CHAPTER 2: RESEARCH DESIGN

2.1 INTRODUCTION

In this chapter I discuss the research design from a theoretical perspective. I explain the guiding research paradigm which informed the research design and the methodological choices, which are also discussed in detail in this chapter.

2.2 RESEARCH PARADIGM

Guba and Lincoln (1994:107) define a paradigm as 'a set of basic beliefs (or metaphysics) that deals with ultimates or first principles. It represents a worldview that defines, for its holder, the nature of the "world", the individual's place in it, and the range of possible relationships to that world and its parts'. A paradigm contains an investigator's assumptions, not only about the manner in which an investigation should be performed (in other words, the methodology), but also about how the investigator defines truth and reality (in other words, the research ontology) and how the investigator comes to know that truth or reality (in other words, the research epistemology) (Plack, 2005:224). Organisational research in particular displays a paradigmatic diversity (and methodological innovation), mainly, according to Buchanan and Bryman (2007:486), because of the field's multi-disciplinary nature.

Potter (1996:35-36) emphasises the importance of the research paradigm and the fundamental difference between qualitative and quantitative approaches to research:

> *The issue of ontology and epistemology are so fundamental to our everyday behavior that we may rarely bother to examine them.* In fact, the questions themselves are so fundamental that we might think it silly to even ask them seriously in everyday conversation. We tell ourselves that, of course, we

> believe in an external reality that exists apart from us. If a tree falls in the woods and we do not hear it, was there a sound? We answer: Of course! A tree can make a sound even if we are not there to hear it. Furthermore, if someone tells us there is a tree in the woods, we can accept this to be true. We don't have to see the woods or the tree to accept its existence. (…) For most of our everyday life the words ontology and epistemology do not arise, nor do the questions it poses. Our lack of concern for them derives from axiomatic nature; they require us to take a position based on belief, not proof. Similar axiomatic questions include, Is there a supreme being?, What is beauty? and What is moral life? The answers to these questions are beyond fact and logic, they require an answer based on belief. Once we have recognized our belief, then we can use logic to fashion arguments and practices to follow from it. When these practices become established we need not think about them; we take them for granted.
>
> *However, when we enter the world of formal scholarship, it is essential that we examine the foundations of our thinking. When we do this, we discover that there exist alternative answers to each foundational question.* Two scholars who hold different beliefs of ontology and epistemology may be interested in examining the same phenomenon, but their beliefs will lead them to set up their studies very differently because of their differing views of evidence, analysis and the purpose of the research. (my emphases)

It therefore becomes important to highlight the paradigm I used in this study in order to place the research design, methodology and approach in context to avoid the pitfall that Evered and Louis (1981:386) so aptly warn researchers against: often 'the quality of a piece of research is more critically judged by the appropriateness of the paradigm selected than by the mere technical correctness of the methods used'.

I chose a constructivist-interpretive paradigm in this study, based on the research questions. Interpretive research is based on the belief that a deeper understanding of a

phenomenon is only made possible by understanding the interpretations of that phenomenon by those experiencing it (Shan & Corley, 2006:1823). This perspective assumes that reality is constructed by the people (including the researcher) who participate in this reality. Constructivists acknowledge that their *interpretation* of the studied phenomenon is in itself a *construction* (Charmaz, 2006:187).

Sciarra (1999: 40) comments that constructivism seems to be preferred over interpretivism in present-day social science research, but also points out that many writers (for example, Guba and Lincoln (1989), Schwandt (1994) and Archer (2009)) acknowledge that constructivist and interpretivist paradigms are similar – hence my use of the term 'constructivist-interpretive paradigm'.

A comparison between different research paradigms is given in Table 2, in order to describe the constructivist-interpretive paradigm in more detail by also contrasting it with other paradigms that are not used in this study, namely the positivist and critical paradigms. Within the constructivist-interpretive paradigm, qualitative research methods were used, based on grounded theory methods.

Table 2: Comparison of research paradigms

		Research paradigms		
		Positivism	**Constructivist- interpretive**	**Critical theory**
Ontological questions	Nature of reality	• An objective, true reality exists which is governed by unchangeable natural cause-effect laws. • Consists of stable pre-existing patterns or order that can be discovered. • Reality is not time- or context-bound.	• The world is complex, dynamic and is constructed, interpreted and experienced by people in their interactions with each other and with wider social systems i.e. fluid definitions of a situation crated by human interaction/social construction of reality. • Reality is subjective. People experience reality in different ways. Subjective reality is important, i.e. what people think, feel, see. • Reality can only be imperfectly grasped.	• Governed by conflicting, underlying structures – social, political, cultural, economic, ethic, gender

	Nature of human beings	• Rational. • Shaped by external factors (same cause has the same effect on everyone) i.e. mechanical model/behaviourist approach. Under certain conditions people will probably engage in a specified behaviour	• Social beings who create meaning and who constantly make sense of their worlds • People possess an internally experienced sense of reality	• People can design/reconstruct their own world through action and critical reflection
Epistemological questions	Nature of knowledge	• Knowledge can be described in a systematic way • Knowledge consists of verified hypotheses that can be regarded as facts or laws • Knowledge is accurate and certain	• Knowledge is based not only on observable phenomena, but also on subjective beliefs, values, reasons and understandings • Knowledge is constructed • Knowledge is about the *way* in which people make meaning in their lives, not just *that* they make meaning, and *what* meaning they make	• Knowledge is dispersed and distributed • Knowledge is a source of power • Knowledge is constituted by the lived experience and social relations that structure these experiences
	Role of theory Theories are:	• Normative • Present 'models' • General propositions explaining causal relationships between variables	• Revisable • Approximate truth • Are sensitive to context	• Are constructed in the act of critique in a dialectical process of deconstructing and reconstructing the world
	Theory building / testing	• Postulates theories that can be tested in order to confirm or reject • Prove a theory form observable phenomena / behaviour • Test theories in a controlled setting, empirically supporting or falsifying hypotheses through process of experimentation	• Theories are built / constructed from multiple realities – the researcher has to look at different things in order to understand the phenomenon • Theory is shaped by social and cultural context	• Theories are built from deconstructing the world, from analyzing power relationships
	Role of research	• Uncover reality, i.e. natural laws • Scientifically explain / describe, predict and control phenomena	• Study mental, social, cultural phenomenon in an endeavour to understand why people behave in a certain way • Grasp the 'meaning' of phenomena • Describe multiple realities	• Breaking down institutional structures and arrangements that produce oppressive ideologies and social inequalities • Address social issues

