

Exploring accountability of individuals in the mining sector: A multi-level perspective



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Purpose: In heavy industries like mining, where safety is paramount, organisations need a well-functioning system of accountability. Yet to whom employees perceive they are accountable differs at varying hierarchical levels. This article reports on the findings from a study that investigated sources of accountability at different organisational levels in a certain mining operation and the mechanisms used to manage such accountability.

Design/methodology/approach: An exploratory, qualitative research methodology was used in the study, underpinned by in-depth interviews with participants from three organisational levels: blue-collar workers, supervisors and managers. The data collected were analysed using thematic content analysis.

Findings/results: Blue-collar workers and supervisors considered self-accountability and accountability to line managers to be the primary sources of accountability. However, managers stressed the importance of accountability to regulatory bodies and the legal implications of non-adherence to prescribed standards. All participants perceived their reputations to be heavily dependent on their accountability relationships. Mechanisms used in the organisation to promote accountability included clarifying roles and responsibilities, building open and honest interpersonal relationships, implementing standardised policies and procedures, and offering financial incentives.

Practical implications: The findings from the study informed the development of a conceptual accountability model, which should help mining executives in other organisations to manage the accountability process and promote responsible and safe behaviour at all organisational levels.

Originality/value: There is limited empirical research on sources of accountability in organisations. This study provides useful insights that help to fill this gap.

Keywords: accountability; responsibility; management; performance management; mining; safety.

Introduction

The high incidence of occupational injuries in heavy industries like mining is of significant concern to scholars (Bascompta et al., 2018; Komljenovic et al., 2017; Nyoni et al., 2018). While mine safety has long been of interest to engineering scholars (Emery et al., 2020), prompting more emphasis being placed on health and safety management systems, severe injuries and fatalities continue to occur (Kim et al., 2016). For example, there was a death at Sibanye-Stillwater's Driefontein mine in January 2022 and four fatalities due to a maintenance-related accident at a Harmony Gold mine in South Africa in May 2022 (Mining Review Africa, 2022; Reuters, 2022).

Safety management has evolved to include behaviour-based safety measures (Komljenovic et al., 2017) because injury occurrences have also been attributed to multi-level human factors: job-related, individual or organisational (Nyoni et al., 2018). If organisations have a poor safety culture, which is a multi-faceted concept comprising psychological, situational, systemic and behavioural elements, then safety management systems are rendered ineffective by individuals who are both a crucial component and at the heart of the organisational culture (Kim et al., 2016; Komljenovic et al., 2017).

South Africa is a country rich in mineral resources. According to the Minerals Council South Africa (2022), the mining sector is the single greatest contributor to export revenues and has remained the foundation of the South African economy since its formation (Khubana et al., 2022). It is also the largest direct and indirect employer in the sector, employing approximately 460 000 people and contributing R480.9 billion to South Africa's Gross Domestic Product (GDP) in 2021 (Statista, 2022). With rising fatality rates and an increase of a significant

27.5% from 2020 to 2021 (a total of 74 fatalities in 2021), the inherent risks are obvious, with a high possibility of accidents leading to disaster. A clear commitment to safety is thus required (Ismail et al., 2021; Prinsloo & Hofmeyr, 2022; Statista, 2022).

A culture of safety is crucial for organisations in the mining sector because different groups of people need to coordinate activities to meet the organisations’ safety objectives (Hall & Ferris, 2011; Komljenovic et al., 2017; Mansouri & Rowney, 2014; Nyoni et al., 2018). Consequently, accountability is emerging as a critical component of a culture of safety, as lived by organisational actors (Hall et al., 2017; Kim et al., 2016; Mero et al., 2014) in the mining sector. Specifically, and from the perspective of organisational actors, Hall et al. (2017) suggest that an individual’s behaviour and perceived sense of accountability may differ, depending on the source of accountability in that organisation. This explains why employees in high-risk industries might at times prioritise their own personal goals or ethical codes above organisational rules (Hall et al., 2017).

Moreover, managers often mistakenly assume that clear lines of accountability exist in their organisations and are understood by all stakeholders (McCall & Pruchnicki, 2017). Yet they fail to recognise that employees may have to navigate multiple relationships, all with competing priorities. This prompts the question: To whom are employees accountable?

This study set out to establish the ‘to whom’ aspect of accountability and thereby contribute to a gap in the body of knowledge regarding the sources of accountability – specifically, sources of accountability within the mining sector. To this end,

the study identified the primary sources of accountability at different organisational levels within a mining organisation. As accountability is activated through various mechanisms (Goodman et al., 2021; Hall & Ferris, 2011; Pearson & Sutherland, 2017), this study contributes to practice by identifying various mechanisms, and the prioritisation thereof, according to the identified sources with a view to driving accountability at different organisational levels in a mining organisation, as illustrated in Figure 1 (accountability prioritisation heat map). By identifying the sources of accountability, the associated mechanisms and the accountability prioritisation heat map derived from this study, safety scholars and organisations in the mining sector may be able to increase levels of accountability to improve employees’ behaviour and performance, thereby helping to entrench a safety culture.

Literature review

While the concept of accountability dates back to ancient times, empirical research on individual level accountability has only come to the fore more recently (Hall & Ferris, 2011; Hall et al., 2017). Furthermore, few studies examine accountability as it relates to individual employees in actual organisations (Hall & Ferris, 2011). As such, accountability remains in the nascent phase of development in the field organisational studies, with much still to be discovered about this important construct (Hall et al., 2017; Li et al., 2022; Mulgan, 2000; Brees et al., 2020). Most of the literature relating to mining and this particular area of focus strongly echoes the safety climate literature (Ismail et al., 2021). In fact, mining as a context is well established within the accountability research domain. However, many studies are focused on the social responsibility and accountability of the



FIGURE 1: Accountability prioritisation heat map in mining organisations.

organisation rather than on individual-level accountability within the organisation (Phiri et al., 2019; Rodrigues & Mendes, 2018; Wilson, 2022). Furthermore, Hall et al. (2017) suggest that sources of accountability have not been extensively researched across sectors when it comes to individual-level accountability. Naturally, this would also be applicable in the mining sector but has not necessarily been considered at different hierarchical levels, which are well entrenched in mining organisations.

