A proposed model and measuring instrument for internal safety communication: A longitudinal study in the South African mining and construction industries

by

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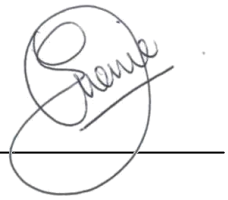
I declare that *A proposed model and measuring instrument for internal safety communication: A longitudinal study in the South African mining and construction industries* is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.



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ABSTRACT

As much as the mining and construction industries in South Africa have been the backbone of the South African economy since the discovery of gold at the turn of the 19th century, so too have they been responsible for most work-related deaths in their employee population, due to their inherent hazardous working conditions. It is for this reason that the governing bodies of these industries have started to clamp down on safety in organisations, legislatively ensuring that all organisations adhere to comparatively stringent and austere regulations, or face possible shutdown. Internal safety communication is, therefore, not only literally a matter of life and death, but also forms part of complying with the laws of the country.

Notwithstanding its importance, this inimitable form of internal organisational communication has yet to be widely researched. Positioned within this void, this study proposes the first model for internal safety communication within the context of the South African mining and construction industries, as well as a measuring instrument for its evaluation.

The research into these two contributions is based on a sound and rigorous literature review, focusing on the chronological development of germane theories, onwards from the systems theory – the meta-theory of this research. Subsequently, the empirical research of the study was done at two organisations seated within the mining and construction industries of the country, and comprises interviews, focus group discussions and a questionnaire. In this way, the research took the form of a longitudinal study, in terms of the testing of the two contributions, but specifically the measuring instrument. This testing was done during the first stage of the empirical research at the *Gautrain project* and after the research intervention yielded from the findings of this first stage, the

contributions were reworked and tested again in the second empirical stage of the research, at *Diesel Power Opencast Mining*.

The model and the empirically tested and validated measuring instrument for internal safety communication – both for the context of the South African mining and construction industries – expand and contribute to the field of internal organisational communication in an imperative and relevant way, providing new theory from the South African context.

Keywords

safety communication; SHE communication; SHEQ communication; mining communication; construction communication; internal communication; holistic communication; safety questionnaire; relationship management; South African mining industry; South African construction industry

OPSOMMING

Net soos die mynbou- en konstruksie-bedrywe die ruggraat van die Suid-Afrikaanse ekonomie is sedert die ontdekking van goud teen die wending van die 19de eeu, is hulle ook verantwoordelik vir die meeste werkverwante sterfgevalle in hulle werkmag as gevolg van die inherente gevaarlike werksomstandighede. Daarom het die bestuursliggame van hierdie bedrywe begin om fermer standpunt in te neem oor veiligheid en om deur wetgewing te verseker dat al die instellings gehoor gee aan rigiede en streng regulasies, of die gevaar te loop om gesluit te word. Interne veiligheidskommunikasie is daarom nie net letterlik ’n geval van lewe en dood nie, maar speel ook ’n belangrike rol in die nakoming van die landswette.

Ten spyte van die belangrikheid van hierdie interne veiligheidskommunikasie, is dit ’n gebied waarin daar nog wye navorsing gedoen moet word. Geleë binne genoemde leemte, bied hierdie studie die eerste model vir interne veiligheidskommunikasie binne die unieke agtergrond van die mynbou en konstruksiebedrywe, sowel as ’n meetinstrument vir die evaluering daarvan.

Die navorsing van hierdie twee bydraers is gegrond op ’n wye en deeglike studie van die literatuur wat fokus op die kronologiese ontwikkeling van relevante teorieë van die sisteemteorie – die metateorie van hierdie navorsing. Daaropvolgend is die studie se empiriese navorsing uitgevoer by twee organisasies wat in die mynbou- en konstruksiebedrywe van die land gesetel is. Die studie behels onderhoude, fokusgroepbesprekings en ’n vraelys. Op hierdie manier neem die navorsing die vorm van ’n longitudinale studie aan, in terme van die toets van hierdie twee bydraes, maar spesifiek die meetinstrument. In die eerste stadium word dit empiries getoets by die *Gautrein-projek* en, nadat die inligting van hierdie eerste stadium van die empiriese navorsing verkry, verwerk

en weer bygewerk is, is dit in die tweede stadium van die empiriese navorsing by *Diesel Power Opencast Mining* getoets.

Die model vir interne veiligheidskommunikasie asook die empiries getoetste en geverifieerde meetinstrument vir die evaluering daarvan – albei vir die konteks van die Suid-Afrikaanse mynbou- en konstruksiebedrywe – ontwikkel en lewer ’n bydrae tot die gebied van interne organisatoriese kommunikasie op ’n imperatiewe en relevante manier en bied sodoende ’n nuwe teorie vanaf die Suid-Afrikaanse konteks.

Sleutelwoorde:
veiligheidskommunikasie; VGO-kommunikasie; VGOK-kommunikasie; mynboukommunikasie; konstruksiekommunikasie; interne kommunikasie; holistiese kommunikasie; veiligheidsvraelys; verhoudingsbestuur; Suid-Afrikaanse mynboubedryf; Suid Afrikaanse konstruksiebedryf.

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CHAPTER 1
INTRODUCTION, PROBLEM DESCRIPTION AND OBJECTIVES

1.1 INTRODUCTION

Organisational communication has been credited with being “the lifeblood of an organisation” (Dolphin 2005:173), as without it an organisation is unable to set goals and objectives, or to motivate or obtain them. Specifically, internal organisational communication is further seen as a major gauging and guiding factor in this goal attainment, as it is responsible for shaping and guiding employee behaviour and gratification (Wood 2006:1; Bates, Botha, Botha, Goodman, Ladzani, De Vries, De Vries, November & Southey 2005:294). Concerning the mining and construction industries of South Africa, an unique dimension of this is experienced, as internal organisational communication can literally be the difference between life and death for employees, and between operation and shutdown for the organisation. This unique dimension is internal employee safety communication or, as referred to in this study, internal safety communication. The reason why it is so important is because these industries are ascribed the highest mortality rate for employees and are consequently ruled austerely by government sectors (DoL 2011; DMR 2009).

Notwithstanding this importance, no clear, direct or unswerving guidelines are present in internal organisational communication literature for internal safety communication, not to mention within the unique context of the mining and construction industries of South Africa. This research is positioned to address this void by offering a model for internal safety communication, and a measuring instrument for its evaluation – both theoretically and empirically grounded.

This chapter focuses on introducing and orientating this research by means of its contextualisation (specifically within the context of the mining and construction industries of South Africa); the research problem and questions that emerged from it; the approach followed (epistemologically, methodologically and theoretically); its delimitation; and the focus of the chapters that follow.

Before this is done, however, clarity regarding the terminology and lexis of this study should be obtained by operationalising those deemed noteworthy in terms of the focus of this study.

1.2 DEFINITIONS OF KEY TERMS

1.2.1 Safety

The term *safety*, as it is used in the context of this study, refers to the concept of occupational health and safety. This is seen as the cross-functional discipline that is concerned with all activities that seek to eliminate or minimise conditions that can cause injury, illness or property damage from the hazards of the organisational setting (Frank 2000:340; Akpom & King 1999:428). As a secondary effect, it may also protect family members or communities affected by the organisation's activities (Frank 2000:340).