	Research findings are true if:	• Can be observed and measured • Can be replicated and are generalisable	• Research has been a communal process, informed by participants, and scrutinized and endorsed by others	• Can solve problems within a specific context • Unveil illusions
	Role of common sense	• None – only deductive reasoning	• Common sense reflects powerful everyday theories held by ordinary people	• False belief that hide power and objective conditions
Methodological questions	Role of researcher	• Objective, independent from the subject • Investigator often controls the investigated	• Co-creator of meaning • Bring own subjective experience to the research • Tries to develop an understanding of the whole and a deep understanding of how each part relates and is connected to the whole	• Adopts role of facilitator encouraging the participation and involvement of the 'subjects' who become partners in the research process
	Role of values	• Science is value free • Values have no place in research, must eliminate all bias	• Values are integral part of social life – no values are wrong, only different	• Facts can never be isolated from values • Values of researcher influence values of research
	Methods	• Empirical • Structured and replicable observation • Quantification / measurement • Experimental – directly manipulate variables and observe	• Unstructured observation • Open interviewing • Discourse analysis • Try to capture 'insider' knowledge	• Participatory action research • Dialogical methods
	Type of studies	• Survey studies • Verification of hypotheses • Statistical analysis • Quantitative descriptive studies	• Field research conducted in natural settings in order to collect substantial situational information	

Source: Voce (2004:2-4)

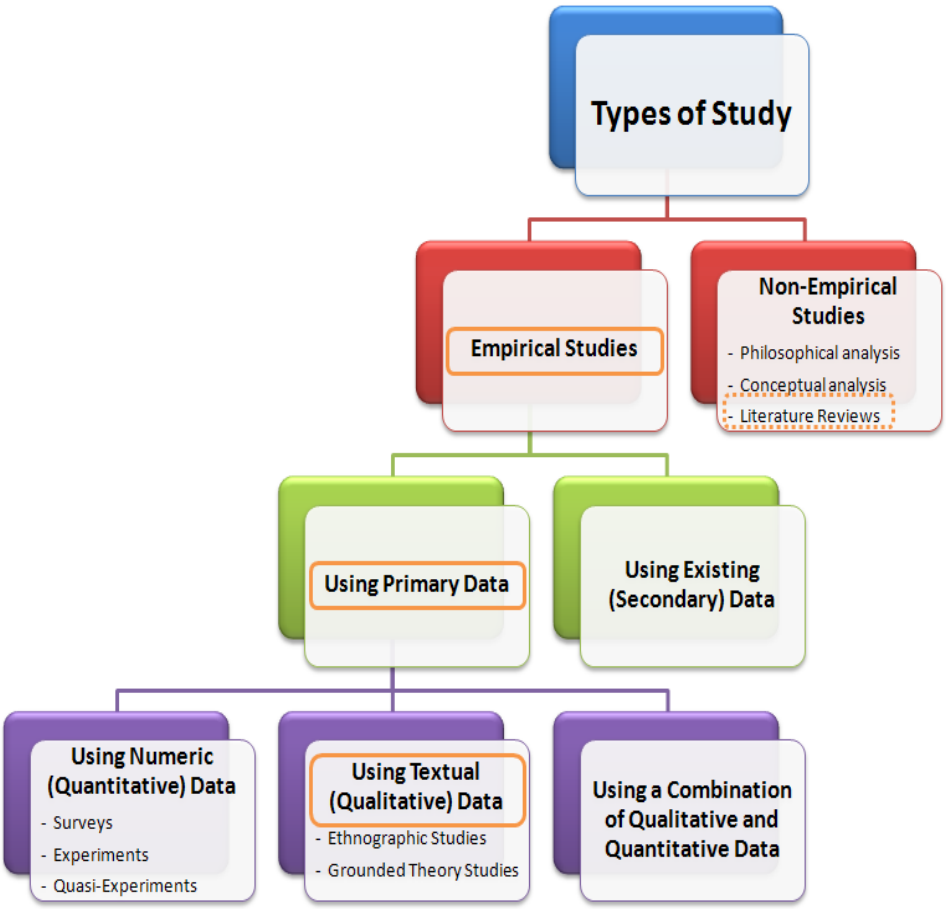
2.3 RESEARCH DESIGN

A research design is a general strategy, approach or framework for solving a research problem. It provides the overall structure for the procedures that a researcher follows, the data the researcher collects and the analyses the researcher conducts (Leedy & Ormrod, 2005:85). Simply put, it attempts to answer the question: 'What kind of study will you be doing?' (Mouton, 2001:55).

Mouton (2001:57) gives a broad classification of the main research design types, illustrated in Figure 9 below. To answer the research questions posed in Section 1.6, an

empirical study using primary qualitative data was chosen. A literature review also forms part of the study, based on the grounded theory approach. The chosen research design for the study is indicated (in orange) in Figure 9:

Figure 9: Typology of research design types



Source: Adapted from Mouton (2007:57)

I discuss qualitative research and the particular approach that I used, namely grounded theory, in the sections below.

2.4 QUALITATIVE RESEARCH

It is often argued that much of what qualitative researchers investigate might otherwise go unstudied or unnoticed if everyone were to proceed according to the methodological

guidelines provided by more conventional forms of inquiry (Contas, 1992:254). For a long time, the term 'qualitative research' was used to describe an alternative to 'quantitative' research. However, the development in this field has been such that qualitative research is no longer defined *ex negativo* (in other words, by stating that qualitative research is *not* quantitative or *not* standardized), but is rather characterised by several distinctive features (Flick, 2007a:2) – qualitative research

- 'uses text as empirical material;
- starts from the notion of the social construction of realities under study; and
- is interested in the perceptions of participants, in everyday practices and everyday knowledge referring to the issue being studied'.

Henwood and Pidgeon (1994) express a similar opinion, stating that researchers should avoid seeing qualitative research as a homogeneous category posed in opposition to quantitative research and simply reducing it to matters of method or technique. Instead, they argue for a distinctive qualitative paradigm, distinguishing between two sides of the quantity-quality debate, namely the 'technical' and the 'epistemological' (Henwood & Pidgeon, 1994:227). The technical side calls for a choice between qualitative and quantitative methods, based on pragmatic considerations, for example, sampling decisions and the availability of time and resources. By contrast, the epistemological side holds that 'the gathering, analysis and interpretation of data are always conducted within some broader understanding of what constitutes legitimate inquiry and warrantable knowledge' (Henwood & Pidgeon, 1994:227), leading to two epistemological positions that are possibly mutually exclusive. These epistemological positions are, first, experimental, hypothetico-deductive, or positivist; and, second, naturalistic, contextual, or interpretive. Although Guba and Lincoln (1994) argue for viewing discussions of the methodological aspects of qualitative techniques adopted as secondary to the paradigmatic concerns (specifically those of constructivism), I concur with the view of Henwood and Pidgeon (1994), who maintain that both sides of the debate (technical and epistemological) are bound together, as opposed to being independent determinants of choices about research methods and approaches.

