflicts arise when expectations differ and when there is no alignment between “what matters” and “what is prioritised” (Busuioc & Lodge, 2017, p. 99). The differences in expectations can be attributed to the variation in the account-holder and account-giver investment in the accountability relationship (Busuioc & Lodge, 2017). Accountability as a mechanism will form the basis of the research.

Figure 1: Visual Definition of Accountability (Willems & Van Dooren, 2011, p. 509)



2.2 Theory of Accountability

Notable works have attempted to explain accountability however no overarching model has been formulated (Hall et al., 2017; Mansouri & Rowney, 2014). Initial definitions were deeply rooted in accounting principles and were linked to “checks and balances”, with the concept regarded as a method to control behaviour by being answerable to an external audience (Dubnick, 2003; Frink & Klimoski, 2004). Agency theory has dominated the perspective of mainstream management forms the basis of accountability theory (Mansouri & Rowney, 2014; Mero, Guidice, & Werner, 2014). The theory postulates that accountability is based on a contractual relationship between the principal and an agent (Eisenhardt, 1989; Mero, et al., 2014; Mansouri & Rowney, 2014). Accountability is a contextually bound concept consisting of a “wide array of phenomena”

including the attitudes; behaviors and subjective interpretations of individuals (Royle, 2017, p. 20; Busuioc & Lodge, 2017). It therefore cannot be limited to the principal-agent model of agency theory as the “individual, subjective and internal nature of accountability” needs to be taken into consideration (Hall & Ferris, 2011, p. 132). Hall, et al. (2017) reviewed the extant theoretical and empirical research of accountability and found seven key concepts emerging from the various theoretical frameworks. These seven concepts are summarized in Table 1

Table 1: Emerging concepts from accountability frameworks (Hall et al, 2017)

Individual agents of their own actions	Accountability is viewed as an essential component in maintaining social order. Systems and structures of social order operate because of individuals’ capacity to hold themselves accountable for their own decisions and actions.
Accountability operates in the perceptual domain	Irrespective of any formal accountabilities, accountability is a function of the individual’s state of mind or perceived accountability. Therefore, given the same demands for answerability, individuals will perceive and react to the situation differently.
Accountability influences cognitive processing	Accountability does not only impact what individual thinks about but also how they think. This will differ according to different perceptions.
People are driven to build and maintain a public and private self-image	An individual’s desire to portray a particular image will influence the coping processes adopted to deal with any accountability demands. Attribution error, a social construct from attribution theory, is an example of an accountability coping effort.
Perception are a product of context and relationship	Individuals will perceive accountability in a situation based on the context and the relevant relationships.
Accountability influences human social behavior.	Accountability is considered ubiquitous, can be anticipated by individuals and is directly connected to the individual’s self-image. Therefore, it is considered the single most pervasive influence on human social behaviour.
Individuals have powerful motivations to cope, manipulate or avoid accountabilities.	Individuals will use stereotyping and the most easily defensible options when an account has to be given to an audience whose preferences are known. In cases where an individual is held accountable after their decisions they are likely to use justifications to rationalise behaviour.

2.3 Felt accountability

As discussed by Hall et al. (2017) , accountability occurs in the perceptual domain. Perceived accountability, or felt-accountability, is an individual's subjective interpretation of the accountability environment (Laird, Harvey, & Lancaster, 2015). Reality is not the defining factor in driving individual's behaviour, but rather the subjective interpretation of accountability features in the environment that make individual's feel accountable and influence their behavioral responses (Royle, 2017). Therefore, individuals may perceive accountability differently which leads to inconsistency in results given the same accountability demands (Wikhamn & Hall, 2014). Perceptions of accountability are influenced by environmental aspects (job designs, formal policies and practices) and intra-personal characteristics. Brees & Martinko (2015) suggest that individuals vary in their accountability acceptance, influence by intrapersonal and environmental factors.

In other words, just because organisations have formal accountability systems in place, it does not automatically evoke feelings of remorse or answerability from individuals who do not comply (Royle, 2017). Formal accountability relationships can be limited as the perceived significance of the accountability relationship, from both the account-holder and the account-giver, are not considered. Therefore, formal accountability relationships are often not indicative of the actual dynamics at play (Busuioc & Lodge, 2017). Royle (2017) argued that felt accountability can function as a "challenge stressor" (p.36), promote job satisfaction and positively influence job performance.

Empirical studies have shown that the variations in interest and investment can be attributed to reputational considerations acting as a filtering mechanism for external demands. In other words, reputational concerns are central to account-giving and a critical consideration when attempting to understand individual behaviour (Busuioc & Lodge, 2017).

2.4 Informal and Formal Mechanisms

Although accountability is often associated with virtuous behaviour, it has been found that personal ethics is not entirely sufficient in ensuring accountability within organisations. External constraints and controls, or accountability mechanisms, are often required (Dubnick, 2003). Organizations response to the need for accountability often include the introduction of formalised mechanisms such as formal reporting, processes and procedures (Frink & Klimoski, 2004). Formal accountability relationships can be

limited as the perceived significance of the accountability relationship, from both the account-holder and the account-giver, are not considered. Therefore, formal accountability relationships are often not indicative of the actual dynamics at play (Busuioc & Lodge, 2017). Since the focus is often predominately on formalized systems, often little regard is given to informal sources (McCall & Pruchnicki, 2017).