1.2.2 Internal safety communication

Internal safety communication exists to aid receivers internal to an organisation in achieving safety-related goals, to perform work activities safely, to solve work-related problems safely and to achieve organisational safety goals. All this are reached through effectual internal organisational communication, which alludes to both quantity and quality of safety information exchange (Greeff 2010:21). Alongside internal safety communication, other forms of safety communication can also be seen. An example of this is external safety communication, which refers to the communication of safety goal attainment, pledges, safety successes and the like to external stakeholders, such as investors or even governing bodies of the mining and construction industries. In terms of this study, however, the specific focus is internal safety communication and furthermore, expressly internal employee safety communication.

1.2.3 Production communication

Aligned to the definition above, namely of internal safety communication, production communication also exists to aid receivers in achieving organisational goals, but in this instance as they relate or pertain to the production output of the organisation in the mining and construction industries. This communication is aimed at output or production goals, and is conveyed in order to allow employees to do their individual tasks in the interest of the output of the organisation, done in accordance to its goals (Greeff 2010:21). Production communication is very often juxtaposed against internal safety communication in the mining and construction industries of South Africa. For this reason, in this thesis, it is referred to not as a focus or subject matter of the research, but rather as an element that habitually impacts on internal safety communication.

1.2.4 Internal organisational communication

Internal organisational communication is described as the cross-functional communication transactions between individuals and/or groups on different levels in an organisation. The main focus of internal organisational communication is employee communication that is strategically managed (Verčic, Verčic & Sriramesh 2012:223; Hallahan, Holtzhausen, Van Ruler, Verčic & Sriramesh 2007:4), as it makes room for upward, downward, as well as horizontal communication flows (Van Staden, Marx, Erasmus-Kritzinger 2005:15; Holtz 2004:7). As stated above, in line with the main focus defined by Verčic et al (2012:223), this study centres its attention on employee communication, in terms of its references to internal organisational communication.

1.2.5 Internal organisational communication channels and media

Internal organisational communication channels are defined as the media that are generated and used internally in an organisation (Verčic et al 2012:227; Steyn & Puth 2000:91). These channels are specifically designed with employees as target group in mind and consist of communication to and from employees (Rensburg 2003:142; Steyn & Puth 2000:91).

1.2.6 Symmetrical and asymmetrical communication

Symmetrical communication is described as communication that strives to create a balance between the organisation and its stakeholders. Symmetrical communication from an organisation allows for feedback from receivers (stakeholders) and in this way practises two-way communication – with reference to the flow of communication. It is only when the reciprocation of stakeholders is acted upon that the communication becomes symmetrical in nature, and balance is ensured between the organisation and its stakeholders. Contrary to this, *asymmetrical* communication in an organisation does not take the views of its stakeholders into account. Frequently, the views of the stakeholders are not even known to the organisation, as the message flow is one-way. In this instance, the communication between the organisation and its stakeholders becomes one-way asymmetrical (Mishra & Li 2008:33; Grunig 2008:1; Grunig, Grunig & Dozier 2002:6).

1.2.7 Stakeholders

The concept *stakeholder* is used to refer to a person or group who has a stake, interest or ownership in, or a claim or right to an organisation (Freeman 1984:46). Stakeholders influence an organisation and are influenced by the organisation. In light of this, stakeholders also help or hinder the organisation to reach its goals, including safety goals (Steyn & Puth 2000:5; Ledingham & Bruning 2000a:75; Freeman 1984:46). The main stakeholder group under investigation in this study is employees, defined as one of the main and primary groups (in terms of their importance) that an organisation could be faced with (Ledingham & Bruning 2000a:75; Freeman 1984:46).

1.2.8 Dominant coalition

This term is used to refer to those, usually the top executives of an organisation, who are in control of the management of an organisation or, as Grunig (1992:24) phrases it, are the “power holders of the organization”. This coalition is inherently involved in the strategic planning and implementation phases of the management of every sector of their organisation (Bowen 2009:418; Chen 2008:170).

1.2.9 The organisational environment

For the purposes of this research, organisational environment is defined as anything inside or outside the organisation that can generate change pressures on that organisation. The factors in the environment that generate these change pressures, as well as their influence, differ from organisation to organisation (Wood 2006:11; Cutlip, Center, Broom & Du Plessis 2002:17).

1.2.10 Activist groups

An activist group is defined by Blee (2012:14), Jiang and Bowen (2011:5) as well as Den Hond and De Bakker (2011:903) as a collection of individuals who organise themselves to exert pressure on an organisation on behalf of a cause that they deem important or otherwise necessary. In terms of the focus of this study, such a cause could include employees' safety. An archetypal example of an activist group lobbying for employees' safety is unions in the mining and construction industries.

1.2.11 Safety culture

"The safety culture of an organisation is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of an organisation's health and safety management" (Cox & Flin 1998:191).

1.2.12 Safety hazard and safety risk

A *safety hazard* refers to a circumstance that increases the conditions that could lead to injury, illness or property damage, while a *safety risk* refers to the likelihood of the occurrence of a safety hazard (Mathis 2008:43). Internal safety communication is used to minimise or eliminate the possibility of both these occurrences.

1.2.13 Lost-time injury

A lost-time injury (referred to in industry as LTI) denotes an injury "which incapacitates the injured person from performing his/her normal or similar occupation for a period totalling one calendar day or more, but less than 14 days, or which causes the injured to suffer the loss of a joint, or sustain a permanent disability" (South Africa 1996:sec 23). It is required by law that this type of injury be reported to the governing body of the industries (ibid).

1.2.14 Personal protective equipment

Personal protective equipment (PPE) is specialised equipment and clothing used by individuals for their protection against safety hazards (OSHA 2008). PPE is designed to protect many parts of the body, for example the ears, hands, head, eyes, and so forth of the individual wearing it. In the context of the mining and construction industries, this would typically include hardhats, goggles and gloves (Logsdon 2009:12; OSHA 2008).

1.2.15 Competent persons and safety personnel

Competent persons, as they pertain to the focus of this study, are defined by the Mine Health and Safety Act (South Africa 1996:sec 12.1) as well as the Occupational Health and Safety Act (South Africa 1993:sec 32) as persons who are, by virtue of their training and/or experience, knowledgeable about the various safety standards particular to their workplace, and have "the authority invested in [them] by their employer to correct the hazards to protect workers" (OSHA 2011). These competent persons, as defined by these acts, include (but are not limited to) construction or mine managers, safety managers, safety officers or safety representatives. The reality of the South African mining and construction industries is thus that these safety personnel are responsible for internal safety communication, as they are deemed and held responsible for all safety in the organisation and the protection of workers in terms of these acts. When mention is made of safety personnel in this thesis, it therefore collectively refers to all of these competent persons tasked with the safety of the organisation, unless stated otherwise.