Guba and Lincoln (1994:106) argue that human behaviour, unlike that of physical objects, cannot be understood without reference to the purposes and meanings attached by human actors to their activities. Qualitative data can provide rich insight into such human behaviour. Leedy and Ormrod (2005) add that the purpose of qualitative research is to study phenomena in all their complexity. Hence, qualitative researchers rarely try to simplify what they observe; instead, they attempt to study and portray the issue in its multifaceted form.

In the case of my study, I took into account that a qualitative research approach was most suitable, due to the extreme and enduring complexity of the leadership phenomenon studied. Conger (1998) argues that qualitative research is the cornerstone methodology for understanding the 'how' and 'why' of leadership as opposed to the 'what', 'where' and 'when' thereof. Folkman and Moskowitz (2004) call for narrative approaches in coping research in response to methodological critiques of coping research (see Somerfield and McCrae (2000) for a review, as discussed in Section 1.4.1). Using narrative approaches is in line with the idea that qualitative research uses text as empirical material.

For me, choosing a qualitative research design was thus not a matter of considering it a default choice as opposed to quantitative research (because qualitative research is frowned upon in a particular department) or because I felt uncomfortable with the use of statistics. Instead, it was a deliberate and critical choice to help me to answer a particular research question in the best way possible. I thus deemed qualitative research best suited to answer the research questions I wanted to answer in this study.

2.5 GROUNDED THEORY

Charmaz (2006:2) explains that grounded theory methods consist of systematic, yet flexible guidelines for collecting and analysing qualitative data to construct theories 'grounded' in the data themselves.

The defining components of grounded theory include

- 'simultaneous involvement in data collection and analysis;
- constructing analytic codes and categories from data, not from preconceived logically deduced hypotheses;
- using the constant comparison method, which involves making comparisons during each stage of the analysis;
- advancing theory development during each step of data collection and analysis;
- memo-writing to elaborate categories, specify their properties, define relationships between categories, and identify gaps;
- sampling aimed towards theory construction, not for population representativeness; and
- conducting the literature review *after* developing an independent analysis' (Glaser & Strauss, 1967).

The process of grounded theory building involves

- identifying a theoretical question of interest (*how do leaders cope during an economic downturn);*
- choosing an appropriate research context (*the South African mining industry*);
- sampling within that context in such a way that the data collection facilitates the emerging theory (*South African mining leaders from selected mining houses*); and
- making constant comparisons between the collected data.

Constant comparison refers to a technique of constantly comparing 'data first against itself, then against evolving original data, and finally against extant theoretical and conceptual claims' (Duchscher & Morgan, 2004:608). The purpose of constant comparison is to see if data supports and continues to support emerging categories (Holton, 2007:277)

Research questions best addressed by grounded theory include ones that explore new areas, seek to understand poorly understood phenomena, and attempt to understand unspecified variables or ill-structured linkages (Shan & Corley, 2006).

Within the constructivist-interpretive paradigm, I draw mainly on the constructivist grounded theory, as explained by Charmaz (2006:10), who in turn built on the original work of Glaser and Strauss (1967).

2.5.1 Literature review in grounded theory

There has been some confusion regarding the approach to and use of existing literature since the publication of *The discovery of grounded theory* (Bryant & Charmaz, 2007:19), mainly due to the diverging points of view of the founders of grounded theory on the extent to which researchers should use prior knowledge. Glaser and Strauss (1967:33) argue that researchers 'should study an area without any preconceived theory that dictates, prior to the research, "relevancies" in concepts and hypotheses'. They also advise that 'an effective strategy is, at first, literally to ignore the literature of theory and fact of the area under study, in order to assure that the emergence of categories will not be contaminated by concepts more suited to different areas' (Glaser & Strauss, 1967:37). By contrast, as Hesse-Briber (2007:325) points out, Strauss and Corbin call for a 'theoretical sensitivity' that acknowledges the importance of a researcher's prior experiences and theoretical ideas.

To overcome this confusion, one must examine the reason for Glaser and Strauss's sanction against researching the literature at the initial stages of a research project: there is some concern that a researcher might stifle theory development by imposing concepts from the literature on the data too early on, rather than allow the theory to emerge naturally (Urquhart, 2007:341). Grounded theory rejects *a priori* theorizing (Locke, 2001). However, this does not mean that grounded theory researchers should ignore the literature or enter the field lacking an understanding of the theoretical question that is to be addressed. However, it does mean that researchers should not let

preconceived constructs and hypotheses direct their data collection. *Ex-post theorizing* is required within a contextualisation of the findings and novel theoretical contributions within the framework provided by existing theory (Shan & Corley, 2006).

In light of the above, I used the literature review for two main purposes. Firstly, I used it as an orienting process. According to Urquhart (2007:351), such a process allows a researcher to be aware of the current thinking in the field without taking a position about the research to be done. This approach was useful in 'nesting' the problem, a term used by Walcott (1990:17, in Silverman, 2005:299), allowing me to contextualise my study to argue a case and identify a niche that my research would occupy, as suggested by Henning (2004:27). Thus, part of the literature review was done prior to the data collection and data analysis, while bearing in mind the original reason for delaying a literature review: not to force preconceived ideas onto the data.

Secondly, I used my literature review to explain my data, showing the relevance of my findings in relation to the existing body of knowledge (Henning, 2004:27). Stern (2007:123) uses the following quotation by Robert Burton (cited from *Bartlett's familiar quotations*, 1980:258) to explain this eloquently: '...a dwarf standing on the shoulders of a giant may see farther than the giant himself.' Stern (2007:123) notes that, while you may feel like a giant when you write up grounded theory, you are in fact a dwarf, which makes it important to position your work within the body of related literature, firstly, because it is academically honest to do so and, secondly, in order to demonstrate how you built upon it 'so you can see further'. Doing a literature review after data analysis completes and enriches your work with the aim of demonstrating how it adds a new dimension, an element that heretofore was unknown. In my case, it allowed me to show how I was standing on the shoulders of giants, and to acknowledge which giants, in order see further.