Informal accountability is defined as an array of interpersonal interactions as a means for an individual to “demonstrate their sense of obligation to others” to facilitate collaboration with others (Piatek, Romzek, LeRoux, & Johnston, 2018, p. 153). Informal accountability involves “expectations and discretionary behaviours” such as shared norms such as trust and reciprocity, which sometimes operate outside of formal accountability mechanisms (Piatek et al., 2018, p.153). Alternatively, informal accountability mechanisms such as values, culture and interpersonal relationships are used to drive accountability within the organization (Frink & Klimoski, 2004; Romzek et al., 2012). The use of both informal and formal accountabilities establishes a “web of accountabilities” (Frink & Klimoski, 2004, p. 3). The combination of formal and informal mechanisms is influential in promoting collaborative efforts amongst groups (Piatek et al., 2018).

2.5 Sources of Accountability

The definition and theory of accountability presented highlight that an individual’s perceived accountability influences behavior. However, an individual’s perception of accountability can be affected by certain elements of the work environment (Hall et al., 2007). One of these elements is the accountability source which is defined as the source to whom an individual feels accountable (Hall et al., 2017). McCall & Pruchnicki (2017) state there are “fluid boundaries created by the different accountability relationships” (p 149). Managers and employees have to move between these different relationships daily and negotiate how to best meet their individual needs, the needs of various team and the organisation (McCall & Pruchnicki, 2017).

Understanding these different accountability relationships are important as conflicts between them could either result in safe operations or be the cause of the next accident (McCall & Pruchnicki, 2017). Creating a safety culture with shared accountability requires a deeper understanding of how work is conducted within the boundaries of these relationships and how accountability sources are prioritised (McCall & Pruchnicki, 2017). In a review of the theoretical and empirical research on felt accountability to date, Hall et

al. (2017) highlight the need to investigate the degree to which employees prioritize different accountability sources (Hall et al. 2017). Hall et al (2007) suggest that individual's feelings of accountability might differ depending on the source.

Furthermore, the "protection of one's reputation" has been suggested to be a powerful influencing factor (Busuioc & Lodge, 2017, p. 94). Individuals tend to place priority on areas where their reputation will be enhanced (Busuioc & Lodge, 2017). Contrastingly, in areas where survival is not at stake, there is considerably less interest in accounting and therefore minimal information is often provided. In organizations where there is an "endless plethora of accountability responsibilities", (Busuioc & Lodge, 2017, p. 92), reputational concerns provide an explanation as why account-givers would prioritise account-holders differently. The review of literature predominately makes mention of four main accountability sources: peers, managers or supervisors, systems and the individual being accountable to themselves.

2.5.1 Accountability to managers

Hierarchical accountability is common in high risk industries where relationships are based on supervisors holding power over an employee, due to their position or rank (McCall & Pruchnicki, 2017). It exists when there is a contractual agreement existing between a superior and a subordinate, whereby the subordinates are expected to deliver on their accepted responsibilities and provide an account for their performance (Cordery, et al., 2010). Hierarchical accountability is concerned with ensuring the expectations of the superior is met and is a form of control over the subordinates; limiting their power (Cordery et al., 2010). (Cordery et al., 2010).

Managers are considered to have a high degree of influence in the system of accountability, as individuals are expected to give an account to a higher authority (Joannides, 2012; Mero et al, 2014). Accountability for specific outcomes are a result of managers monitoring employee's behaviour and communicating the desired outcome (Mero et al., 2014). Often, an increased demand for accountability gets translated into a need for added managerial controls (Messner, 2009). Control can be directed by issuing clear orders or having formalized laws and regulations in place (Mansouri & Rowney, 2014). Employee's roles and responsibilities are defined within these hierarchical types of relationships through rules, policies and procedures. This approach is used to try standardizing processes and to achieve efficiency (McCall & Pruchnicki, 2017).

In such industries, it is common to find managers trying to exercise control by expressing the desire to “hold someone accountable” for errors (McCall & Pruchnicki, 2017, p1). However, accountability extends beyond control, it involves a “sense of individual responsibility, professional and personal accountability” (Mansouri & Rowney, 2014, p 50). Mansouri & Rowney (2014) suggest that hierarchical accountability and the exercise of too much control can damage professional accountability and restrict the advancement of safety in the workplace (McCall & Pruchnicki, 2017).

Empirical evidence suggests that people in powerful positions, required to make difficult decisions with far-reaching consequences, may often discard the advice of others (De Wit, Scheepers, Ellemers, Sassenberg, & Scholl, 2017). Therefore, making these perceptions susceptible to suboptimal decision making. It has been found that persons in a position of power are more likely to take advice if they perceive their power in terms of responsibilities (De Wit, et al., 2017).