Definition and nature of accountability

Accountability is of 'strategic importance' to organisations because, without it, it would be difficult to coordinate activities and individuals would act without regard for consequences (Romzek, 2015, p. 27), especially where mine safety is concerned. Accountability is a 'foundational social force' that regulates individual behaviour (Brees & Martinko, 2015, p. 63) and requires individuals to provide reason and justification for their behaviour or conduct in some form of social exchange as suggested by Messner (2009). It is also considered a complex, nebulous and ever-expanding concept, with multiple definitions (Goodman et al., 2021; Mansouri & Rowney, 2014; McKernan, 2012; Romzek, 2015; Willems & Van Dooren, 2011). Therefore, it is important to define it more tightly to improve its efficacy.

The characterisations of accountability are wide-ranging. Some people regard accountability as a 'virtue' encompassing values such as transparency, integrity and responsibility, while others consider it to be a social mechanism (Bovens, 2010; Hall & Ferris, 2011; Romzek, 2015). Furthermore, accountability does not always yield 'universally positive' results, with some perceiving it to be a stressor (Hall & Ferris, 2011, p. 132; Laird et al., 2015; Wikhamn & Hall, 2014). The multi-faceted nature of the concept often makes understanding, implementation and measurement challenging. Indeed, Cordery et al. (2010, p. 795) suggest that accountability is 'more readily identified when it is absent than when it is present' because it is often when individuals do not take accountability for poor outcomes that it is noticed or recognised.

As there are multiple interpretations of accountability (Hall et al., 2017; Mansouri & Rowney, 2014), it is necessary to seek a common definition of the term within a mining organisation and to understand how accountability influences individual behaviour, as illustrated in the next section:

RQ1: What is understood by the term accountability in the mining sector and how does it influence the behaviour of individuals in the mining sector?

Accountability theory

Beyond the definitional issues, accountability is a multi-disciplinary construct and, accordingly, is developed differently across a range of disciplines. From an economics perspective, accountability theory is largely based on agency theory which postulates that accountability is derived from a contractual relationship between the principal and an agent

TABLE 1: Literature-derived accountability concepts.

Concept	
1.	Individuals are agents of their own decisions and actions. They should therefore anticipate being held accountable for the role they play in any social activity.
2.	Accountability extends beyond the boundaries of formalised systems; it is a function of an individual's state of mind. Given the same accountability demands, individuals' perceptions of and reactions to a situation will differ.
3.	Accountability influences cognitive processing. How individuals think is influenced by their perception of accountability.
4.	People are driven to build and maintain a public and a private self-image. Reputational considerations influence how individuals deal with accountability demands.
5.	Perceived accountability is contextually bound. An individual's perception of accountability is linked to how they view and relate to a situation.
6.	Accountability significantly influences human social behaviour. Accountability has a powerful influence on human social behaviour because of its effect on self-image.
7.	Individuals have powerful motivations to cope with, manipulate or avoid accountability. Individuals use various tactics to rationalise their behaviour when they have to account to people whose preferences they know.

Source: Adapted from Hall, A.T., Frink, D.D., & Buckley, M.R. (2017). An accountability account: A review and synthesis of the theoretical and empirical research on felt accountability. *Journal of Organizational Behavior*, 38(2), 204–224. <https://doi.org/10.1002/job.2052>

(Bosse & Phillips, 2016; Eisenhardt, 1989; Goodman et al., 2021; Mansouri & Rowney, 2014; Mero et al., 2014). However, from a public administration perspective (Royle, 2017, p. 20), accountability is a contextually bound concept consisting of a 'wide array of phenomena', including individuals' attitudes, behaviours and subjective interpretations.

The public administration view is echoed in organisational studies (Busuioc & Lodge, 2017). Therefore, accountability cannot be limited to the regnant principal agent model underpinning agency theory which prioritises contractual relationships, because consideration needs to be given to the 'individual, subjective and internal nature of accountability' (Hall & Ferris, 2011, p. 132). Using a more process-based, as opposed to a contract-based, approach to accountability, Hall et al. (2017) reviewed the extant theoretical and empirical literature on accountability and identified seven key concepts from a number of theoretical frameworks, as presented in Table 1.

Sources of accountability

The source of accountability, or the 'to whom' aspect of the relationship, is an important feature of the accountability environment (Hall et al., 2017). Yet the interdependent relationship between an account holder and an account giver is often neglected in the extant literature on accountability, which focuses primarily on the influence of a single moderator or antecedent (Busuioc & Lodge, 2017; Hall & Ferris, 2011; Hall et al., 2017; Joannides, 2012; McKernan, 2012; Mero et al., 2014; Messner, 2009). Understanding the 'to whom' aspect is crucial because individuals may alter their behaviour according to the source of accountability and the investment made in the relationship (Busuioc & Lodge, 2017; Goodman et al., 2021; Hall et al., 2017). The literature refers to four main sources of accountability: to oneself, to peers, to managers, and to systems.

Self-accountability

With self-accountability or personal accountability, an individual assumes the role of both agent and audience in the accountability relationship (Pearson & Sutherland, 2017). This inward-looking process is generally accepted as a prerequisite for the effective operation of an organisation (Pearson & Sutherland, 2017). Self-accountability is said to be the product of an individual's inherent sense of responsibility (McKernan, 2012). However, Mansouri and Rowney (2014) argue that it stems from an individual's values and motivations, such as the desire for achievement and inner satisfaction. Prinsloo and Hofmeyr (2022) suggest that the tendency for a supervisor, in a mining organisation, to hold themselves and their team accountable is a strong predictor of safety behaviour within that organisation. Furthermore, intrinsic motivating factors such as trust and transparency could be leveraged to reduce the need for external monitoring and control (Mansouri & Rowney, 2014). This is crucial in high-risk areas, particularly in the mining environment, where there is an expectation that people will at times be able to work remotely and independently, without supervision.

Accountability to peers

Peer-to-peer feedback is part of behaviour-based safety programmes that address at-risk behaviour (Ranney et al., 2018). An over-reliance on hierarchical controls may hinder efforts to improve accountability because they could be 'inflexible' and 'formulaic'. In contrast, informal peer accountability means that the parties are not being restricted to a hierarchical structure (Willems & Van Dooren, 2011). This allows at-risk behaviours to be addressed informally when they occur in the field prior to their causing an injury (Ranney et al., 2018, p. 510; Royle, 2017).