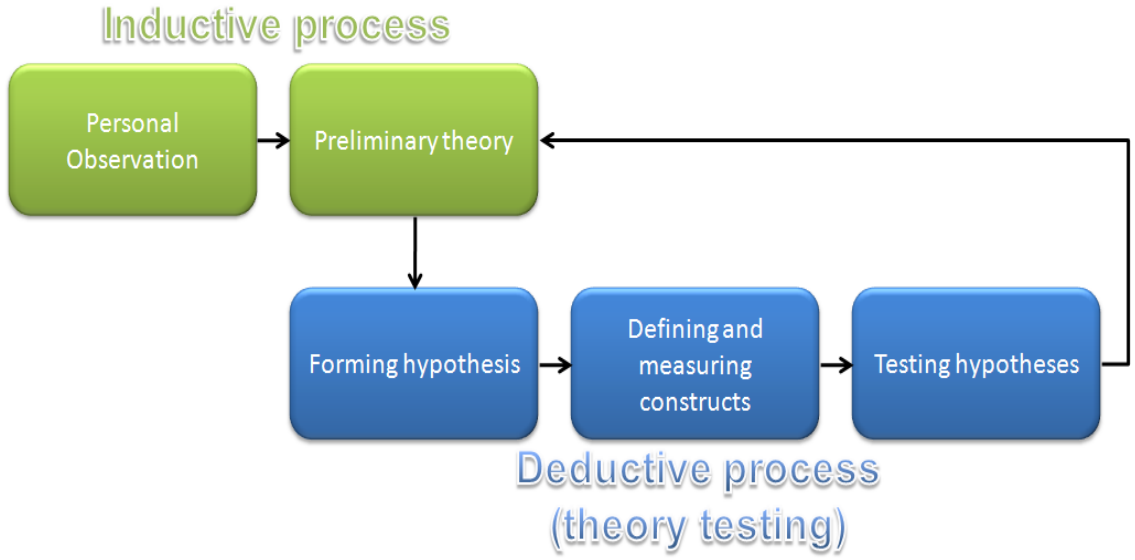
2.5.2 Methods of reasoning

Both inductive and deductive approaches to reasoning are used in this study:

- Inductive reasoning begins with the observation of examination of events or specific processes in order to reach wider and more general statements based on the events or processes. The assumptions are inferred from the research results (findings) and create a theory (Voce, 2004:4).
- Deductive reasoning includes the creation or designing of a theory, determining the assumptions in relation to that theory and analysing those assumptions in the face of reality. The assumptions are inferred from a theory and examined in order to prove or disprove a theory (Voce, 2004:4).

The theory building process, including inductive and deductive reasoning, is illustrated in Figure 10.

Figure 10: The theory building process



Source: McShane and Von Glinow (2005:557)

Although the concept of induction is often applied to qualitative research and more specifically to grounded theory research, Strauss and Corbin (1998:126) argue that both

inductive and deductive reasoning are used in grounded theory. They are of the opinion that there is a constant interplay between data and the researcher, as the researcher conceptualises the data or develops hypotheses through interpretation, which these authors regard as a form of deduction. Charmaz (2006:103) adds that theoretical sampling *per se* entails both inductive and deductive reasoning, as a researcher interprets data and then tests 'hypotheses' though subsequent data collection.

However, in the development of the conceptual framework developed in my study (see Chapter 5), a third form of reasoning or inference was also applied, namely abduction. The concept of abduction, developed by Peirce in the late nineteenth century, consists of 'assembling or discovering, on the basis of an interpretation of the collected data, such combinations of features for which there is no appropriate explanation or rule in the store of knowledge that already exists' (Reichertz, 2007:217). Through abduction, one invents a way of understanding, or a conceptualisation, achieving a synthesis of observations, using what Locke (2007:567) calls dual thinking modes, a combination of conscious controlled thought and spontaneous and creative inference.

2.6 RESEARCH METHODOLOGY

2.6.1 Role of the researcher

When one is working within a constructivist-interpretive paradigm, it is particularly important to highlight the role of the researcher in the qualitative research process. In this paradigm, the researcher can be seen as a research instrument that serves to understand the meanings of an action or how participants construct their reality (Sciarra, 1999:41). Sciarra (1999:43) regards the researcher, firstly, as an actor (as opposed to the onlooker typical of quantitative research) that allows him- or herself to become part of the world of the participant, for example, through extensive interviewing. Secondly, the researcher does not exert control over the participants, but rather interacts with them. A qualitative researcher enters the world of the participants 'not as a person who knows everything, but as a person who has come to learn; not as a person who wants

to be like them, but as a person who wants to know what it is like to be them' (Bogdan & Biklen, 1992:79, cited in Sciarra, 1999:43).

Thirdly, the researcher's subjectivity is seen as a critical component of qualitative research. The researcher becomes close to the participant and this type of closeness requires identification and emotional involvement with the participant in a way that, in quantitative research, could be seen as hampering the research process.

Moreover, reflexivity is an important method that qualitative researchers use to ensure that their closeness and interaction with the participants does not affect the research negatively. Qualitative researchers reflect on ways in which bias might influence qualitative research practice, and we acknowledge our own background and beliefs that can be relevant (Snape & Spencer, 2003:20).

2.6.2 Sampling

The population of a study is comprised of the complete set of cases or people to be studied (Saunders, Lewis & Thornhill, 2007:607). In the current study, the population consisted of individual South African mining leaders employed by a mine or mining group. For the purposes of the study, 'mining leaders' are defined as members of a mine or mining group's South African executive committee.

For some research questions, it is possible to collect data from an entire population, as it is of manageable size. For this study, however, I employed a process of sampling to enable a reduction of the amount of data that should be collected by considering only data from a subgroup (sample) rather than the impractical use of all cases or elements. Several different types of sampling were used in this study. These types of sampling are discussed below.

2.6.2.1. Purposive sampling

Rather than aspiring to representativeness, qualitative research mostly intends to reflect the diversity within a given population. Historically, qualitative research, according to Barbour (2001:1115), often relied on convenience samples, especially when the group of interest was difficult to access. By contrast, purposive sampling offers a researcher a degree of control, selecting units on the basis of the researcher's judgement about which units will be most useful or representative. This selection is made based on the researcher's knowledge of the population, its elements and the purpose of the study (Babbie, 2007:184). Purposive sampling was selected for this study as an initial sampling strategy.

Sampling took place on an institutional (mine) level, as well as on an individual (mining leader) level, although the unit of analysis was individual leaders. Based on my knowledge of the population and the purpose of the study, mines or mine groups were selected which are involved in beneficiating a variety of commodities, namely gold, platinum and uranium.