Accountability is context driven and in unsafe conditions it might require a shift from the standard hierarchy (McCall & Pruchnicki, 2017) Employees might be required to take instructions and be accountable to more knowledgeable personnel (McCall & Pruchnicki, 2017). It has been suggested that in high consequence industries, a shift in focus to shared accountability may be required, where employees are empowered to play an active role in risk mitigation (McCall & Pruchnicki, 2017).

This approach would require employees to be self-accountable and accountable to their peers. An empirical study by Pearson & Sutherland (2017) suggests that managers might not be as influential in driving accountability as some researchers might suggest. A manager’s influence in driving accountability could be restricted to the implementation of systems and culture within organization. The impact of managers as a factor was not ranked highly, therefore bringing into question their priority as an identified accountability source (Pearson & Sutherland, 2017).

Although studies have emphasized the role of accountability to top management, Hall et al (2017) recommend further investigation in employee’s answerability to immediate supervisors and managers and other important audiences such as co-workers and customers/clients. Given the effect perceived accountability has on behaviour and performance, consideration must be given to the relationship between the manager and their employee. It is important to establish the whether a manager is considered a source of accountability due to the position they hold or due to the relationship with the individual (Mero et al., 2014).

2.5.2 Accountability to self

It has been generally accepted that self-accountability is a prerequisite for organizations to operate effectively (Hall and Ferris, 2011). However, generalizations are limited, as few studies considering context exist. Individuals may feel accountable based on the motivation to do their jobs well. However, no empirical evidence has been gathered to try and explain the extent to which motivation related constructs have on the level to which an individual feels accountable (Hall and Ferris, 2011, Roch and McNall, 2007).

McKernan (2012) argues that responsibility forms the foundation of self-accountability. People acceptance of responsibility for their actions and outcomes can vary (Brees & Martinko, 2015). Motivating factors such as personal values and professional ethics are said to form the basis of an individual's sense of responsibility (Mansouri and Rowney, 2014; Roch and McNall, 2007). It has been suggested that individuals are self-accountable due to their motivation to achieve and gain intrinsic satisfaction (Mansouri & Rowney, 2014). An individual's sense of accountability theorized to be based on personal values and professional ethics.

Furthermore, it is proposed that intrinsic motivators such as Stewardship Theory can be leveraged to form the base for an effective accountability system. Stewardship theory proposes that individuals are self-accountable due to their motivation to achieve, gain intrinsic satisfaction and being responsible (Mansouri & Rowney, 2014). Based on this, it has been suggested that intrinsic motivators such as trust and transparency could be leveraged to form an effective accountability system, reducing the need for external monitoring and control measures (Mansouri & Rowney, 2014).

Self-accountability is central to managing safety in the mining environment, whereby accountability must be effectively managed to be able to identify and address at risk behavior before an injury occurs (Goulart, 2016). This is done by analyzing leading indicators which requires inputs from all employees on being able to self-report failures or shortcomings (Goulart, 2016). Review of failures requires all responsible parties to be able to give an account of the events and decisions made to prevent similar incidents occurring in future (Goulart, 2016)

Pearson & Sutherland (2017) identified that the role of the individual employee was crucial to drive accountability in the workplace. The individual self is considered a source of accountability since the individual could “choose to hold themselves accountable” (Pearson & Sutherland, 2017, p 429). Without this ability, any supporting mechanism used to drive accountability would be ineffective (Pearson & Sutherland, 2017). Organizations could benefit from focusing on leveraging these individuals’ self-accountability rather than monitoring and control (Mansouri & Roney, 2014).

2.5.3 Accountability to peers

Accountability is not restricted to a hierarchical structure or formalized systems but can occur at a peer-to-peer level, through informal subjective mechanisms such as reciprocal relationships (Royle & Hall, 2012). The perceived pressure to please others and an individual’s desire to advance his or her reputation forms the bases of peer accountability, with individuals often eliciting responses based on the perceived expectation of the account-holder (Busuioc and Lodge, 2017; Roch and McNall, 2007). Royle & Hall (2012) found that an individual’s needs for power, affiliation and achievement not only promoted individual accountability but can facilitate accountability for others and is mediated by the individual’s perceived accountability.

Peer-to-peer accountability is also not without its limitations as research has shown that individuals have the propensity to judge themselves differently to others for the same transgression (Brees & Martinko, 2015). However, it was further found that as the severity of the transgression increased, individuals’ judgements of responsibility and accountability aligned (Brees & Martinko, 2015). Furthermore, in cases where there is no distinct hierarchy; managers must act as “conflict managers” and “conflict resolvers” which poses a challenge in resolving conflict (Piatek et al., , 2018, p. 155).

Individuals can overcome goal conflict and hold another accountable for a goal through informal mechanism such as share norms and facilitative behaviors as their authority is limited (Piatek et al., 2018). Frink & Klimoski (2004) argue individuals are not always accepting of informal accountability systems. It has been found that individuals defended their performance at greater lengths when questioned by superiors than by their peers.

Further research aimed at understanding the reasons an individual might perceive themselves accountable to their peers is warranted (Frink & Klimoski, 2004; Roch & McNall, 2007).