Accountability to peers develops through a pattern of reciprocal relationships. It focuses on more subtle influences and could be motivated by an individual's reputational concerns (Busuioc & Lodge, 2017; Willems & Van Dooren, 2011). Royle and Hall (2012) found that an individual's need for power, affiliation and achievement not only promoted individual accountability but also facilitated accountability to others. However, peer-to-peer accountability is not without its limitations. For example, an individual's social power in horizontal accountability structures is limited. Therefore, in the absence of a clear hierarchy, overcoming goal conflicts may prove challenging (De Wit et al., 2017; Piatek et al., 2018). In addition, Frink and Klimoski (2004) argue that individuals do not always accept informal accountability systems and often go to greater lengths to defend themselves when questioned by a superior than when questioned by peers.

Accountability to managers

Managers are considered to have a high level of influence in the system of accountability because employees are expected to account to a higher authority (Joannides, 2012; Mero et al., 2014). Managers are deemed influential

because they are the 'most proximal audience' to their employees. Hierarchical accountability also gives managers the social power to reward or punish employees (De Wit et al., 2017). However, Pearson and Sutherland (2017) argue that existing systems and the culture of the organisation could limit a manager's ability to demand accountability from employees.

In workplace settings, the mining sector included, being accountable for specific outcomes is the result of a manager communicating expectations and monitoring employees' behaviour (Mero et al., 2014). Tetlock et al. (2013) warn that managers run the risk of encouraging excessive risk-taking if they adopt an outcome-based view of accountability. Yet evidence suggests that those in powerful positions often disregard the advice of others (De Wit et al., 2017). Prinsloo and Hofmeyr (2022, p. 1) determined that supervisor accountability is 'positively correlated with good safety behaviour' and that supervisor accountability predicts safety behaviour of individuals in mining organisations. In light of this, it is suggested that managers should consider the accountability process and focus on relevant input mechanisms.

Accountability to systems

Systems-driven accountability allows performance standards to be set, along with rewards or penalties for compliance and non-compliance respectively (Patil et al., 2017). In dynamic, high-consequence industries such as mining, accountability-based systems are designed to monitor compliance against safety standards and procedures, and take the form of scheduled inspections and audits, among other methods (McCall & Pruchnicki, 2017). Using standardised procedures guards against inconsistencies and ambiguities, which makes it difficult for individuals to shift blame unfairly or to accept credit for a successful outcome that they do not deserve (Hall & Ferris, 2011; Laird et al., 2015; Patil et al., 2017).

However, a standardised approach is not always useful, particularly when excessive conformity to rules could discourage new learning and adaptation (Patil et al., 2017). Systems could further hinder employees' performance as they may feel 'policed, undermined and caught out', which increases the risk of mistakes being covered up (Pearson & Sutherland, 2017, p. 428). Hall and Ferris (2017) stress the need for organisations to establish appropriate accountability systems and measures that limit the negative consequences of weak or no accountability. The prevalence of injuries in the mining sector, despite technological improvements and the implementation of monitoring systems, means that alternative approaches need to be explored to enhance governance and promote proper accountability in the workplace (Kim et al., 2016).

Systems of accountability

Accountability research shows the popularity of the hierarchical approach, where the focus is on a single factor

that drives accountability (Hall & Ferris, 2011; Mero et al., 2014). Pearson and Sutherland (2017) developed the 'Systems of Accountability Model' (p. 434) to show how a range of factors relate to and interact with one another. The factors that feature in the Pearson and Sutherland (2017) model differ from those identified in previous studies. For example, peers and managers are not considered to be key drivers of accountability. Instead, the five primary drivers are as follows: systems, the culture of the organisation, clarity of role and tasks, strategic leadership, and the individual (Pearson & Sutherland, 2017). In the model, each factor has a critical threshold that limits its influence on accountability, after which additional factors may come into play.

Having considered the various sources of accountability, it is necessary to identify and understand 'to whom' employees view themselves to be accountable, a critical feature of the accountability environment and an area of accountability that warrants research (Hall et al., 2017), particularly in the mining sector. Furthermore, it is important to understand the reasons why and the extent to which an individual, in a mining context, prioritises different sources of accountability. This is a further area of accountability that warrants research:

RQ2: What are considered the major sources of accountability at different levels within a mining organisation?

RQ3: How are sources of accountability prioritised in a mining organisation and what are the reasons for the prioritisation?

Informal and formal mechanisms

Although accountability is often associated with virtuous behaviour, personal ethics may not be sufficient to ensure accountability within organisations. External constraints and controls, or accountability mechanisms, are often required (Dubnick, 2003; Goodman et al., 2021). Organisational responses to the need for accountability include the introduction of formalised mechanisms or systems, such as formal reporting processes and procedures (Frink & Klimoski, 2004). Alternatively, informal mechanisms such as values, cultural norms and interpersonal relationships are used to drive accountability within organisations (Frink & Klimoski, 2004; Romzek et al., 2012). The use of both informal and formal accountability mechanisms establishes a 'web of accountabilities' that occurs at varying levels within an organisation, further illustrating the complexity of the accountability construct (Frink & Klimoski, 2004, p. 3).

Individuals are required to make sense of the accountability web and prioritise sources of accountability within it (Pearson & Sutherland, 2017). While there are various types of accountability mechanisms, little is known about the specific mechanisms used for identified sources in the context of the mining sector (Prinsloo & Hofmeyr, 2022). It is necessary, therefore, to identify

which mechanisms are implemented by the organisation in response to the need for accountability (Frink & Klimoski, 2004). More importantly, understanding which mechanisms can be implemented for each identified source of accountability will enable the individual to experience the source:

RQ4: Which mechanisms used by individuals in a mining organisation are considered effective in driving accountability?

Research methodology

A qualitative, exploratory approach was considered appropriate for this study as the concept of accountability is complex and empirical research in this area is still nascent. The subject matter therefore called for an exploratory method to discover new insights, which would have been difficult to obtain using other methodologies (Saunders & Lewis, 2012; Zikmund et al., 2013). Specifically, the study used the case-study method as case studies allow for the multi-level analysis (Creswell, 2013; Ragin & Becker, 2005) of exploratory questions (Yin, 2009). By using the single case-study method, the study was able to simultaneously analyse self-accountability, accountability to line management and accountability to organisational stakeholders.