1.3 PURPOSE AND CONTEXTUALISATION

The mining and construction industries of South Africa were established as the economic backbone of the country at the turn of the 19th century when gold was discovered, and have lived up to this throughout (Camco Trade and Industrial Policy and Strategies 2011:1; SSA 2011b:3; Davenpoort 2005). Alongside this great economic strength, these industries are, however, also responsible for the highest employee mortality rate, as the working conditions in both industries inherently imply hazardous conditions (Davenpoort 2005). In the earlier days of the mining and construction industries, even as late as the late 1900s, the safety of the workers in these hazardous conditions was not regarded as readily or as earnestly as it could have been – an aspect that has changed almost farcically. Although the mining and construction industries are discussed in detail in Chapter 2, it is important to take note of the fact that safety in the mining and construction industries has become an increasingly important aspect that organisations are obligated to regard.

One of the greatest reasons for this discernment transferral is the pressure that organisations receive from their governing bodies, namely the Department of Labour for the construction industry and the Department of Mineral Resources (previously the Department of Minerals and Energy) for the mining industry. In 1993 and 1996 respectively, the Occupational Health and Safety Act and the Mine Health and Safety Act were published, which allow these governing bodies to enforce respectable safety standards in these industries. These standards have to be upheld in an organisation if it wants to be allowed to operate within South Africa by receiving working permits and mineral rights from the aforementioned governing bodies (South Africa 1996:sec 7.82; South Africa 1993:sec 44).

As a result, safety in organisations within the mining and construction industries has become such an important aspect that their governing bodies hold the power to shut down operations of an organisation if it is not in line with the prodigious benchmark set. This sentiment culminated in the words of Thabo Gazi, the Chief Inspector of Mines, who said that “government is determined to ensure that safety measures in South Africa ... are improved and we will not compromise on achieving that objective” (Prinsloo 2010:1) and that of the Minister of South African Mineral

Resources, Susan Shabangu, who stated that "I want to make it clear that those who cannot mine *safely* must not mine at all" (Creamer Media 2010:2). Proving that these industries are intent on upholding this sentiment in practice, Reuters (2012), for example, reports that:

> Safety-related stoppages cost the [South African] platinum sector 300 000 ounces last year in lost output – about 5% of global production and worth about $500 m at current prices. But the department of mineral resources has said the industry needs a shakeup to cut deaths in the country's mines, the world's deepest and among the most dangerous.

One other measure that these acts implement to ensure that safety in organisations is observed and its standards upheld is the employment of "competent persons", who are deemed as such by virtue of their safety qualifications and experience (South Africa 1996:sec 102; South Africa 1993:sec 1). These individuals are responsible for the safety in the organisation, and safety aspects or features cannot be implemented by any other than those deemed "competent" in safety. In terms of the focus of this study, it is seen in this instance that safety communication in organisations within the mining and construction industries is handled (in an overwhelming majority of cases) not by an individual trained as a communicator, but by one trained in safety. This means that those responsible for arguably one of the most important internal organisational communication functions are not necessarily trained, experienced or otherwise competent organisational communicators.

Complicating these safety personnel's task even more is the fact that employees as internal audience of this communication constitute one of the most diverse populations found in a single organisation. Internal organisational communication in the mining and construction industries is specifically complicated by diversity in terms of origin, culture, language and literacy, meaning that communicators in these industries have to operate in a very complex and demanding context (Greeff 2011:117; Holtzhausen & Fourie 2008:84; Bharuthram 2006:6; Naudé & Le Roux 2005:6; Creamer 2002:2).

A clear need is thus seen for a direct and practical guide or model for internal safety communication within the mining and construction industries, as well as a measuring instrument for its evaluation.

Against the background of the points discussed above, this is important, firstly, as good safety practice has become a strategic goal of any organisation functioning in the mining and construction industries, not only due to the fact that their employees' very lives are at stake, but also due to the importance of the longevity of the organisation under the governance of its governing bodies. Secondly, a practical model or guide for the internal communication of safety information and a measuring instrument for its evaluation are of the utmost importance, due to the fact that those who are responsible for communication are not necessarily trained or competent in internal organisational communication methods, techniques or literature. Lastly, this aspect is intensified when viewed within context, as the employees at whom this safety communication is directed are a diverse and exceptionally heterogeneous group. This research therefore aims to address this need.

1.4 RESEARCH AIMS

The above purpose and contextualisation give rise to the conceptualisation of specific research aims to address the identified gap. These aims are in the form of a general research problem, research questions, as well as research objectives, which are subsequently discussed.

1.4.1 General research problem

The general research problem for this thesis is:
A longitudinal quantitative and qualitative study to construct a model and measuring instrument for internal safety communication within the mining and construction industries of South Africa.

1.4.2 Subproblems and research questions

The following subproblems give rise to the research questions that guided the rest of the thesis and its chapters. These are discussed in related pairs below.

- **Subproblem 1:**

  To determine what the current proposed methods, models or theory are for internal organisational communication according to the literature.

Research question (RQ) 1:
What are the current proposed methods, models or theory for internal organisational communication according to the literature?

- **Subproblem 2:**

  To determine the factors that impact on internal organisational communication within the South African mining and construction industries.

Research question (RQ) 2:
What factors impact on internal organisational communication within the South African mining and construction industries?

- **Subproblem 3:**

  To determine what the unique characteristics of internal safety communication are.

Research question (RQ) 3:
What are the unique characteristics of internal safety communication?

- **Subproblem 4:**

  To determine from the literature methods for the measurement of internal organisational communication.

Research question (RQ) 4:
From the literature, what methods exist for the measurement of internal organisational communication?

- **Subproblem 5:**

  To determine how the context of the South African mining and construction industries impacts on the measurement of internal safety communication.

Research question (RQ) 5:
What factors impact on the measurement of internal safety communication within the South African mining and construction industries?

- **Subproblem 6:**

  To construct a model for internal safety communication within the South African mining and construction industries.

Research question (RQ) 6:
How should the current internal organisational communication literature be adapted to the communication of safety information within the South African mining and construction industries?

- **Subproblem 7:**

  To construct a measuring instrument for internal safety communication within the South African mining and construction industries.

Research question (RQ) 7:
How should current measuring instruments be adapted or developed to measure internal safety communication within the South African mining and construction industries?

In light of these research questions and subproblems, the research objective and goals of this study can be conferred.

1.4.3 Research goals and objective

The main purpose of this study was stated to be the intent to firstly translate the existing internal organisational communication literature into a model for internal safety communication within the South African mining and construction industries and, secondly, to construct a measuring instrument for this phenomenon in this

context. The goals of this study are therefore twofold: firstly, *basic communication research* and, secondly, *applied communication research*.

Basic communication research is described by Du Plooy (2002:48) as a study that "investigates and develops theories to explain particular communication phenomena". Applied communication research, on the other hand, refers to a study where practical issues are investigated, "often to find solutions for problems that can be applied in practice" (Du Plooy 2002:48). Basic communication research is therefore seen as the first goal of this study, as the model to be created will investigate current internal organisational communication theories with the aim of translating and transforming them into a new model for internal safety communication (the communication phenomenon in question), within the unique context of the South African mining and construction industries. Subsequent to this, the measuring instrument developed from this model (and empirical testing) as well as the model will then be employed towards solving the problem identified as a lack of guidance and measurement when it comes to internal safety communication in practice.