This research would assist managers in understanding the impact of peer accountability and the motivation behind the relationship. Understanding the investment into the relationship could assist managers in promoting peer-to-peer accountability within the organization. This is important as peer accountability is viewed as the predictor of good safety performance (Forck, 2011). Safety professionals have long regarded coaching as a valuable tool to try change or influence at risk behavior (Goulart, 2016). The need for coaching arises when at risk behavior is observed and requires a discussion of current versus expected performance. Coaching is encouraged to take place amongst peers so at-risk behavior can be addressed immediately. (Goulart, 2016). Therefore, peer to peer accountability is essential to drive the required behaviour for safety in the mining industry. However, any steps to reinforce safe behavior and correct at-risk actions by employees needs to be carefully considered (Goulart, 2016). In cases where an individual does not hold the belief they are accountable to their peers, would render such initiative obsolete.

2.5.4 Accountability to system

The mining industry has a legal accountability to ensure all regulations are adhered to. Legal accountability is based on formal specific responsibilities that have punitive measures if not complied with (McCall & Pruchnicki, 2017). Most organizations have some form of formal mechanism in place to drive accountability (Hall & Ferris, 2011). Dynamic high consequence industries such as mining make use of scheduled inspections; audits and standardized operating procedures to promote safety and monitor compliance (McCall & Pruchnicki, 2017). These serve as evidence of legal compliance and used to deter any punitive measures. Accountability systems allows acceptable performance standards to be set and prescribe the reward or penalty associated with compliance to those standards (Patil, et al., 2017).

The use of formalized systems to drive accountability is often favored as it can remove ambiguity. Therefore, making it difficult for individuals to pass blame for failure or accept unwarranted responsibility for success (Laird et al., 2015). However, formalized systems also have the potential of hindering performance as employees could “feel policed, undermined and caught out” (Pearson & Sutherland, 2017, p 428). In the case where the consequences of contraventions are high, the risk for employees to cover their mistakes is high. (Pearson & Sutherland, 2017).

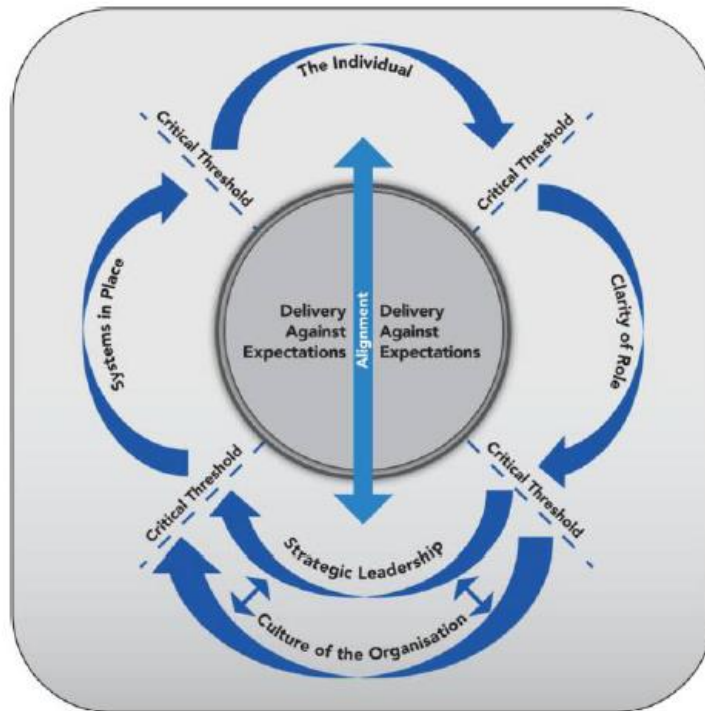
This negatively impacts the safety culture within an organization since all parties are required to give an accurate account of events to prevent similar occurrences in future (Goulart, 2016). An organization's resilience to safety incidents is dependent on creating an environment that promotes reporting and learning from incidents and is free of reprisal. Hall & Ferris (2017) highlight the need to establish the appropriate forms of accountability that organizations should impose to try limit negative consequences.

2.6 Systems of Accountability

Researchers have noted the complexity of accountability as a construct and have identified that interdependent relationships exist between different sources (Mero et al., 2014). However, no overarching or integrated model has been produced to explain these relationships (Hall et al., 2017; Pearson & Sutherland, 2017). The "Systems of Accountability Model" was developed as a means of identifying and understanding the drivers of accountability and the relationship between them (Pearson & Sutherland, 2017). The interdependent relationships within the system of accountability is dependent on the interest, intensity and investment into the relationship from both the account-giver and the account-holder (Busuioac & Lodge, 2017).

The drivers of accountability differed from those previously identified from research. The five primary antecedents identified as drivers of accountability were: systems; culture of an organisation; clarity of role and tasks; strategic leadership and the individual (Pearson & Sutherland, 2017). A key finding highlighted in the model is the notion that each factor has a critical threshold. Each factor is limited in its influence on accountability, after which additional factors need to be introduced (Pearson & Sutherland, 2017).