Individual leaders (executives) within each company were also selected purposively from the executive committees to form the sample of individual sampling units.

2.6.2.2. Theoretical sampling

In theoretical sampling, a researcher aims to develop the properties of the developing categories or theory, seeking people, events or information to illuminate and define the boundaries and relevance of the categories (Charmaz, 2006:189). This type of sampling is especially relevant in grounded theory research as applied in this study, and it was decided to use this kind of sampling in order to answer the research questions as fully as possible. Charmaz (2006:189) explains that in grounded theory, initial sampling (purposive sampling, in this study) is where the researcher starts, whereas theoretical sampling directs one to where one goes.

2.6.2.3. Theoretical saturation

Theoretical saturation is reached, according to the standard definition set out by Glaser and Strauss (1967:61), when no additional data are found that can be used to develop the properties of a category. Strauss and Corbin (1998:136) argue that saturation is a matter of degree, because one can always find additional properties or dimensions of a category if one looks 'long and hard enough'. They therefore propose that theoretical saturation is 'more a matter of reaching a point in the research where collecting additional data seems counterproductive; the "new" that is uncovered does not add that much more to the explanation at this time' (Strauss & Corbin, 1997:136).

2.6.3 Data collection

Data collection in qualitative research can be done using a variety of methods, including interviewing, textual analysis, focus groups, observation. Richards and Morse (2007:111-112) provide a list of techniques for collecting qualitative data (see Table 3).

Table 3: Techniques for qualitative data collection

Data collection method	Characteristics	Commonly used in
Unstructured, interactive interviews	• Relatively few prepared questions, maybe one or more main questions • Researcher listens to and learns from the participant • Unplanned, unanticipated questions may be used, also probes for clarification	• Ethnography • Discourse analysis • Grounded theory • Narrative inquiry • Life history • Case study
Informal conversations	• Researcher assumes a more active role than in interactive interviews	• Phenomenology • Ethnography • Grounded theory
Semi structured interviews	• Open-ended questions are developed in advance, along with prepared probes • Unplanned, unanticipated probes may also be used	• May be used in ethnography, grounded theory or as a 'stand-alone' method

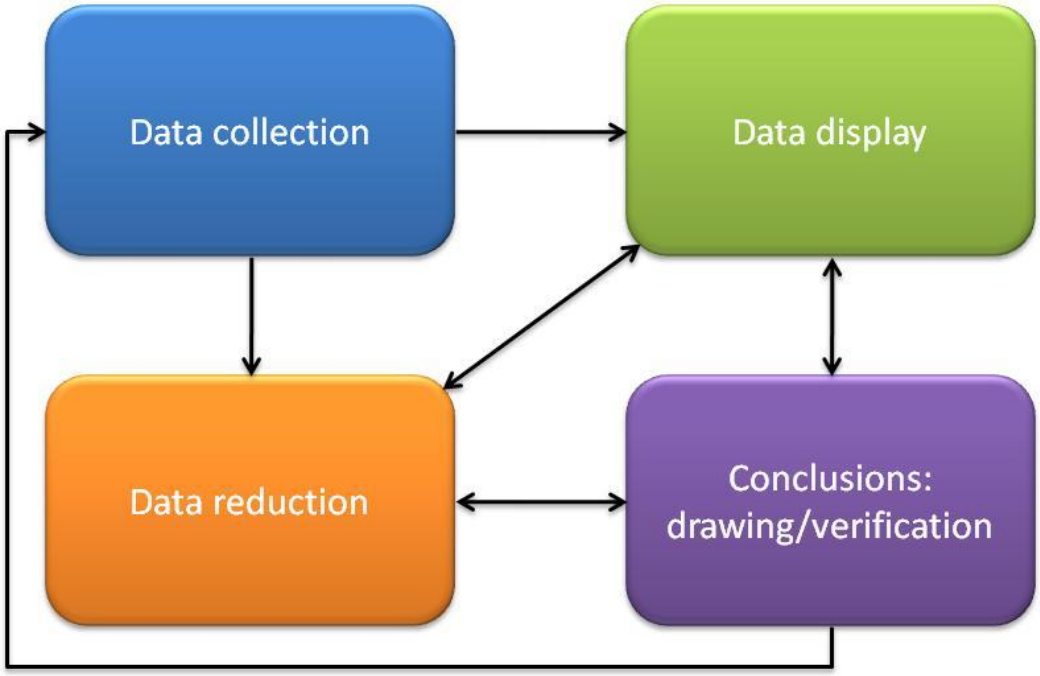
Group interviews	• Recorded • Limited number of open ended questions are asked • Facilitator stimulates dialogue among participants	• Focus groups (type of group interview) • Informal groups may be used in ethnography
Observations	• Field notes may be recorded as notes (and later expended on) or recorded and later transcribed • Participant or non-participant observation may be used	• Ethnography • Grounded theory • Supplement to interviews in all methods
Documents	• May be collected during research and used to give background or detail	• All methods
Diaries, letters	• May be retained in detail or summarised	• Many methods, especially life history

Source: Richards and Morse (2007:111-112)

For this study, interactive interviews were used. These were what Charmaz (2006:25) terms ‘intensive interviewing’. Field notes describing observations were made during the interviews.

However, before discussing interviewing as a data collection method in more detail, it is important to note that, although data collection, analysis and display are discussed separately in this document, they are in fact all part of an interactive process, as is indicated in Figure 11 (overleaf).

Figure 11: Interaction between data collection and data analysis



Source: Miles and Huberman (1984:23)

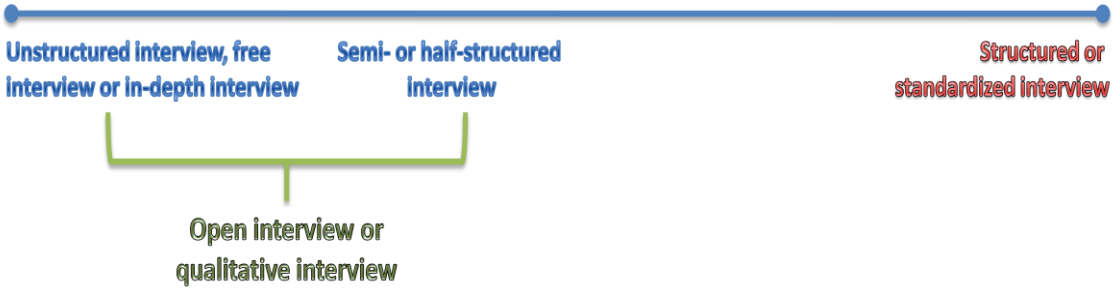
2.6.3.1. Intensive interviewing

Charmaz (2006:25) refers to 'intensive interviewing' as permitting an in-depth exploration of a particular topic. Thus it is useful for interpretive enquiry. The aim of this type of interviewing is to obtain 'rich data' or 'thick descriptions' that are focused and detailed, and that fully reveal participants' views, feelings, intentions and actions, as well as the context and structures of their lives (Charmaz, 2006:14) – in this case, the way in which leaders cope during an economic downturn.