Apart from these two goals of the research, the objective of the proposed research can be said to be *exploratory* in nature. Onwuegbuzie and Leech (2005a:268) and Onwuegbuzie and Leech (2005b:5) describe exploratory research as aimed at establishing the accuracy of a principle or theory, promoting knowledge of a process or building and expanding on theory. As the model and measuring instrument of this study build on and expand internal organisational communication theory and test this by means of empirical research (thus establishing its accuracy), the goal of this research points to an exploratory nature. Du Plooy (2002:48) strengthens this when stating that this kind of research aims to explore an unknown area of research – as internal safety communication within these industries is viewed as an uncharted area of research, exploration is further seen to be the resounding objective of the study.

These goals and especially the objective of the study guided the approach to addressing the research problem, in all facets, which will be discussed next.

1.5 THE RESEARCH APPROACH

In order to clarify what cumulatively constitutes the research approach of this thesis, the epistemological and ontological, the theoretical and the methodological approaches to the research are subsequently discussed.

1.5.1 The epistemological and ontological approach

Epistemology is simplistically defined by Terre Blanche and Durrheim (2006:6) as "the nature of the relationship between the researcher (knower) and what can be known", while ontology is seen as the "nature of reality that is to be studied, and what can be known about it". In terms of these definitions, the primary epistemological and ontological approaches of this research are interpretivistic in nature. Although discussed in detail in Chapter 6, the point of departure for the interpretivistic paradigm is the avowal of the existence of multiple realities, all in simultaneous existence regarding one same phenomenon. These multiple realities exist from the different perspectives of those individuals viewing or subjectively experiencing the phenomenon in reality (Van der Walt 2006:343; Terre Blanche & Durrheim 2006:6; Merringan & Huston 2004:7). In line with this, the onus of interpretivistic ontological and epistemological research is on how people, for example employees in an organisation, construct their meanings.

Basically, therefore, the point of departure for the 'reality' (which is what ontology refers to) explored in this research, as well as its understanding and reporting (referring to the epistemology) thereof, is that employees in the mining and construction industries of South Africa assign meaning to safety and internal safety communication based on their experience and their interpretation of that experience in the organisation. No single one of these experiences can be seen as correct or accurate, as all are valid within this paradigm (Terre Blanche & Durrheim 2006:6; Merringan & Huston 2004:7).

Furthermore, and according to Van der Walt (2006:359) and Stewart (2002:4), the context in which the research phenomenon exists is exceedingly important to

underline in any research of such a phenomenon, as, from this perspective, the subjective meaning assigned to this phenomenon is greatly dependent on it. In line with this, in this research, the context of the mining and construction industries is something that internal safety communication will be situated against throughout. This interpretivistic approach will therefore be evident in all the ways it will be brought to bear on the research problem, including the theoretical approach that supports the empirical research methods employed and which are discussed below.

1.5.2 The theoretical approach

The theoretical approach of this research, based on a thorough literature review, is engaged in understanding internal organisational communication theory, the main focus of this research. The theoretical approach traces the chronological development of internal organisational communication literature, from the systems theory, which is seen as the inaugurate of all ensuing theories discussed. The reason why this theory is the starting point of this chronological development discussion is because this theory was the first to directly and formally coin the notion of interrelated systems (Leydesdorff 2010:67; Luhmann 2008:23; Walby 2007:450; Von Bertalanffy 1972:407).

It was from this notion of interrelatedness that theories focusing on internal organisational communication could develop and the first of these, regarding the specific focus of this study, is the stakeholder theory. The stakeholder theory builds forth on, inter alia, the notion of interrelatedness in the systems theory to establish an understanding that organisations need to be mindful or heedful of all groups (or subsystems, as in the lexis of the systems theory) with which they are in contact. As a result of their interrelatedness to one another and the organisation, they impact on the organisation in a noticeable way (Freeman, Harrison, Wicks, Parmar & De Colle 2010:6; Angle, Donaldson, Freeman, Jensen, Mitchell & Wood 2008:163; Jones, Wicks & Freeman 2006:33; Freeman 1984:172). This theory also distinguishes between more and less important stakeholder groups (subsystems), seeing employees as one of the most important or primary groups with which to build a relationship to ensure success in a competitive business market or environment (Freeman et al 2010:6; Jones et al 2006:33).

The stakeholder theory, however, does not unequivocally state what this relationship should look like, and within this vacuity the relationship management theory develops these outlines forthrightly (Brønn 2007:377; Ledingham 2003:183; Grunig & Hon 1999:7). This theory explains that an organisation can only create and maintain a relationship with its employees (or any other stakeholder group) if it communicates to them in a strategic and efficacious manner (Brønn 2007:377; Hallahan et al 2007:4; Ledingham 2003:183; Grunig & Hon 1999:7). However, this theory does not directly address how this communication should be embodied. This leaves space for the development of the excellence theory, which delineates exactly what constitutes excellent internal organisational communication (Grunig & Grunig 2011:3; Grunig 2008:1; Grunig et al 2002:6; Grunig 1992:219).

Still, this theory and those that herald it only look at this communication from the vantage point of the organisation in relation to responsibility and recompense. Satisfaction literature entails considering organisation–employee communication from the viewpoint of the *employees* (Battey 2010:13; Clampitt 2009:58; Hopper 2009:13; Tsai & Chuang 2009:826; Downs & Hazen 1977:66). This literature focuses on employee perceptions of the organisational communication directed at them and their reciprocal input, or lack thereof (Downs & Adrian 2004:115; Rubin, Palmgreen & Sypher 2004:115).

Briefly, the theoretical approach of this study is consequently to trace the development of internal organisational communication literature from its inception to the point of progression where it is viewed holistically and from all angles. This progression is discussed in detail in Chapter 3, with Figure 3.1 graphically representing and concisely explaining this progression. To take this theoretical approach to the empirical focus of this study, the methodological approach used is subsequently discussed.

1.5.3 The methodological approach

The empirical methodological approach of this study was applied in two phases – each with a respective output or contribution, as is discussed in detail in Chapter 6.

The first phase aimed to propose a model for internal organisational communication and the second entailed a measuring instrument for its evaluation.

The first phase therefore primarily employed a literature review, as this model was based on the theoretical statements made in internal organisational communication literature, and adapting, translating and re-articulating it to internal safety communication within the mining and construction industries of South Africa. In order to equip this adaptation, this phase employed four semi-structured qualitative interviews with safety managers from two organisations, classified under the mining and construction industries of South Africa, and three qualitative focus groups from general employees.[*] These interviews and focus group discussions allowed for the model for internal organisational communication to be more than just conceptual, as it was grounded in empirical testing (see Appendix D for the model). Furthermore, the factors and elements yielded by this model (which is discussed in Chapter 7), were then used for the construction of a measuring instrument for the evaluation of internal safety communication within the mining and construction industries. The compilation and empirical testing thereof constituted the second phase of this research.