Figure 2: The "Systems of Accountability" model (Pearson & Sutherland, 2017)



2.7 Negative effects of accountability on behaviour

Accountability does not always yield “universally positive” results as some may perceive it to be a stressor (Hall and Ferris, 2011, p. 132; Laird, et al., 2015; Wikhamn and Hall, 2014). In such cases, employees may display "politically motivated behaviour that may divert employees from work tasks" (Hall and Ferris, 2011, p 132); "increased stereotyping" (Laird et al., 2015, p. 89) and "inaccurate performance evaluations" (Laird et al., 2015, p. 89).

2.8 Limitations of theory

The concept of accountability has been extensively researched, yet empirically based knowledge about perceived accountability is limited. Much of the research was based in laboratory settings (Hall & Ferris, 2011; Hall et al., 2017). The extant literature has primarily adopted a hierarchical approach, focussing on a single moderator or antecedent (Roch and McNall, 2007; Messner, 2009; Hall and Ferris, 2011; Mero et al., 2012). In the accountability literature reviewed, there was limited mention of a systematic view of accountability.

Pearson and Sutherland (2017) recent research presented an integrated systematic model for accountability. The research was based on empirically gathered data but was limited to perceptions of senior managers and executives. Pearson and Sutherland (2017) suggest further exploration is required to understand the perceived accountability sources from the perspective of employees.

2.9 Conclusion

In summary, the literature review found that accountability is widely thought to be a fundamental element in all societies and organisations (Hall, Frink, & Buckley, An accountability account: A review and synthesis of the theoretical and empirical research on felt accountability, 2017). Nonetheless, the understanding on how accountability is perceived at different levels within the organisation is limited. Given the unanswered questions and considering the importance of accountability in all organisations, in particular high-risk mining environments, this study aimed to explore the concept by analysing empirical data collected from different levels within an organisation in the mining industry.

CHAPTER 4: RESEARCH METHODOLOGY AND DESIGN

4.1 Introduction

Chapter 4 outlines the research methodology used to conduct the study. Explanations are provided for the selected research method, design, data gathering and analysis techniques. Furthermore, the chapter addresses potential concerns regarding reliability, validity and limitations of the study.

4.2 Research Methodology and Design

The selection of the research methodology and design was driven by the amount of uncertainty surrounding the situation that motivated the need for the research. The objective of the research was to gain insights into the perceived accountability sources, a subject literature has shown to be a relatively unexplored and lacking empirical evidence. In such cases qualitative research is warranted (Hall et al., 2017).

Exploratory research is generally conducted during the early stages of decision making, when the problem is considered highly ambiguous (Zikmund, Babin, Carr, & Griffin, 2013). The researcher was required to do exploration as the chosen topic is considered to be vague and not clearly understood. Exploratory research is done to discover information about the research topic or management dilemma (Blumberg, Cooper, & Schindler, 2008; Saunders & Lewis, 2012).

The aim of the exploratory study was to provide tentative answers to the researcher's initial questions and to gain a fuller understanding of the topic of accountability (Saunders & Lewis, 2012; Zikmund et al., 2013). The intention was not to provide conclusive evidence but to form ideas, the basis from which additional research could be built on (Zikmund et al., 2013).

Qualitative business research focuses on discovering inner meanings and new insights through techniques that are not dependent on numerical measurement but is dependent on the researcher to extract meaning from unstructured responses (Zikmund et al., 2013). Qualitative research was considered an appropriate tool for the research objective as it was less specific, and the emphasis of the research required a deeper understanding of a phenomena (Zikmund et al., 2013). A mono-method design was used whereby qualitative data was used to answer the research questions.

The selection of a qualitative and exploratory research method was aligned to purpose of the study as it allowed the researcher to explore and discover new insights. The aim of the research did not dictate a need to study changes or developments over time, therefore a longitudinal design is not required. The research time horizon is cross sectional as the period for evaluation is fixed (Saunders & Lewis, 2012).

4.3 Population

Saunders & Lewis (2012) defines the population as the full set of cases from which a sample is taken. The study made use of managers, front line supervisors and blue-collared workers working within the mining industry, with knowledge and expertise in the field of safety management and accountability. The definitions of a manager, supervisor and worker were based on leadership pipeline as described by Drotter (2010), a framework assisting in categorising organisational levels. Managers were defined as individuals who “manage managers” (Drotter, 2010, p12), who are required to first hold first-line managers accountable for their work. Supervisors refers to first-level management or persons who “manage others” (Drotter, 2010, p12). Supervisors (first-level management) are responsible to assign tasks to their direct reports, the workers. Finally, blue-collared workers are individuals, who get results through their own efforts by “managing self” (Drotter, 2010, p12). Furthermore, blue-collared workers refer to a skilled working-class person performing manual work. Blue-collar workers were selected as they operate in high risk areas requiring strict compliance measures to be adhered to.

4.4 Sampling Method and Size

The sample was selected from a single organisation to mitigate the effect of extraneous variables on the perceptions of the participants. The chosen organisation was a large coal mining operation, employing 1200 employees and considered to be a high-risk environment, requiring accountability as a means of managing safety in the organisation.