Mason (2002:231) claims that it is not possible to conduct completely structure-free interviews, arguing that as a minimum the agendas and assumptions of both the interviewer and interviewee will impose a framework for meaningful interaction. Charmaz (2006:26) holds a similar view; and suggests that researchers devise a few broad, open-ended questions in the form of an interview guide and then use their interview questions to invite detailed discussions of the topic. Boeije (2010:62) proposes

a classification of interviews based on their pre-structuring (see Figure 12) and classifies an interview as 'open' when it depends, at least in part, on the source and situation of each individual interview.

Figure 12: Interviews classified by extent of pre-structuring



Source: Boeije (2010:62)

2.6.3.2. Interview guides

An interview guide, or a list of questions to be explored in the course of the interview, was used for the intensive interviews in this study. Intensive interviewing suits grounded theory well, as it is open-ended, yet directed, shaped yet emergent, paced, yet unrestricted (Charmaz, 2006:53). The purpose of the open-ended questions in the interview guide was thus to shape and pace the interviews, while remaining emergent and unrestricted. In Table 4 (overleaf), an example of the interview guide used in this study is given.

Table 4: Interview guide

Main	Probe for
How does the economic downturn affect your organisation?	Specific examples and situations
What was/is your role in the organisation during the downturn?	Not merely position, but role in downturn response
How does the economic downturn affect you as a person?	Specific examples and situations of individual impact
How did you handle a typical situation mentioned?	Other strategies used in other situations?
How would you have done things differently (if applicable) in retrospect?	Specific examples
What advice would you give to a fellow executive to cope with an economic downturn?	
Does your organisation assist you to cope during the economic downturn?	• Specific actions • If so, how?
Would you like to add anything else that you feel might be relevant that we have not discussed?	

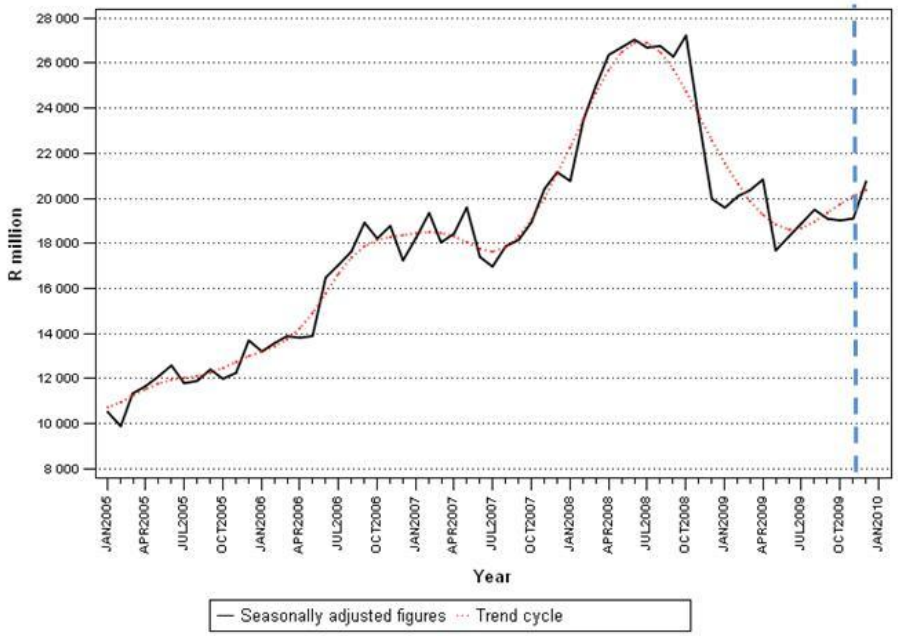
2.6.3.3. Timing of data collection and research

Folkman and Moskowitz (2004:751) distinguish between momentary accounts, where coping is measured during a stressful event. This approach addresses the potential problem of bias due to recall, but it may also under represent the coping complexity and what people actually cope with. Retrospective measurement deals with coping complexity, but introduces potential recall bias. Coping measurement is therefore seen as an art, as much as it is a science. The timing of both kinds of data collection effort considers different aspects of the coping, all part of the coping process.

Data collection for this study was done during November and December 2009, at the end of the downturn, but it was a period that was still very much, at that stage, viewed as part of the downturn. As Figure 13 illustrates, although the mining industry (in terms

of sales) started to recover, showing a positive trend, the total sales volume remained low. I believe that I therefore addressed the complexities of coping, while also limiting potential bias due to recall.

Figure 13: Total volume of mineral sales



Source: Statistics South Africa (2010c:5)

2.6.4 Data recording

Bogdan and Biklen (1998, cited in Schurink, 2004:9) provide valuable advice on the recording of qualitative data. Researchers should

- undertake to keep data physically well organised and develop a plan to ensure this;
- create a backup system, ensuring that they have hard copies of all captured data in a manual filing system, as well as electronic backups stored separately; and
- safeguard documents and store them in a secure environment.

2.6.4.1. Transcribed interviews

Data recording and the transcription of audio or video recordings have advantages during data analysis, but also for the entire research process. Recordings, according to Boeije (2010:72)

- benefit data quality, as the researcher can focus on the interview and/or observation without having to worry about taking notes;
- improve data quality, as the researcher does not have to select what to take notes on and what to leave out during the interview;
- benefit data quality, as they facilitate discussion of the interview with peers to aid interview technique as well as data interpretation;
- are considered an important guarantee of data quality, illustrating a commitment to quality; and
- provide direct quotes that can be used in the final report for readers to judge the relationship between researcher's interpretation of the data and the data itself.

Data is inevitably altered during transcription, as facial expressions, tone and intonation are lost, or are based on subjective interpretation where they are included in the form of inserted descriptions. Charmaz (2006:34) proposes close study of recordings with transcriptions to assist the researcher to attend closely to a respondent's feelings and views despite the alteration of transcribed data. In addition, field notes assist the researcher in to capturing observations made during the interview which cannot be captured either through a recording or the subsequent transcriptions of recordings.