Population and sample

The population consisted of mine managers, front-line mine supervisors and blue-collar mine workers employed in a mining organisation, with knowledge of and expertise in safety management and accountability. Managers are individuals who 'manage managers' and supervisors are first-level management or persons who 'manage others' (Drotter, 2010, p. 12). Supervisors are responsible for assigning tasks to their direct reports, the workers. Finally, blue-collar workers are individuals who produce results through their own efforts by 'managing self' (Drotter, 2010, p. 12); they are skilled, working-class people performing manual work. The above-mentioned categories constituted individual units of analysis.

The individual workers, supervisors and managers from a single mining organisation, employing 1200 employees, were the units of analysis in this study. The mining organisation was selected to mitigate the effects of extraneous variables on participants' perceptions, such as varying mining company cultures, and different organisational structures or labour relations matters. Participants were selected using non-probability quota sampling techniques involving judgmental and quota sampling (Saunders & Lewis, 2012; Zikmund et al., 2013). The use of a judgment sampling technique required participants in 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 organisation, with knowledge and expertise in the fields of safety management and accountability.

Data collection

Data were collected from interviews conducted with participants from the three different levels in the mining organisation. A total of 21 face-to-face, semi-structured, in-depth interviews were conducted. Of these, 10 interviews were conducted with blue-collar workers, 5 with supervisors, and 6 with managers. 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 sample size of 21 participants was deemed appropriate. The sample size was selected with the aim of concluding the interviews once no new insights were being revealed (Burden & Roodt, 2007). Saturation was achieved at each of the levels for the given sample size (Burden & Roodt, 2007). Furthermore, the sample size was benchmarked against a related qualitative study and found to be suitable (Pearson & Sutherland, 2017). The interviewer identified potential candidates to be interviewed based on the defined sample characteristics.

Candidates were invited to interviews via telephonic communications and were formally invited through electronic mail. The interviews were conducted face-to-face with the participants. Prior to each interview, the participant in question received an interview guide and a consent form and was assured that their responses would be presented without identifiers. The information gathered from the literature review was used to draft standardised interview questions that served as a guideline for the researcher. The interviewer used an interview guide to facilitate a discussion by asking nine open-ended, non-leading questions (Yin, 2009). The participants were encouraged to answer at will, sharing their own insights and opinions based on their personal experiences. The open-ended question approach was used to support the exploratory nature of the research and encourage open dialogue. The semi-structured interview guide is presented in Table 2 and comprised nine questions. To ensure data credibility, the same open-ended questions were used at each level of participant.

Two pilot interviews were conducted to evaluate the interview guide and the technique used by the interviewer. Adjustments were made to the interviewer's technique as the analyses of the pilot interviews revealed that the interviewer followed up dialogue points made by the interviewees with questions that were deemed leading (based on the theoretical knowledge gained). The interviewer

adjusted techniques by allowing the dialogue to flow freely and by asking clarifying, non-leading questions. The pilot investigation prompted another change being made to the interviewer's technique, as the feedback revealed that some explanation was required for the term 'accountability source'. Furthermore, the blue-collar worker pilot interview emphasised the need for the individual to be familiar with the English spoken language to ensure that they arrived at the correct understanding and interpretations. During the data-collection process, notes were made in an attempt to conduct a partial analysis.

The interviews were recorded with the permission of the interviewee and transcribed to form part of the data analysis. Interviews ranged from an average of 28 min to as long as 1 h, which was generally dependent on the organisational level of the individual being interviewed.

Data analysis

The data were analysed using thematic analysis, a common method applied in qualitative studies (Guest et al., 2012) to identify and analyse emergent themes (Gibson & Brown, 2009). The different stages of thematic analysis, as described by Braun and Clarke (2006), were followed. These were:

1. Getting familiar with the data: The researcher became deeply engaged with the dataset by thoroughly reading the transcribed interviews and observation notes several times. The noted observations were used to generate provisional ideas early in the analytical process (Terry et al., 2017).
2. Coding the data: Coding of the data involved identifying relevant features within the data and assigning a 'tag' or code to these segments of interest. Inductive coding was conducted. Computing software (ATLAS.ti) was used to capture the codes. Meaningful observations related to the research questions were then captured. The coding was an iterative process, with the researcher listening and reading through the recordings several times. Codes were systematically assigned to the data.
3. Developing themes: The researcher actively formed and identified patterns of ideas that appeared repetitively in the data. Constructs were captured by means of coding, and the number of times they were repeated was captured to generate a frequency count. This allowed 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).
4. Reviewing and,
5. 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 (Terry, et al., 2017). The data were examined for evident commonalities, differences, and relationships resulting in themes that mapped to the research questions (Braun & Clarke, 2006).
6. Producing the report: The researcher synthesised the insights from the data analysis and linked these to the

TABLE 2: Semi-structured interview guide.

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

scholarly literature, producing a singular output that related the analysis back to the research questions. The researcher selected persuasive, quoted data extracts in an illustrative and analytical manner to highlight the key elements of the findings (Terry et al., 2017). Each interview took approximately 2.5 h to analyse.

Ethical considerations

This study followed all ethical standards for research. Ethical clearance for the study was obtained from University of Pretoria's Gordon Institute of Business Science Research Ethics Committee.

Findings and discussion

The findings are presented according to four high-order themes. These themes were derived from the data and structured according to specific constructs elaborated on in the literature review section. Each of the themes directly addresses the identified research questions which emerged from the review of the literature.

Understanding the concept of accountability

This section outlines what is understood by the term accountability by individuals working in the mining sector and how it influences an individual's behaviour. The first interview question dealt with participants' understanding of the concept of accountability. Table 3 shows the five most frequently mentioned aspects of accountability for each subsample.

The subsamples' understanding of accountability can be summarised as follows:

TABLE 3: Understanding the concept of accountability.