Non-probability sampling techniques were used, as it was not possible to identify the entire sampling frame for the population (Saunders & Lewis, 2012). Participants were selected by means of a two-layered, non-probability sampling technique, which included judgemental and quota sampling (Zikmund, Babin, Carr, & Griffin, 2013; Saunders & Lewis, 2012).

The use of a judgment sampling technique required participants of the sample to represent certain characteristics of the population (Saunders & Lewis, 2012). The

characteristics were defined as individuals working in high-risk areas within the mining industry, with knowledge and expertise in the field of safety management and accountability. Participants were selected based on the prior mentioned definitions of a blue-collar worker, supervisors and managers. Additionally, participants were required to be familiar with the English language, to mitigate the risk of a language barrier in obtaining data. In discovery-orientated qualitative research, it is considered generally acceptable for the source of the qualitative data to originate from a relatively small sample size or a “handful of people” (Zikmund et al.,2013, p.135). Therefore, a selected sample size of 21 participants was deemed appropriated. Additionally, the sample was divided into 3 subsamples, consisting of senior managers; front line supervisors and skilled blue-collar workers. The proposed sample size was benchmarked against a related qualitative study and therefore found to be suitable (Pearson & Sutherland, 2017). The division into three subsamples allowed for a comparison to be done of the perceptions of individuals at different organizational levels. The profiles of the participants were as follows:

Table 2 : Sample description

Level	Numbers in sample	Job title	Years Experience
Blue-collar workers (Manage self)	10	Condition Monitor	27
		Surveyor	13
		Shovels artisan	12
		Subassembly controller	16
		Diesel mechanic	22
		Diesel mechanic	9
		Blasting operator	11
		Dragline trainee operator	10
		PC Fleet operator	2
		Cable Reeler operator	11
Supervisors (Manage others)	5	Dispatch data analyst	5
		Rehabilitation officer	14
		LDV foreman	13
		Dragline electrical foreman	16
		Reticulation foreman	8
Managers (Manage Managers)	6	Dragline section manager	10
		Geology section manager	26
		Dragline section engineer	8
		Coaling section manager	15
		Plant engineer	34
		Project engineer	29

4.5 Unit of Analysis

The objective of the research was to gain an understanding of individual's perceived sources of accountability at different levels of an organisation, and to identify the mechanisms used to influence accountability. Therefore, the individual perceptions and opinions formed the unit of analysis for the study, as it related specifically to the purpose of the research.

4.6 Measurement Instrument

The aim of an exploratory study is to obtain insightful information from sources and relies predominately on qualitative research techniques such as interviews (Blumberg et al., 2008). Saunders and Lewis (2012) recommends searching for available literature and conducting in-depth interviews when doing exploratory research.

Data collection was done via semi-structured, in-depth interviews on the chosen sample of participants. Semi-structured interviews were used to collect data, as it allowed the researcher to address predetermined themes through selected open-ended questions (Zikmund et al., 2013). The information gathered from the literature review was used to draft standardized interview questions that formed a guideline for the researcher.

The interviews were completed face to face with the participant. The interview comprised of open-ended questions to ensure the respondents were given the opportunity to freely explore the topic. The use of semi-structured interviews made provision for follow up probing questions to be asked (Zikmund et al., 2013).

Table 3: Research and interview question mapping

Research Questions	Interview Questions
Research Question 1 What is understood by the term accountability and how does it influence an individual's behaviour?	1. What do you understand by the term accountability? 2. How does being accountable influence your behaviour?
Research Question 2 What are considered the major accountability sources at different levels within the organisation?	3. Who or what source would you attribute to driving accountability? 4. Why do you view yourself accountable to each of these sources?

<p>Research Question 3</p> <p>How are accountability sources prioritised and the reasons therefore?</p>	<p>5. From the sources you previously identified, which one has the most influence in driving accountability?</p> <p>6. If you had were given 100 points to allocate to the each of the identified source, how would you allocate the points to establish importance?</p> <p>7. What reasons can you give as to why sources are prioritised differently?</p>
<p>Research Question 4</p> <p>Which mechanisms are considered effective in driving accountability?</p>	<p>8. What mechanisms are used by these sources to drive accountability in the organisation?</p> <p>9. How effective would you say these mechanisms are?</p>

4.7 Data Collection

Data was gathered by means of semi-structured, open-ended, in-depth interviews of the chosen sample to 21 participants within the mining industry. Prior to commencing with data gathering, two pilot pre-interviews were conducted to test the researcher’s interviewing techniques and the interview process. Saunders and Lewis (2012) highlight the benefits of conducting pilot interviews as it assists in obtaining quality data during the data gathering process. A pilot investigation of two pre-interviews were conducted to test the interview guideline and the interview technique of the interviewer.

Feedback from the pilot investigation led to a change in the interviewer’s technique, as the feedback revealed that some explanation would be required on the term “accountability source” . Furthermore, the blue-collar worker pilot interview emphasised the requirement that the individual should be familiar with the English spoken language to ensure the correct understanding and interpretation was achieved.