2.6.4.2. Field notes

Field notes, according to Schurink (2004:11) are 'written accounts of what researchers hear, see, experience, and think in the course of collecting and reflecting on the data in qualitative research studies'.

Material that should typically be included in field notes includes reflections

- on analysis, that is, thoughts on what the researcher is learning, potential themes that are emerging, links between data and any other thoughts that the researcher may have;
- on method, that is, information on methods used during the study and the researcher's interaction with respondents;
- on ethical dilemmas and conflicts, that is, any ethical concerns regarding the researcher's values and the responsibility to the subjects; and
- on the researcher's frame of mind, in other words, his or her assumptions about the research setting, feelings and potential bias.

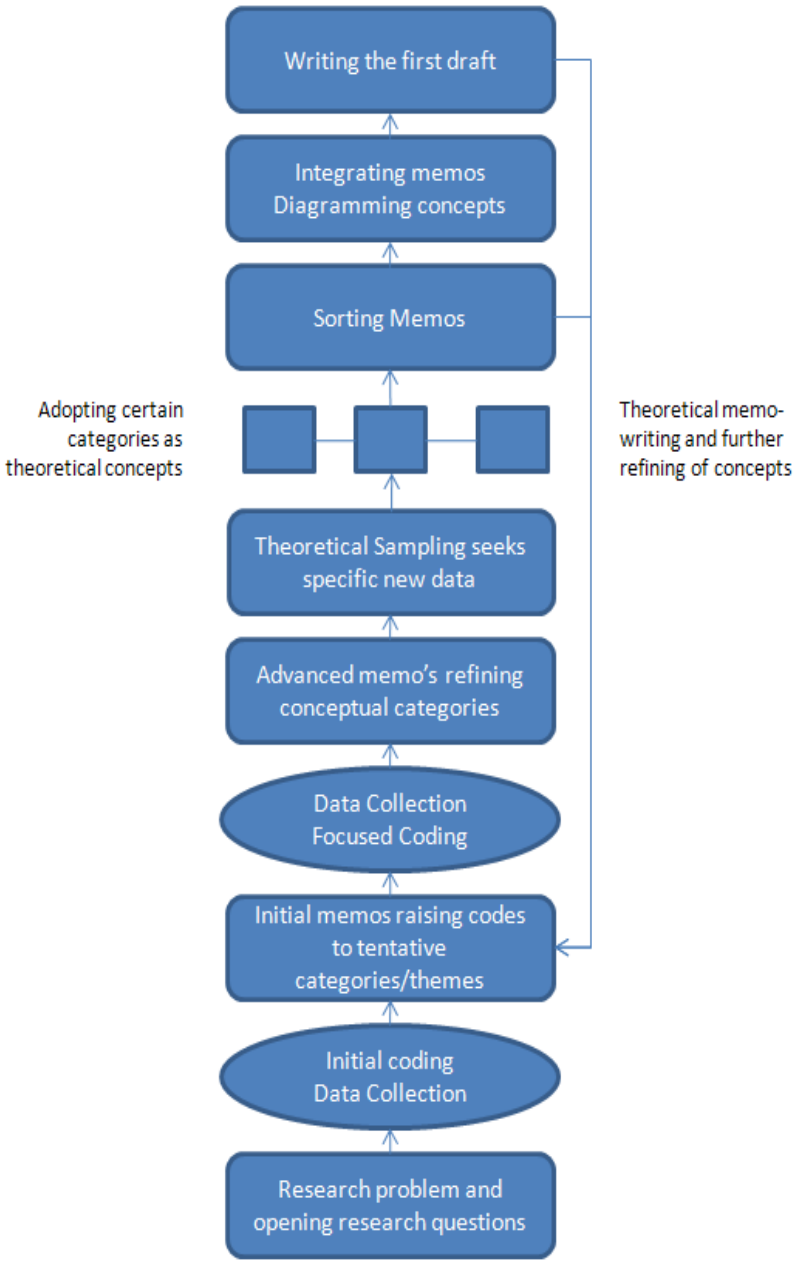
Gibbs (2007:27) suggests that one should write field notes as soon as one can, distinguishing between merely recording what has happened and recording one's own actions and reflections.

2.6.5 Data analysis

As mentioned in Section 2.6.3, although data collection and data analysis are two separate sections of this document, there is no separation between the two in qualitative research. Data analysis should begin in the field, by taking field notes and keeping a research diary. Indeed, a research diary can be kept even before the first interview takes place (Gibbs, 2007:3).

This is illustrated well in the grounded theory process, where data collection and data analysis take place concurrently from the beginning of the process, as indicated in Figure 14 (overleaf).

Figure 14: Grounded theory process



Source: Charmaz (2006:11)

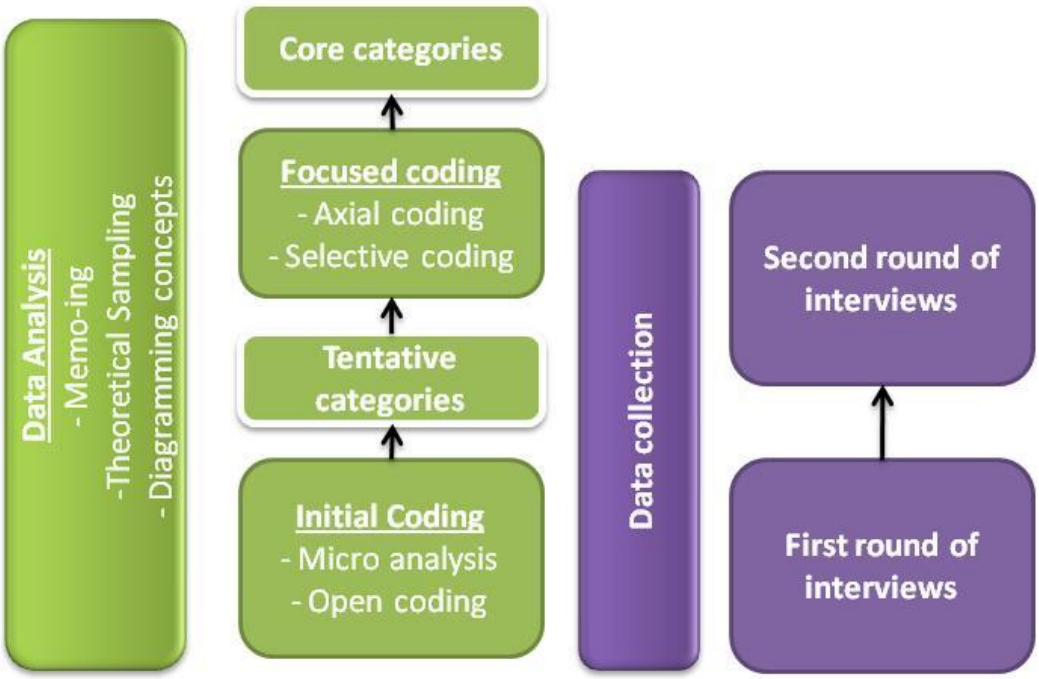
According to Charmaz (2006:43), coding is the first step in moving beyond concrete statements in the data to making analytical interpretations. She defines coding as 'categorising segments of data with a label that simultaneously categorises, summarises and accounts for each piece of data'.