Group	Rank	Construct	Frequency
Blue-collar workers	1	Being responsible and answerable for the outcome of an assigned task	7
	2	Enforcement of sanctions if a desirable outcome is not achieved	6
	3	Mechanism to receive feedback and learn from mistakes	4
	4	An evaluation of an individual's ability	3
	5	Taking ownership of and pride in one's tasks or area of responsibility	3
Supervisors	1	Taking ownership of and pride in one's tasks or area of responsibility	3
	2	Requirement to maintain social order	3
	3	Being answerable for non-conformance to an account holder	2
	4	Enforcement of sanctions if a desirable outcome is not achieved	2
	5	Being responsible and answerable for the outcome of an assigned task	2
Managers	1	The authority to make and be answerable for decisions	3
	2	Taking ownership of and pride in one's tasks or area of responsibility	3
	3	Being responsible and answerable for a task completed by others	2
	4	Providing an account to an account holder for one's actions and decisions	2
	5	Being answerable when a desired outcome is not achieved	2

- **Blue-collar workers' understanding of accountability:** Many blue-collar mine workers perceived accountability to be inherent in their responsibility to complete an assigned task and to comply with the rules of the organisation. Therefore, blue-collar workers understood accountability to be part of the responsibility to complete an assigned task to the required standard and to comply with the rules and regulations of the mining organisation. Failure to meet the expectations of an account holder would result in sanctions.
- **Supervisors' understanding of accountability:** Supervisors spoke less about being responsible for the completion of a task and more about being answerable for the outcome of the task. Responses revealed that accountability is 'something that you need' to maintain order and control in a social system within the mining organisation, otherwise 'people will just do what they want to do' (Hall et al., 2017). The common understanding of accountability among supervisors was the responsibility to ensure that the expectations surrounding an assigned task within the mining organisation are met, to provide the necessary justifications to an account holder and to expect sanctions for unfavourable outcomes.
- **Managers' understanding of accountability:** Managers confirmed that an individual can delegate responsibility but not their accountability (McGrath & Whitty, 2018). To the mine managers, accountability meant having the authority to make decisions but also the obligation to have accountability for those decisions when they lead to an unfavourable outcome such as an accident or fatality.

Blue-collar workers' accountability was tied to task completion, for supervisors it was tied to the maintenance of social order in a hierarchical structure, and for managers it was tied to authority and obligation in order to limit liability. Therefore, accountability in mining appeared to have different meanings at different levels of the organisation, thereby suggesting differences in people's understanding of accountability at different hierarchical levels within the organisation. A closer review of the data, however, indicates that individuals across organisational levels viewed accountability as having a common feature, which is that accountability is an outcome of tasks, order and obligation; it is not a process. Accordingly, the views provided by blue-collar workers, supervisors and managers, respectively, were consolidated to form an overarching definition for the purpose of this study:

Accountability, as defined by individuals at different levels in a mining organisation, refers to the expectation that a specified outcome will be achieved for an assigned task, social order and obligation level, such that failure to meet the expectation will require the account giver to explain their actions and decisions to an account holder, who will then determine the impact and consequences for the account giver.

Influence of accountability on behaviour

The second interview question was designed to determine how a person's perceived sense of accountability influenced their behaviour. Behaviours were ranked for each subsample,

based on the frequency with which each was mentioned. The results are shown in Table 4 and thereafter discussed:

- **Fear and anxiety due to perceived threat of consequences:** Blue-collar workers characterised accountability as a stressor, 'legalistic' and a form of forced compliance which, if disregarded, would attract discipline. This supports the notion that accountability has a 'dark side' (Pearson & Sutherland, 2017) and could prompt employees to cover up their mistakes if the consequences are severe (Pearson & Sutherland, 2017).
- **Increased discretionary effort and improved work performance:** Blue-collar workers and supervisors shared the view that accountability positively influences an individual's commitment and effort. Supervisors confirmed seeing a change in the performance of their subordinates, saying that accountability imbued in them a greater sense of pride and enhanced professionalism.
- **Prioritised tasks based on accountability expectations:** Managers made specific reference to the need to focus on the priorities for which they would have to account and not attempt to please everyone all of the time.
- **Demonstrated trustworthiness:** Some supervisors mentioned the concepts of trust and acting in a trustworthy manner. The view was expressed that when an individual is assigned a task, a 'certain level of trust is given with that task or that accountability'. Perceived trust in their abilities encouraged individuals to behave in a trustworthy manner. This is consistent both with competence-based trust literature, which is associated with ability and integrity (Mayer et al., 1995), and trust-propensity literature (Ferguson & Peterson, 2015).
- **Dependent on context, the account holder and the account giver:** A general theme emerging from most participants' responses was that the context of a situation affects an

individual's behaviour. Both supervisors and managers were of the view that managing accountability was 'difficult because every person differs' (in terms of culture or core beliefs) and 'some people need to be managed differently'.

- **Considered the impact of their actions on their reputation:** Other themes that emerged from blue-collar workers' and supervisors' responses were their sense of pride in being held accountable and their reputations being dependent on their acquitting themselves well. Managers viewed being held accountable as having to 'prove competence' and that an unfavourable outcome would 'affect your name'.
- **Considered the impact of their decisions before acting:** Participants from all three subsamples supported the idea that an individual would alter their behaviour if they considered the consequences of being held accountable, which would affect their relationships with their superiors and subordinates.

Major sources of accountability

The second research question required participants to identify 'to whom' they viewed themselves accountable, that is, the source of their accountability, within the different levels in a mining organisation. The identified sources of accountability per subsample were ranked and are shown in Table 5, along with the main motivation or reason provided for the accountability relationship. Each of the sources of accountability is then discussed in turn:

- **The individual:** It has been suggested that 'strong core values could create an internal sense of responsibility and result in accountable behavior' (Mansouri & Rowney, 2014, p. 51). Participants across the sample echoed these sentiments. Accountability was perceived to be a core

TABLE 4: Influence of accountability on behaviour.

Group	Rank	Construct	Frequency
Blue-collar workers	1	Fear and anxiety due to perceived threat of consequences	7
	2	Increased discretionary effort and improved work performance	4
	3	Dependent on context, the account holder and the account giver	4
	4	Considered the impact of their actions on their reputation	2
	5	Considered the impact of their decisions before acting	2
Supervisors	1	Dependent on context, the account holder and the account giver	3
	2	Demonstrated trustworthiness	2
	3	Increased discretionary effort and improved work performance	2
	4	Considered the impact of their actions on their reputation	2
	5	Considered the impact of their decisions before acting	2
Managers	1	Fear and anxiety due to perceived threat of consequences	4
	2	Considered the impact of their decisions before acting	3
	3	Prioritised tasks based on accountability expectations	2
	4	Considered the impact of their actions on their reputation	2
	5	Dependent on context, the account holder and the account giver	2

TABLE 5: Identified sources of accountability per subsample.