The interviewer identified potential candidates to be interviewed based on the defined sample characteristics. The candidates were contacted telephonically to secure an interview and were provided with background to the study. A formal invite after the telephonic conversation electronic mail after the telephonic conversation.

A sample of the invite has been provided in Appendix B. Data was gathered in an ethical manner by ensuring that no interviews were conducted without prior written consent from the participant. An example of the consent form has been provided in Appendix C. Once consent was granted, the interviewer confirmed a suitable location and time to conduct a face to face interview with the participant. Data was captured by recording the interview as well as taking handwritten notes. Recording only took place once permission had been granted by participant. Detailed transcriptions of the recordings formed the data that was used when conducting analysis.

4.8 Data Analysis Approach

Thematic analysis was used to evaluate the gathered data as it is a commonly used data analysis method in qualitative studies (Guest, MacQueen, & Namey, 2012). The aim of thematic analysis was to identify and analyse common themes emerging from the gathered data (Gibson & Brown, 2009). Gibson and Brown (2009) state the general aim of thematic analysis is to examine the data for commonalities, differences and relationships. During data collection, notes were made as an attempt to do partial analysis during collection. Most of the analysis occurred post the data gathering process, by means of analysing each question systematically (Braun & Clarke, 2006; Saunders & Lewis, 2012; Zikmund et al., 2013). An attempt was made to identify any new emerging themes. Each interview took approximately 2.5 hours, to analyse by reviewing the recordings; transcriptions and field notes. The phases of thematic analysis process specified by Braun & Clarke (2006) are described below.

Phase 1: Familiarisation of data

Familiarisation was the entry point into analysis and provided the opportunity for the researcher to become deeply engaged with the dataset. The collected data was transcribed and afterwards be read several times. The objective was to actively read the data and make observational notes. The noted observations were used to generate provisional ideas early in the analysis process (Terry, Hayfield, Clarke, & Braun, 2017).

Phase 2: Coding of data

Coding of the data involved identifying relevant features within the data and assigning a “tag” or code to these segments of interest. Computing software (ATLAS Ti) was used to capture the codes. Meaningful observations related to the research questions were captured.

Terry et al. (2017) describe it as “the systematic and thorough creation of meaningful labels”. The coding was an iterative process, the researcher listened and read through the recordings several times. The objective of this phase was to assist in providing structure to the data that would form the foundation for the analysis (Terry et al., 2017).

Phase 3: Theme development

Theme development is the active process of forming and identifying patterns of the ideas that appear repetitively in the data. Constructs were captured by means of coding and the number of times they were repeated were captured to generate a frequency count, to allow the constructs to be ranked. The codes generated in Phase 2 were examined and collated into more meaningful patterns. The research questions were used as a reference to keep the identification of patterns and analysis relevant (Terry et al., 2017).

Phase 4 and 5: Reviewing and defining themes

Themes were further reviewed and defined as a means of quality control, to ensure alignment between the coded extracts, the dataset, the themes and the research questions. The reviewing phase involved clearly defining the boundaries of each theme. It was an ongoing process of refining of themes to deliver a distinctive and meaningful narrative related to the research questions. The objective was to produce a “thematic map” of the analysis (Terry, et al., 2017).

Phase 6: Producing the report

In the production of the report, the researcher synthesized the insights from the data analysis and link it to the scholarly literature. The objective was to produce a singular output that related the analysis back to the research questions. The researcher selected persuasive quoted data extracts in an illustrative and analytic manner to highlight the key elements of the findings (Terry et al., 2017).

4.9 Data Validity and Reliability

In qualitative studies, reliability and validity are two key criteria used for evaluating measurement to ensure the data gathered is both reliable and accurate (Saunders & Lewis, 2012; Zikmund et al., 2013). Reliability is an indicator of the measurement tool’s internal consistency or the homogeneity. Whereas, validity is concerned with the accuracy of the measure to truthfully representing a concept (Zikmund et al., 2013)

Due to the subjective nature of qualitative research, the reliability of the data gathered could have been affected by several biases, such as interviewer bias; interpreter bias and response bias (Saunders & Lewis, 2012; Zikmund et al., 2013). During the data collection stage, the interviewer was responsible for controlling the process (Blumberg et al., 2008). Any preconceptions held by the interviewer could have negatively affected the reliability of the data collected (Saunders & Lewis, 2012). This is commonly referred to as interview error which is a source of response bias (Blumberg et al., 2008).

The chosen method of data, thematic analysis, extends beyond counting common words or phrases, requiring extensive involvement of the researcher to generate codes and themes. Due to the significant role of the researcher in the data analysis process, reliability was a concern due to the potential for interpreter bias (Guest et al., 2012). There was risk of selectively choosing data to suit a predetermined argument that might not have been representative of the best explanation of the data (Terry et al., 2017).

The risk of reliability was mitigated by ensuring consistency during the interview process by means of a standardised questionnaire (Saunders & Lewis, 2012). The standardised questions provided the interviewer with a guideline to assist the researcher in controlling the interview process. Validity was addressed by the researcher being aware that bias's may exist, the researcher made attempts to be as objective as possible when interpreting the responses from the interviews.