This second phase of the research had as contribution a measuring instrument for internal safety communication. This measuring instrument was compiled and based on a rigorous literature review and empirical researching. Both research methods pointed to the appropriateness of a quantitative questionnaire as measuring instrument in this context, largely due to four reasons. Firstly, a quantitative questionnaire allows for the isolation of abstract aspects of communication into separate variables. As safety personnel are not necessarily practiced communication researchers, the concretisation of abstract concepts and its diminution to separate variables allows for easier measurement by individuals less proficient in communication methods and measurement. Secondly, these questionnaires can be administered to a large group of employees, which, owing to its quantification nature, makes generalisations possible. Due to the heterogeneous nature of employees as research population in this context, as discussed above, this wide administration and

[*] Discussed in detail in Section 6.3, Chapter 6.

subsequent generalisation becomes beneficial for a valid and reliable measure of the internal safety communication. This wide administration can thirdly be anonymous, which allows the internal research population to be honest in their response – an aspect that is important in this instance, and not necessarily guaranteed through other methods. Fourthly, as employees are the units of analysis in the case of a quantitative questionnaire, an investigation is done into the degree to which internal safety communication percolates down to every employee in the organisation, rather than researching the strategic intent of the communication, as would mainly be the case if an audit was done on the communication processes. These main reasons for the compilation of a quantitative questionnaire as measuring instrument in this context, as well as supplementing motivations and explanations is given in greater detail in Chapter 6, Section 6.3.2.

The testing of this quantitative questionnaire established the longitudinal nature of the study, as it was tested in two stages (see Figure 1.1 below). Firstly, the questionnaire was tested at the Gautrain project – an organisation that juristically falls within both the mining and construction industries.† This testing constituted a pre-testing phase, including interviews with Gautrain management and pilot studies, followed by a full administration to a representative sample of workers at one of their operations and, thereafter, three focus group discussions among the general workforce.‡ The qualitative and quantitative findings at this stage of the research could then be interpreted and in the intervention phase be used for the adjustment and improvement of the questionnaire.

The questionnaire was tested in the second stage at Diesel Power Opencast Mining – an operation that also falls within the spheres of both the mining and the construction industry† – and included pretesting with interviews with managers, a pilot study and thereafter a full administration to a representative sample of employees. Cumulatively, these two phases of the empirical research spanned 2008

† For a full discussion of the selection of the organisations used in this research, as well as an explanation as to their classification under both the mining and the construction industry of South Africa, see Section 6.3.2.1, Chapter 6.

‡ A full discussion on the methods of sampling and the nature of the qualitative and the quantitative methods employed in both phases and stages of this research is given in Section 6.3 of this thesis, in Chapter 6. This discussion here is only for the orientation of the study, and is by no means comprehensive.

to 2011, and the findings from this last stage was used for the alteration and improvement of the questionnaire, which culminated in the final research output presented in this thesis (see Appendix A for the full final questionnaire). This empirical testing of the questionnaire is discussed in full detail in Chapter 6, with Figure 6.2 showing its progression as discussed above. In Figure 1.1 below a synopsis of this process is shown.

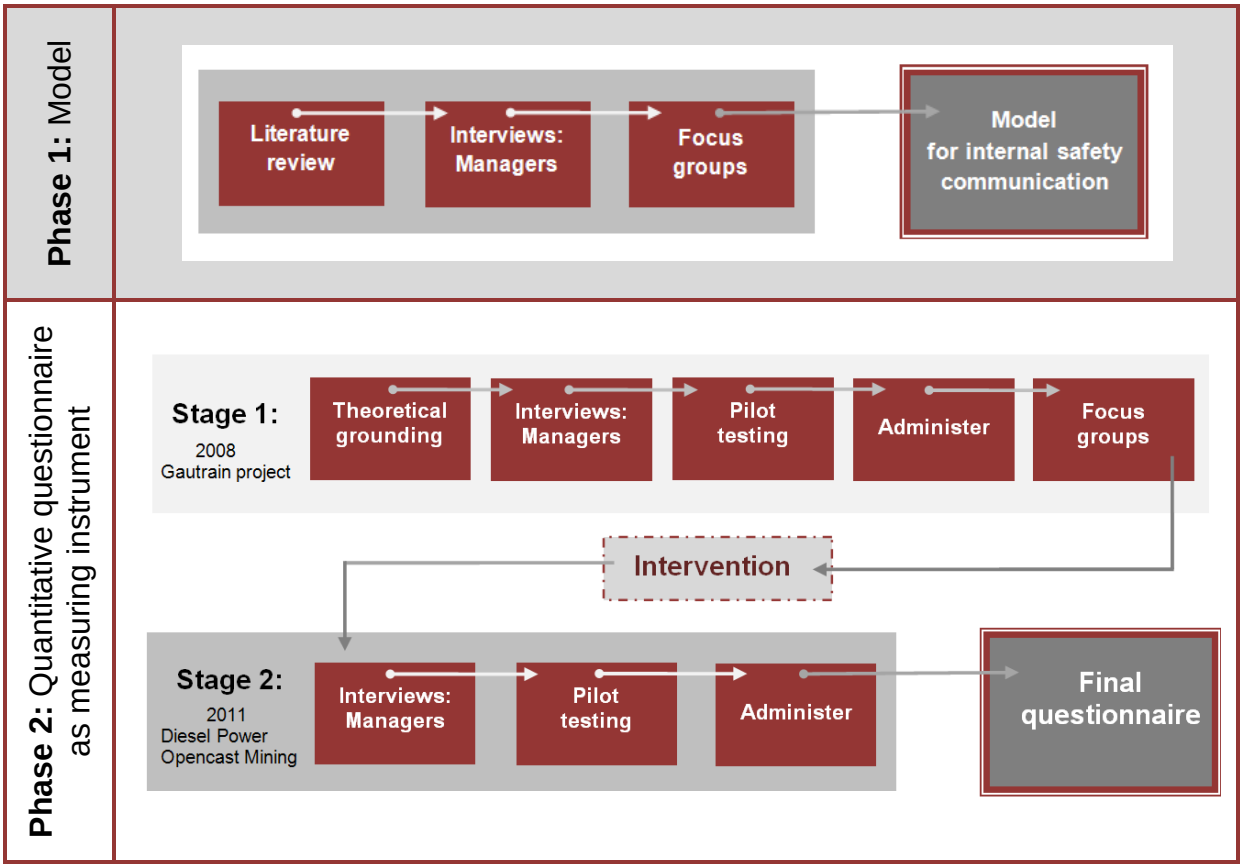


Figure 1.1: Progression measuring instrument compilation

The discussion of the two phases of the empirical testing with their respective outputs points to the contribution of this study to the field of organisational communication literature, which is discussed next.

1.6 CONTRIBUTION OF STUDY

In the preceding contextualisation of the study the importance of safety in the mining and construction industries was articulated insofar as it being the difference between life and death for employees and their organisations alike. Apart from the realised importance of safety – in these industries, as well as by their governing bodies – very

little research has been attempted in the field of *internal safety communication*, even though it is argued to be a strategic goal of any organisation that seeks to be successful in these industries, and even though the task of communicating in these industries is understood as being cumbersome, to say the least.

Although limited research has been done in these industries into the phenomenon of internal safety communication (cf. Greeff 2010; Mohamed 2002), none has been done to the extent of offering encompassing and comprehensive guidelines on how this phenomenon should be approached or effected.