Group	Rank	Construct	Frequency	Motivation
Blue-collar workers	1	The individual	7	Personal values and beliefs
	2	Line management	4	Offer support to reach shared goals
	3	Peers	3	Reputational considerations
	4	Customers	3	Reputational considerations
	5	Systems	2	Provide guidance regarding expectations
Supervisors	1	The individual	5	Personal achievement
	2	Subordinates	3	Impact of decisions on others
	3	Line management	2	Respect for authority of the role
	4	Peers	2	Maintain healthy work relationships
	5	Systems	2	Monitoring compliance
	6	Customers	1	Reputational considerations
	7	Organisational culture	1	Creation of collaborative environment
Managers	1	Line management	6	Respect for authority of the role
	2	The individual	6	Personal achievement
	3	Regulatory bodies	5	Legal obligation and fear of liability
	4	Systems	3	Objective measure of performance
	5	Mentors	1	Meeting perceived expectations
	6	Subordinates	1	Sense of duty

value, imparted during someone's upbringing and forming 'part of their personality and their personal beliefs'.

- **Management and people in authority:** Many participants supported the commonly held view that managers are influential in the system of accountability (Joannides, 2012; Mero et al., 2014). Although most made specific reference to their being accountable to their direct line managers, some blue-collar mine workers emphasised that any 'person who is an authority figure' within the mining organisation was perceived to be a source of accountability. Direct line managers were regarded as more influential as they were 'the person you know the best'.

Interestingly, only one supervisor listed a manager's leadership skills as a motivating factor in the relationship. Another supervisor argued that leadership skills were not necessary; the fact that someone is a boss automatically gives them authority. Some managers regarded the accountability relationship as 'more of a personal', mutually beneficial relationship:

- **Subordinates:** Managers and supervisors both viewed their subordinates as a source to whom they were accountable. Many felt a moral obligation or responsibility to ensure the wellbeing of their subordinates. This was encouraging, considering the safety risks to which the employees were often exposed in their work.
- **Customers:** Surprisingly, customers of the mine products were only considered to be a source of accountability by those at the lower levels of the organisation. While both blue-collar workers and supervisors regarded customers as a key source of accountability, their motivations differed. Blue-collar workers felt that the contractual obligation to clients was the basis of the accountability relationship and that failure to meet contractual obligations posed a threat to the sustainability of the mining organisation, external communities and the macro economy. Supervisors expressed more concern for their personal reputation if contractual obligations were not met.

However, what should not be overlooked is the fact that the reputation of a mining operation is heavily dependent on adherence to safety standards. Unsafe practices or careless monitoring (even on the part of just a few people) can – in the event of mining accidents – tarnish the organisation's reputation in the eyes of the public (Svobodova et al., 2020):

- **Systems:** Few blue-collar workers viewed systems within the organisation as an influential source of accountability. However, one blue-collar worker saw systems as a means 'to guide you if you don't know what to do'. Supervisors and managers viewed systems as an 'administrative function' which tracks performance to ensure that the organisation's goals and targets are met. Supervisors and managers mentioned the restrictive nature of formal systems (Laird et al., 2015). Many expressed the view that 'systems force you to be accountable', with one manager explaining that they clash with the human desire to be individually valued.
- **Peers:** Peers were regarded as key sources of accountability both by blue-collar workers and supervisors, thereby

disputing the claim made by Frink and Klimoski (2004) that individuals do not accept informal sources of accountability. Blue-collar workers named reputational concerns and how they were viewed by their peers as the main reason for the accountability relationship. Supervisors perceived the relationship to be 'more of a collaboration between peers' to achieve a common goal.

One supervisor questioned the merits of horizontal accountability in the mining sector due to its informal nature, stating: 'It is not monitored or managed officially on a regular basis'. It was regarded as ineffective because neither party had the authority to pass judgment and prescribe sanctions. Surprisingly, managers did not view their peers as highly influential, thus supporting the findings of Pearson and Sutherland (2017), although one manager acknowledged that he still valued his peers:

- **Organisational culture:** Some supervisors and managers regarded themselves as accountable to the organisational culture. However, most were of the view that 'a culture is probably created over the years' and required constant and consistent messaging and behaviour. One manager felt that an accountable organisational culture was only possible when individuals had the same values or 'had internalised' the culture.
- **Regulatory bodies:** Managers regarded mining regulatory bodies as influential sources of accountability in view of the legal responsibility and potential liability associated with their function. One manager spoke of the 'weight and responsibility' that accompanied their perception of accountability, stating: 'I feel legislation and especially mining legislation was written in blood through the lives of people'.
- **Mentors:** Two managers viewed mentors as a source of accountability because of their mentees' expectations of them. One manager said that having an internal mentor helped them make accountable choices as they were able to seek guidance in difficult situations. Another argued that mentors should not create 'forced mentorship relationships' but should rather 'leave it up to yourself to attain what you require from the correct source'.

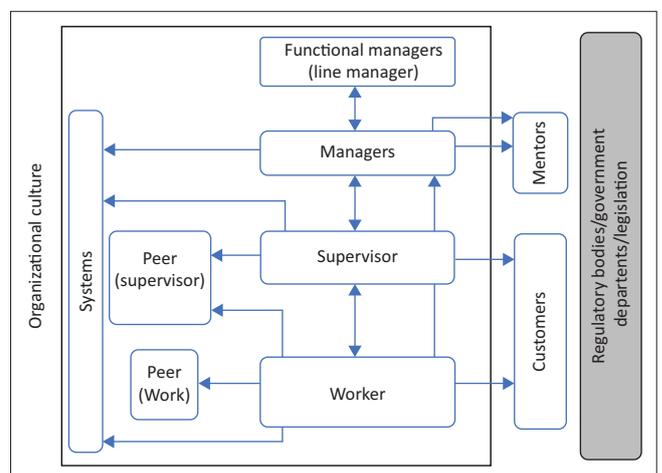


FIGURE 2: Conceptual accountability model.

The authors of this article used the identified sources of accountability from each organisational level in the mining organisation to compile a conceptual accountability model (Figure 2). The model shows that accountability occurs within a system of interrelationships, both with internal and external sources (Busuioc & Lodge, 2017; Mero et al., 2014). The direction of the arrows represents the 'to whom' aspect or source of accountability. For example, managers said they felt accountable to their line managers, their supervisors, their mentors and regulatory bodies. The findings expand on the main accountability sources identified in the literature.