4.10 Research Limitations

The limitation of the study was that a single organisation in the South African mining industry was selected to represent the population. As such, the results of the study may not necessarily be generalised to other populations with any degree of confidence. Generalisation, would require the findings on the differences in perceptions at different organisational levels to be investigated in other industries (Zikmund et al., 2013). Furthermore, due to the mining industry in South Africa being predominately male-dominated, the demographic profile of the sample consisted of mostly men, with a sample of 20 males and 1 female. Therefore, it is acknowledged that that due to the demographic make-up of the participants, gender bias may have had an impact on the responses. Qualitative research is subjective in nature and at risk of being influenced by several biases (Saunders & Lewis, 2012; Zikmund et al., 2013). During the data collection phase, personal interviews were conducted by the interviewer, who had the ability to control the process and patterns of discussion (Blumberg et al., 2008).

It is generally expected that the interviewer should have sufficient knowledge and experience of interviewing techniques to ensure that the topic is explored in depth and that participants are able to freely participate without the interviewer influencing the direction of the conversation (Zikmund et al., 2013). However, in the case of this study, the researcher had not had any formal training in interviewing, which could have impacted the quality of the collected data (Blumberg et al., 2008).

In addition, the possibility of response bias may have been present in the responses obtained from the participants, due to the participants desire to portray a perceived expected view (Zikmund et al., 2013). Furthermore, the subjective nature of qualitative research necessitates the interpretation of the data to be at the discretion of the researcher. Therefore, reliability of the interpretation of the data could be subject to several biases (Saunders & Lewis, 2012; Zikmund, Babin, Carr, & Griffin, 2013). It is probable that interviewer bias and response bias may have taken effect during the data collection and analysis phase. Interview bias refers to the bias introduced when the researcher's personal interpretation may differ from that of an independent observer resulting in differences in conclusion.

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APPENDIX A: PARTICIPATION INVITE

Dear XXXXX

As discussed telephonically, I am a MBA student at the Gordon Institute of Business Science. Obtaining my degree requires the completion of the compulsory research component which I am currently busy with. The title of my research is “Perceptions of managers and employees of the sources of accountability”. Your expertise and work experience will provide valuable insights into this area of study. Therefore, it would be greatly appreciated if you could partake in an interview. The interview will be a semi-structure in-depth interview and will last approximately an hour. I plan to conduct the interviews during the months of June. A consent form has been attached for your perusal and will need to be signed prior to the interview commencing. The interview will be treated as confidential and all participants will remain anonymous.

The research questions I aim to answer through this process are as follows:

- *What are the accountability sources identified by managers and employees ?*
- *Why are these entities viewed as accountability sources?*
- *How are these sources prioritised and what the reasons for this?*
- *What mechanisms are utilised to drive accountability?*

Please confirm your agreement to participate and indicate your availability to be interviewed during the months of June.

I look forward to hearing from you.

Kind regards,

Tarryn Brandling

24032728@mygibs.co.za

APPENDIX B: CONSENT FORM

INTERVIEW CONSENT FORM

TITLE

Researcher: Tarryn Brandling, MBA Student at the Gordon Institute of Business Science,
University of Pretoria

Name of Participant: _____

Organisation of Participant: _____

I confirm that I understand what the research is about and that I have had the opportunity to ask questions

1. I understand that my participation is voluntary and that I can withdraw at any time without giving reason
2. I agree to take part in the research
3. I agree to my interview being audio recorded
4. I agree to the use of anonymised quotations in publications

Participant's Name: _____ Signature: _____

Researcher's Name: _____ Signature: _____

Date: _____

APPENDIX C: INTERVIEW QUESTIONNAIRE

Name:

Start Time:

Organisation:

End Time:

Job Title:

Date:

Thank you for your willingness to participate in this interview. The title of the research is “Exploring perceptions of accountability in the mining industry: A critical component in safety management” The key objective of this research is:

- Establish what are considered the major accountability sources for employees and managers.
- Identify the reasons why individuals consider themselves accountable to these sources.
- Understand how employees and manager would prioritize these different accountability sources.
- Gain insight into the reasons accountability sources would be prioritized differently
- Understand which mechanisms are used by sources of accountability to drive accountability

The aim of this research is to gain insights into the topic by collecting data by means of an exploratory and conversational interview. I want to reassure you that the information shared will be treated as confidential and you are therefore to freely converse.

You are kindly requested to sign the consent form before we begin the interview. Do you give your permission to this interview to be audio recorded? The audio recordings will assist in accurately capturing the data.

Questions:

1. What do you understand by the term accountability?
2. How does being accountable influence your behaviour?
3. Who or what source would you attribute to driving accountability?
4. Why do you view yourself accountable to each of these sources?
5. From the sources you previously identified, which one has the most influence in driving accountability?
6. If you had were given 100 points to allocate to the each of the identified source, how would you allocate the points in order to establish importance?
7. What reasons can you give as to why sources are prioritised differently?
8. What mechanisms are used by these sources to drive accountability in the organisation?
9. How effective would you say these mechanisms are?