This study aims at this vacuity by offering such guidelines in the form of a model for internal safety communication, and a measuring instrument in the form of a questionnaire for its evaluation. These two contributions to the field of organisational communication literature are not purely theoretical or conceptual in nature, but are based on empirical research (while remaining true to its sound theoretical underpinning). It is argued that this unique context cannot be viewed and evaluated from a conceptual distance – it is only once this unique context is understood experientially that any augmentation to it can be made.

The main contribution of this study is hence to add to the field of organisational communication literature and the mining and construction industries, by offering tools to be used in the *mêlée* for safer working conditions and ultimately less injuries or fatalities. These tools will be a proposed model for reflected and strategic internal safety communication, as well as a measuring instrument in the form of a quantitative questionnaire designed for its evaluation; ideally to be used alongside each other for the improvement of internal safety communication and, by proxy, safety in these organisations.

1.7 DELIMITATION OF THE STUDY

In line with the contribution outlined above, certain delimitations or demarcations of the study need to be set. Firstly, it should be stated that this study focuses on internal safety communication, specifically between the organisation and its employees, and no other stakeholders. The reason for this focus is that employees

are, conceivably, the ones who need this safety communication the most – as they are the ones who face the hazards of working literally at the coal face or factory floor. Although other forms of safety communication undoubtedly exist, for example external safety communication that communicates the safety successes and failures of an organisation to the governing bodies of these industries, this lies outside of the sphere of focus of this study.

Secondly, and in line with the above, this study explores the phenomenon of internal safety communication in the organisation solitarily, mindful of the aspects that impact thereon (for example production communication). The demarcation is that not all forms of internal organisational communication in the mining and construction industries are addressed, allowing for the placement of internal safety communication therein. Rather, internal safety communication is singularly focused on, and only those other aspects or communication that impact on it, to the degree of influencing it, are included in the focus of the study.

Lastly, it should be understood that the focus of this study is on internal safety *communication* and, therefore, on the vehicle by which employees receive this communication and not the *contents* thereof – the safety message. All comments, statements and utterances made with regard to safety in this thesis are from the vantage point and paradigm relating to the communication of the message, rather than the contents of the message. Still, as the subject matter of the communication being studied is the safety field, which influences the communication of safety information, this is explored simultaneously within the general context of the mining and construction industries.

1.8 CONCLUSION AND CHAPTER DEMARCATION

This chapter served as the introduction to this thesis and as such delineated and demarcated the study. This was firstly done by an explanation of key terms as they pertain to the context of the study and the unique milieu of the mining and construction industries of South Africa, from which the purpose of the study became clear. The purpose was developed into the wording of the research problem, the research questions and the objectives. In order to understand how these research

problems and questions will be discussed in the study, the research approach was subsequently discussed, including the epistemological and ontological approaches that dictated and oversaw both the theoretical and methodological approaches that were applied to this study. These aspects are dealt with in greater depth in subsequent chapters and the demarcation of these will be as follows:

Chapter 2 of this thesis, in line with the purpose and contextualisation discussed above, orientates and positions this study within the mining and construction industries of South Africa through a thorough discussion thereof. This chapter clarifies the necessity for internal safety communication in these industries by giving an overview of its current position.

Chapter 3 is the first of three literature review chapters and elaborates on the structuring of these chapters in terms of the chronological development of the theories thereof. This chapter also focuses on discussing the systems theory, which is seen as the meta-theory of this research, with an explanation of why it is deemed as such.

Chapter 4 elaborates on the literature review and the chronological progression of theories by discussing the stakeholder and relationship management theories respectively, as they pertain to the focus of this study.

Chapter 5 is the last of the literature review chapters and focuses on discussing the excellence theory and satisfaction literature. These three chapters constitute the theoretical underpinning of the thesis and are used in a pragmatic way for the construction of both the model for internal safety communication and the questionnaire designed for its evaluation.

Chapter 6 clarifies how the two outputs or contributions to this study mentioned above were brought into fruition, by elucidating the methodologies followed in their construction.

Chapter 7 discusses the first output or contribution of the study, namely the model for internal safety communication. The findings that lead to the construction of the model, as well as the model itself, with its factors and elements are discussed.

Chapter 8 builds forth on this model by discussing the second contribution of this study, namely the quantitative questionnaire as measuring instrument for internal safety communication, which is based on the factors and elements identified in said model. With the discussion of the two contributions of the study done, all research questions supporting the main research problem have been addressed.

Chapter 9, the concluding chapter of this thesis, answers each of the research questions directly and in the general conclusion addresses the main research problem. Figure 1.2 below graphically represents the chapter demarcation as discussed above.