Prioritisation of the sources of accountability in a mining organisation

The third research question sought to establish how participants prioritised the identified sources of accountability and the reasons for the prioritisation. Each participant was given 100 points and asked to distribute the points across the sources, with the expectation that sources of higher priority would be allocated a larger share of points. The sources were then ranked according to the percentage of points allocated per subsample. The results are shown in Table 6 and the top three sources per subsample are then discussed:

- **The individual:** All but three participants rated the individual the most influential source of accountability in a mining organisation because of their 'character', 'core internal drive' and ability to make their own decisions. This supports previous findings that an individual's sense of responsibility is a key factor in driving accountability (Joannides, 2012; Mansouri & Rowney, 2014; McKernan, 2012; Pearson & Sutherland, 2017).

Participants referred to the limited effectiveness of other sources given the central role played by the individual within a mining context. Interestingly, managers rated themselves significantly higher than any other source. This may indicate

TABLE 6: Identified sources of accountability and their relative weightings.

Group	Rank	Construct	% of points allocated
Blue-collar workers	1	The individual	50
	2	Line management and higher management	26
	3	Peers	13
	4	Customers	8
	5	Systems within an organisation	4
Supervisors	1	The individual	43
	2	Subordinates	15
	3	Line management	11
	4	Peers	11
	5	Systems within an organisation	11
	6	Customers	7
	7	Organisational culture	4
Managers	1	The individual	73
	2	Regulatory bodies	7
	3	Systems within an organisation	6
	4	Line management	5
	5	Mentor	5
	6	Subordinates	5

that people in powerful positions often disregard the advice of others (De Wit et al., 2017):

- **Management:** Some participants believed that managers' influence was based on their assigned authority and the fact that they are the 'most proximal audience', or, according to one worker, 'the one that checks up on you' (Mero et al., 2014, p. 1629). This suggests that hierarchical accountability, aligned to mining organisational structures, affords managers the social power to reward or punish employees (De Wit et al., 2017). Supervisors viewed accountability as predominately self-driven but the level of accountability could 'be aggravated by the person that you work for' and the 'person that is assessing your performance'. Interestingly, the higher their organisational level within the mine, the lower the ranking enjoyed by the manager in question. Supervisors acknowledged the role of the line manager but were more invested in the relationships with their subordinates.

Pearson and Sutherland (2017) found that managers were not regarded as highly influential. This study's findings dispute this assertion at the blue-collar and supervisory levels but support it at the managerial level. Managers rated line managers as only the fourth most effective source of accountability, after regulatory bodies and systems:

- **Systems:** It was noteworthy that individuals higher up in the organisation were more reliant on systems and viewed them as more influential than peers, line managers and subordinates. Blue-collar workers considered systems to be a guide only, to ensure that all were familiar with the rules of the organisation. Managers, in contrast, placed greater emphasis on systems as a 'tangible form' of accountability.

Some managers viewed systems (in particular, disciplinary procedures) as a 'last line of defence', with one stating: 'Policing or, according to the company framework, your disciplinary code is there to help keep the people in line who don't associate with the culture':

- **Peers:** Blue-collar workers supported the view of Busuioc and Lodge (2017) that individuals will prioritise sources of accountability on the basis of reputational considerations. Workers in the mine expressed concern about possible damage to their reputation if their colleagues witnessed them doing something wrong. Moreover, one worker felt that his peers were able to exert more pressure than the line manager as debates about relevant issues within the peer forum were often more rigorous.

A key finding was that peer accountability appeared to become less effective the higher one rose through the organisational hierarchy of the mine. One manager explained that peer accountability was only possible once an organisation had developed a culture of self-regulation. This may reinforce the argument by Frink and Klimoski (2004) that individuals do not always accept informal accountability systems:

- **Regulatory bodies:** Managers rated regulatory bodies as more influential than line management because of

regulatory bodies' ability to issue higher-level sanctions. Legal accountability, in turn, was viewed as 'forced compliance, forced accountability'.

Mechanism used to drive accountability

The fourth research question focused on the mechanisms used to drive accountability in a mining organisation (Frink & Klimoski, 2004). Table 7 summarises the main mechanisms for the top three identifiable sources at each organisational level. Each mechanism is then discussed in turn:

- **Individual-level mechanisms:** Most participants supported the view of Mansouri and Rowney (2014) that self-accountability is based on an individual's values. Participants viewed a person's values, upbringing and attitude as the drivers of their inherent sense of responsibility. Furthermore, the findings were in line with the conclusion arrived at by Pearson and Sutherland (2017) that recruitment is an essential mechanism for driving accountability.

Blue-collar workers and supervisors stressed the importance of an individual's personal values being considered during the recruitment process. One worker said that background checks should be done before people are appointed. Managers listed other factors, such as career aspirations and self-satisfaction, as effective mechanisms to drive accountability.

TABLE 7: Accountability mechanisms introduced by identified sources.

Group	Source	Rank	Construct	Frequency	
Blue-collar workers	Individual	1.1	Recruitment and development of suitable candidates	4	
		1.2	Understanding strategic role and assigned tasks	4	
		1.3	Personal values, upbringing and attitude	3	
	Line manager	2.1	Clarity of roles and expectations	5	
		2.2	A clear, well-communicated plan to achieve goals	4	
		2.3	Delegation of responsibilities to subordinates	3	
	Peers	3	Effective communication	3	
Supervisors	Individual	1.1	Recruitment and development of suitable candidates	4	
		1.2	Personal values, upbringing and attitude	3	
		1.3	Benchmarking performance with peers	2	
	Subordinates	2	Effective communication	2	
	Line manager	3.1	'Knowing' and trusting subordinates	3	
		3.2	Informal feedback sessions	3	
		3.3	Delegation of responsibilities to subordinates	2	
	Managers	Individual	1.1	Personal values, upbringing and attitude	2
			1.2	Career development aspirations	1
Regulatory bodies		2	Professional certifications	2	
Systems		3.1	Performance targets linked to financial rewards or sanctions	4	
		3.2	Implementation of policies and procedures	4	
		3.3	Formal performance reviews	2	

- **Management-level mechanisms:** Management-level mechanisms listed ranged from formal to informal. Blue-collar workers viewed managers' responsibility to ensure that individuals understand their roles as crucial, thus supporting the findings of Pearson and Sutherland (2017). Mine workers concurred with Mero et al. (2014) that outcomes are achieved by managers communicating their expectations and ensuring that their plans for achieving targets are clear and transparent.