Different types of coding were used in this study:

- Initial coding: Initial coding sticks closely to the data and does not apply pre-existing categories to the data. Coding can be done per word, line or incident.
- Focused coding: This method of coding requires using the most significant and/or frequent earlier codes to sift through large amounts of data. This is done to assist the researcher in synthesizing and explaining larger segments of data (Charmaz, 2006:58-60).

I refined both initial and focused coding, as depicted in Figure 15.

Figure 15: Revised data analysis process



Source: Adapted from Charmaz (2006:11)

Initial coding was refined to include micro-analysis, as well as open coding. Micro-analysis is the careful, often minute, examination and interpretation of data (Strauss & Corbin, 1998:58), similar to the word-by-word coding described by Charmaz (2006:50). Open coding refers to uncovering, naming and developing concepts opening up the data (Strauss & Corbin, 1998:102). These two coding actions were not done separately:

micro analysis was used in the naming of concepts in open coding, keeping closely to the data and the principles of initial coding set out by Charmaz (2006:49):

- remain open;
- stay close to the data;
- keep codes simple and precise;
- construct short codes;
- preserve actions;
- compare data with data;
- move quickly though the data.

Secondly, focused coding was refined to two distinct 'steps' of focus, namely axial and selective coding. Axial coding attempts to reassemble data that were 'fractured during open coding' (Strauss & Corbin, 1998:124) and to sort, synthesize and organise large amounts of data (Charmaz, 2006:60). Selective coding further integrates and refines categories (Strauss & Corbin, 1998:143).

2.6.6 Computer-aided qualitative data analysis

Qualitative data by their very nature tend to be rich and complex, but also non-standardized. Computer-aided qualitative data analysis was used in this study to assist in the management and integration of the transcripts, field notes and memos produced in the study.

Hall (2008:37) notes some advantages of using computer-aided qualitative data analysis:

- systematic data management and handling, using self-generated (grounded) or imported (from established methodologies) classifications;
- retaining context, in that the coding and 'pieces' of information are linked back to the original documentation from which they were cut; and
- enabling continual reference to data, allowing the researcher to investigate data from different perspectives and to various degrees of depth.

The Atlas.ti (version 6) software package was used in this study, due to its origin in grounded theory.

2.7 THE QUALITY AND RIGOUR OF THE RESEARCH DESIGN

Historically, it was suggested that the classical criteria of empirical social research – reliability, validity and objectivity – should be applied to qualitative research, or modified to fit this type of research (Flick, 2007b:5). However, since Lincoln and Guba (1985) suggested the substitution of the classical criteria of quantitative research (reliability, validity and objectivity) in qualitative research with what they termed 'trustworthiness', more attempts to move away from the classical criteria in qualitative research have become evident (Flick, 2007b:5). Lincoln and Guba (1985) suggest that trustworthiness is established through credibility, transferability and dependability and confirmability:

- Credibility deals with truth-value, which in traditional research is referred to as internal validity. To test truth-value, one would need to determine whether the interpretations that were made were credible, based on the subjects' own interpretations. Member checking, 'the most crucial technique for establishing credibility', according to Lincoln and Guba (1985:314, cited in Creswell & Miller, 2000:127), was also employed: a group of respondents were asked to review whether the themes and categories made sense and whether my interpretation of the data was realistic and accurate.
- Transferability, as an alternative to external validity, is 'the degree to which similarities exist between contexts that allow findings to be transferred from one situation to another'. The use of 'thick' descriptions provides a framework for comparison from which transferability may occur.
- The use of thick descriptions is once again the key to dependability and confirmability. 'Thick descriptions allow for an inquiry audit where the process can be followed to determine whether it was clear, systematic, well documented, and provided a safeguard against bias'.

The use of thick descriptions was the focal strategy in demonstrating quality in this research study, ensuring that interviews were conducted in such a way that thick descriptions were encouraged and facilitated. Dependability and confirmability were ensured by keeping process notes, keeping the raw data in the form of transcripts and leaving a thorough audit trail.

2.8 ETHICS

Ethics in research, or the appropriateness of the researcher's behaviour in relation to the rights of those who become the subject of the research, or are affected by it, is relevant in every stage of the research (Saunders *et al*., 2007:178). The ethical considerations relevant to this research are discussed below, with measures to ensure that ethical principles are adhered to.

- **Access:**
  Mines or mining groups were approached to participate in this study. I have been working in the mining industry for more than five years and have several contact persons within the industry. I approached them to facilitate contact with the relevant individuals in a position to grant access and provide consent on an institutional level for the research within their mine or mining house. Three mines agreed to participate.
- **Consent:**
  Informed consent was given by all three mines. Formal letters of informed consent were signed by the institutions upon acceptance of the research proposal by the University of Pretoria. Individual respondents also provided informed consent by signing a formal consent form. See Appendix A for an example of an institution's informed consent form and Appendix B for an example of an individual's informed consent form.
- **Confidentiality and anonymity:**
  This is a particularly important aspect due to the personal nature of the exploration of this research and the fact that respondents might feel that it could have an effect

on their position within the organisation if their coping decisions became public. Individual respondents' identities and mine affiliation were therefore treated as confidential. Mines and mine houses are also sensitive about public perceptions, and therefore responses are not linked to a particular mine. No mine-related information from which the identity of the particular mine can be inferred is used.

2.9 CONCLUSION

In this chapter I provided an overview of the chosen research design, focusing on qualitative research and grounded theory. The research methodology that I used was also discussed from a theoretical perspective. I also gave an account of how the quality and rigour of the research design were ensured. I concluded the chapter with a discussion on the research ethics relevant to this study.