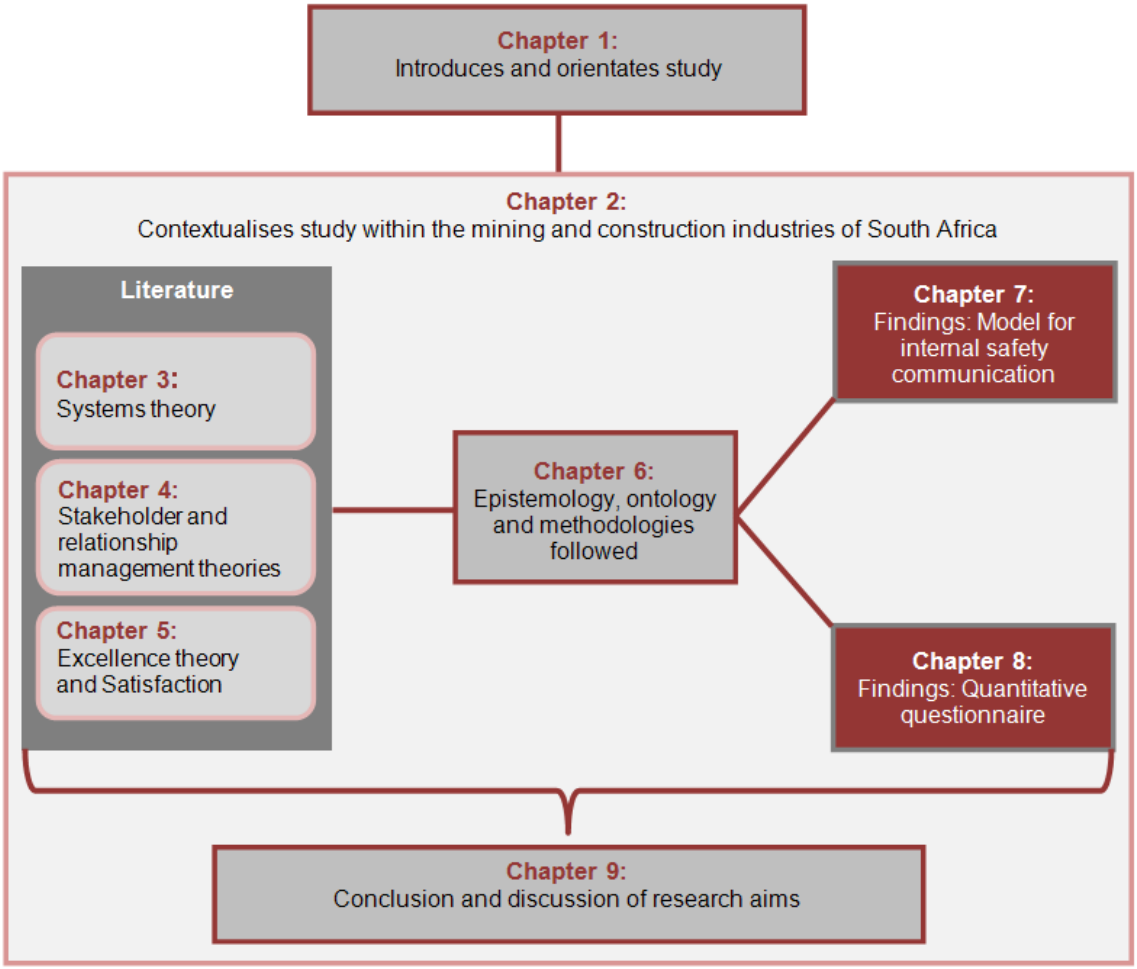


Figure 1.2: Chapter demarcation

CHAPTER 2
CONTEXTUALISATION OF THE SOUTH AFRICAN MINING AND CONSTRUCTION INDUSTRIES

2.1 INTRODUCTION

Organisations are seen as living systems existing in turbulent environments that are constantly testing these organisations' ability to survive. Survival depends, inter alia, on the organisations' internal communication ability (Le Roux 2008:264; Devlin 2003:27; Cutlip et al 2002:21; Steyn & Puth 2000:19). This statement is specifically relevant in the context of the South African mining and construction industries, explained in the previous chapter, in assisting industries that simultaneously solicit internal safety communication of a high standard, while at the same time complicating this task.

In light of this, this chapter contextualises the South African mining and construction industries, and the impact these industries have on internal safety communication by following a deductive reasoning pattern. A general overview of the mining and construction industries is first presented to orientate the discussion, as the unique characteristics of the workers corps of these industries are discussed, followed by a general understanding of the interdependence of environments, aided by the principles of the system's perspective. This leads to a more specific discussion of the macro task and micro environment of organisations within these industries and, subsequently, at its most specific point, concludes with a discussion of those aspects that impact on communication within the organisations in these industries, and internal safety communication specifically.

This done, this chapter answers research questions 2 and 5, namely:

- *What factors impact on internal organisational communication within the South African mining and construction industries?*
- *What factors impact on the measurement of internal safety communication within the South African mining and construction industries?*

2.2 OVERVIEW OF THE SOUTH AFRICAN MINING AND CONSTRUCTION INDUSTRIES

Since the discovery of gold at the turn of the 19th century, the mining and construction industries have been the backbone of the South African economy (Davenpoort 2005). Initially, the mining industry was only centred on independent diggers, disjointedly managing small-scale opencast operations in search of their own fortunes (Feinstein 2005:99). This arrangement did not last, however, as the "economic logic of underground mining [...] led rapidly to radical changes"; one of the most notable of these being the ownership of mining and mining rights in South Africa by a few large joint-stock companies by the late 1880s (Feinstein 2005:99; Harlow 2003:224). The revenues from mining provided the means of establishing infrastructure that gave rise to the construction industry to a large extent and from then forth, the mining and construction industries have determined the growth rate of the South African economy (Trapido, Mqoqi, Williams, White, Solomon, Goode, Macheke, Davies & Panter 1998:306; Yudelman 1983:311; Trapido 1971:311). In 1886, Johannesburg, the town that was to become "the industrial and financial centre of the new industry and South Africa", was founded (Feinstein 2005:100). Individuals from all over the country and even the world congregated in Johannesburg and surrounding mining towns in order to form part of the newly established, yet immensely lucrative industry bolstered by construction, not only for the mines themselves, but also for the expansion of mining towns. The result of this concentration of activity was that labour in both of these industries came in abundance, making it very cheap in monetary terms and as human capital. This aspect was intensified by the then government's stance that the black man was present merely as a labour unit (Feinstein 2005:100; Harlow 2003:224; Trapido et al 1998:306; Yudelman 1983:311). This viewpoint ensured that not much attention was given to the conditions under which workers worked in these industries, as long as their labour brought profit for the operations.

In the current situation in which the mining and construction industries find themselves, not much has changed in terms of their contribution to the South African economy: In the first quarter of 2011, these industries contributed a combined 8.5% of the South African gross domestic product (GDP) (SSA 2011a:15), outweighing all

other industries in their class, while growing and expanding as an employment-creating sector (Camco Trade and Industrial Policy and Strategies 2011:1; SSA 2011b:3). Against this background, a shift is seen in the manner in which the labourers of these industries are regarded – almost just as polar as the shift in government that coupled it.

In 1996, two years after the democratisation of South Africa, the Mine Health and Safety Act was published (No. 29 of 1996) as a measure of control aimed at improving the conditions of labourers in these industries. These industries were identified as some of the most notoriously dangerous ones in this country, as the work done by most employees inherently implies hazardous conditions (Creamer 2009:2; SAGI 2008; South Africa 1996a:29). For this reason, the Department of Mineral Resources (previously the Department of Minerals and Energy) as well as the Department of Labour, which regulates the safety practices of these industries, enacted strict laws and guidelines in order to direct the safety standard (DoL 2010; DME 2009).

In recent years, this sentiment of government regarding the issue of safety in these industries has been exacerbated, as in 2010 the Chief Inspector of Mines, Thabo Gazi, noted that “government is determined to ensure that safety measures in South Africa ... are improved and we will not compromise on achieving that objective”, even if it is detrimental to the economic objectives of the operation (Prinsloo 2010:1). Likewise, and to prove the point more intensely, the Minister of South African Mineral Resources, Susan Shabangu, stated that “profits must be balanced with the interests of workers and I want to make it clear that those who cannot mine *safely* must not mine at all” (Creamer Media 2010:2).

Indeed, these pressures from government to operate in a safe manner within the mining and construction industries are not empty, as government controls the issuing of mineral rights and permits that allow operations in these industries. It is clear that government’s stance on the matter is that if organisations within these industries want to survive, be successful and even just be allowed to operate, they should be able to operate in a safe manner.

Operating in a safe manner, in terms of the Mine Health and Safety Act (No. 29 of 1996) and the Occupational Health and Safety Act (No. 85 of 1993), is the personal responsibility of each worker or employee in these industries. Even so, according to these acts, establishing what constitutes safe work behaviour is the responsibility of 'competent persons'. What thus needs to happen is that the competent persons, identified as safety personnel (see Section 1.2.15 for a definition), need to communicate safe work procedures to the workers, empowering them to work safely. The problem here is that these competent persons are (in most cases) not qualified communication practitioners, yet they are tasked with communicating to employees this very important aspect that determines, apart from the safety of all employees, the very success of the organisation for which they work.

Internal safety communication in these industries is thus, notwithstanding its importance, managed and implemented by individuals who are not qualified to handle this task in the required strategic manner (Greeff 2010:257). The need for a comprehensive, yet practical and simplistic model of how to communicate safety information is thus much needed, alongside a measurement tool for the evaluation thereof.