In addition, much emphasis was placed on informal mechanisms, such as effective communication, informal feedback sessions and the supervisor 'knowing' their subordinates, thus enabling them to delegate tasks according to people's strengths and weaknesses. This was also regarded as an essential platform 'to gain trust' – a recurring theme among blue-collar workers and supervisors. The concept of delegating responsibility to show trust in a subordinate's abilities was also raised. Some considered it a positive reflection of their abilities and felt the need to live up to those expectations. Intrinsic motivating factors such as trust and transparency could therefore be leveraged to reduce the need for external monitoring and control (Mansouri & Rowney, 2014):

- **Mechanisms for peers and subordinates:** Participants could not easily identify mechanisms for peers and subordinates, evidently supporting the notion that informal mechanisms are based on 'softer', 'unseen' influences. Effective communication was a key mechanism identified for both peers and subordinates. Participants expressed the view that a relationship could only be built if communication was open and honest. These findings are in line with the view of Pearson and Sutherland (2017) that clear and effective communication is a critical managerial mechanism.
- **Mechanisms for regulatory bodies:** Managers reported that the issuing of professional certifications and operating licences regulated their behaviour because of the fear of litigation in the event of transgressions. This has particular significance in a high-risk environment like mining. Regulatory bodies were viewed as having significant social power over managers because of their ability to issue sanctions and revoke licences (De Wit et al., 2017).
- **System-level mechanisms:** Much emphasis was placed on the link between good performance and financial incentives, which supports the finding of Hall and Ferris (2011) that organisations tend to have some form of incentive system in place. Most managers said that financial incentives had to be based on clearly defined key performance indicators. They also stressed the importance of having standardised policies and procedures. However, one supervisor was of the view that systems could be 'inflexible' and restrictive, with a plethora of (at times confusing) standards that needed to be met.

Accountability prioritisation heat map

The results of research questions 3 and 4 provided the basis for the development of an accountability prioritisation heat

map (see Figure 1). The top three sources for the identified organisational levels in the mining organisation and their affiliated mechanisms represented the impact of the combinations. The perceived priority of the sources was depicted on a colour scale, while the relative importance of the mechanism was depicted by the size of the icon. The map can be used by managers, specifically mine managers, as a point of reference to determine the importance and priority of the combinations at each level in an organisation.

Conclusion

The literature highlights the role of accountability in an organisation in terms of delineating roles (Pearson & Sutherland, 2017), establishing reporting parameters (Frink & Klimoski, 2004; Goulart, 2016), providing a platform for collaboration (Cordery et al., 2010), controlling behaviour (Brees & Martinko, 2015), maintaining order and achieving specific outcomes (Pearson & Sutherland, 2017). These are all critical in high-risk environments, like mining, where responsible behaviour and conformity to safety standards are paramount.

This study explored the different sources of accountability in a mining organisation and the various mechanisms used to manage accountability at different organisational levels. Three groups of participants were interviewed in the study: blue-collar workers, front-line supervisors and managers. While all participants acknowledged the key role played by accountability in the organisation, they differed in their understanding of the purpose of accountability.

The blue-collar workers associated accountability with rules and regulations and the completion of tasks. It inspired both enthusiasm and a certain amount of fear among the workers because of the potentially severe consequences (to themselves and the organisation) of making mistakes. The supervisors saw accountability as a way of encouraging higher performance standards and ensuring specific outcomes. The managers saw accountability as giving them the authority to take decisions and arrive at optimal solutions. All three groups agreed that perceptions about accountability tended to differ from one situation to the next and that their personal reputations hinged on their accountability relationships with others.

The three groups of participants had different views about the sources of accountability in the organisation. The blue-collar workers regarded accountability to oneself as the main source of accountability and that this was the result of an innate value system that had evolved over many years. Line management and peers were in second and third places, according to the blue-collar workers. Supervisors also saw accountability to oneself as the main source of accountability, with subordinates and line management in second and third places. Managers saw line management as the main source of accountability, with individuals and regulatory bodies in second and third places.

Some participants regarded systems as potentially too rigid, particularly if circumstances dictated discretionary decision-

making and a deviation from standard practices. Interestingly, customers were not rated highly in the accountability source rankings. Furthermore, organisational culture hardly featured, while only the managers saw regulatory bodies as a key source of accountability. This is because, from their vantage point, the managers were aware of the legal responsibility that accompanies accountability and the liability that they or other authority figures would face if reckless behaviour or non-adherence to prescribed standards resulted in injury or loss.

In addition, the study revealed a number of formal and informal mechanisms used to manage the accountability process at the three organisational levels. Management- and supervisory-level mechanisms mainly related to creating effective communication channels, clarifying roles and expectations, getting to know subordinates, and delegating responsibility. Trust and transparency were important elements in this regard. Mechanisms for peers and subordinates similarly centred on effective communication channels and open and honest relationships. Mechanisms used by regulatory bodies included the issuing of certifications and operating licences, while system-level mechanisms included standardised policies and procedures and financial incentives to ensure the achievement of set targets.

This study extends the current accountability literature, providing insights into accountability dynamics in a mining operation, which could help other mining executives encourage discipline, safe behaviour and productive working relationships at various levels within their organisations. However, a limitation of the study is that the population was representative of one organisation in the South African mining sector. Therefore, the results of the study may not necessarily be generalised to other populations. That said, it would be useful to investigate the varying perceptions at different organisational levels in other industries.

As the organisation selected for the study had a hierarchical structure, it would be interesting to conduct a comparative study in matrix organisations. This study revealed that self-accountability and line management relationships were key elements in the organisation's system of accountability. However, it would be beneficial to acquire a more detailed and nuanced view of the factors driving peer accountability at different organisational levels.

This study addressed the 'to whom' question of accountability. However, the 'for what' question should be probed more thoroughly. For example, Tetlock et al. (2013) indicate that accountability for outcomes should not be emphasised at the expense of the process. Therefore, future studies could also investigate the conditions under which process-driven and outcome-driven accountability produces optimal results for an organisation. Finally, the application of the conceptual model as presented in Figure 2 to other industries could be an interesting consideration, with further investigation of individual sources as they apply within other industries.

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