The task of communicating in these industries (which is already falling in unqualified hands) is complicated even more when the uniqueness of the employee body of these industries are taken into consideration (Greeff 2010:53). According to Greeff (2010:64), Naudé and Le Roux (2005:6), as well as Creamer (2002:2), this uniqueness is most notably understood in terms of defining the unique aspects of the employee body, characterised by diversity regarding origin, culture, language and literacy.

2.2.1 Unique aspects of the employee body

The body of employees that organisations in the mining and construction industries engage (the recipients of communication as from the perspective of this study), is characterised by cultural diversity. In addition to the general diversity of the population of South Africa, these industries offer an even more diverse and unique

employee body in terms of four factors: origin, culture, language and literacy (Greeff 2010:64; Naudé & Le Roux 2005:6; Creamer 2002:2).

2.2.1.1 Origin

The influx of workers from all around South Africa, southern Africa and even Africa as a whole results in diversity in the employee body in terms of *origin.* Although many, if indeed not most, industries in South Africa are characterised by diversity in terms of geographical origins, the mining and construction industries experience this aspect intensely due to the presence of a migrant workforce.

Migrant workers are workers not originally from the area where they work (and temporarily live), but who leave their families behind in their places of origin in search of work in the mining and/or construction industries. These workers live temporarily close to the operation where they work, and not permanently with their families, but only go home on *pay weekends* (if at all) in order to deliver money to their families (Lurie, Williams, Zuma, Mkaya, Garnett, Strum, Sweat, Gittelsohn & Abdool 2003:150; Meekers 2000:21). These migrant workers bring diversity into the workforce of the mining and construction industries regarding their origin.

In the overview of the mining and construction industries above, the historical origin of this phenomenon of a migrating workforce was explained insofar as these industries experiencing an influx of individuals driven to towns where mining and construction operations were booming in search of employment, due to the lucrative nature of the industries. A major attraction here was the fact that these industries hosted vast opportunities for unschooled workers, as manual labour made up the largest percentage of the labour force (Creamer 2002:2). Individuals could, therefore, have no schooling or previous experience and still be employed in these sectors (Nyame, Grant & Yakovleva 2009:9). Since the pioneering era, not much has changed in these industries in this regard: In South Africa, it is estimated that over a third of the population of 16 years and older are unschooled (Bharuthram 2006:6; Creamer 2002:2). If this large part of the populace seeks to make a living, the mining and construction industries are good options and, as a result, these individuals move away from their place of origin to where a mine or construction operation could offer

them employment (Nyame et al 2009:6; Parhanse 2007:112). The profitability of these industries is not only based on unschooled work, but depends on qualified individuals as well, as the contribution made to the economy is reflected inwards to employees in management positions (Visser 2007:4).

2.2.1.2 Culture

As migrant workers have different geographical origins, so too are they culturally diverse. Cultural diversity, according to Barker and Gaut (2002:152), "is the sum total of the different ways of life, behaviours, and beliefs reflected by the individuals who constitute a particular group". It is clear that all communication is shaped, diminished, restricted and altered by cultural influences, and when diversity in terms of those influences is experienced, communication has to adapt to take those influences into account (DeVito 2009:34; Lustig & Koester 2003:12; Barker & Gaut 2002:5). When translated to the organisational setting, this holds true due to the fact that the communication process is one of interpretation (Lustig & Koester 2003:12). When an organisation communicates to a culturally diverse workforce, the reception of the communication message is subsequent to interpretation from the receiver, which is filtered through that receiver's cultural backcloth (DeVito 2009:34; Lustig & Koester 2003:12; Barker & Gaut 2002:5). The same message can, therefore, be interpreted in as many different ways as there are cultures at the organisation and a communication message that might "work in one culture might not necessarily work in another" (DeVito 2009:34).

It is in this instance that cultural diversity in the mining and construction industries impact on the internal safety communication therein, because the way in which messages are sent needs to be sensitive to the different ways in which it can be received. If an organisation in these industries wants to make sure that internal safety communication is unambiguous and clear, sensitivity to the workforce's cultural diversity will have to feature.

2.2.1.3 Language

The differing cultures of the workers also result in the interaction of different languages in organisations in the mining and construction industries, epitomised by the use of the *mining language* Fanakalo (also spelt Fanagalo). Fanakalo is a mainly Zulu-based pidgin language developed to promote ease of communication by mixing all the various languages spoken in the mines into one (Holtzhausen & Fourie 2008:84; Naudé & Le Roux 2005:6; Githiora 2002:164). This language later spilled over into the construction industry, as migrant workers started to settle themselves in this industry (Githiora 2002:164). Although this language once featured as the *lingua franca* of the mining and construction industries, it has since been ruled a racist language and is no longer permitted in these industries – rather, the use of English is now implemented (Greeff 2011:118).

Various problems can be encountered when English is made the *lingua franca* in an industry where it is not necessarily the first language of the workforce (see for example Yano 2008; Kirkpatrick 2008; Jenkins 2007; Prodromou 2006; Graddol 2006; Cogo & Dewey 2006 and Sobkowiak 2005). For the purposes of this study, and therefore within the mining and construction industries of South Africa with the aim of internal safety communication, three major problems should be noted: unwillingness to communicate, acceptance of a lesser quality of communication and perceived idiocy.

Communicating in a language one is unaccustomed to, or uncomfortable with, might lead to an *unwillingness to communicate* at all (Yashiman, Zenuk-Nishide & Shimizu 2004:120). This aspect is extremely problematic within the context of internal safety communication, as the unwillingness to communicate might lead to injury (or worse) of the potential recipient of the communication. Put differently: If a person in these industries is unwilling to communicate safety messages, the potential or envisaged recipients of the communication might falter in their safe work procedure due to this lack of information, leading to an accident or incident.

If workers do, however, bring themselves to communicate in this language, Sobkowaik (2005:141), Prodromou (2006:412) and Jenkins (2009:203) warn that an

attitude of “anything goes” might develop between workers who see the *acceptance of a lesser quality of communication* in this language. This is yet again problematic for internal safety communication within the mining and construction industries, as the advancement of the quality of safety information requires the advancement of the understanding of the recipient which, in turn, could potentially advance the safe work practices of the organisation – or vice versa.

Closely linked to this acceptance of a lesser quality of the English language is *perceived idiocy*. Weyant (2007:703) outlines the fact that a non-native English speaker might be perceived as less intelligent due to the person’s slighter grasp of and expression in the English language. Le Roux and Naudé (2009:30) apply this to the South African mining industry and state that workers can even be perceived as illiterate while they are actually literate and fluent in various languages, just not the “dominant business language”, English. This aspect ties in with the fourth and last unique element of the workforce in the mining and construction industries of South Africa, namely literacy.

2.2.1.4 Literacy

The defining distinctions between what constitutes literacy and illiteracy in individuals are widely varied and fluctuating, as the concept of literacy is deemed to be “composed of culturally relevant skills that change over time and between cultures” (Ntiri 2009:98) (cf. Street 2011; Ntiti 2009; Nussbaum 2006; Brandt & Clinton 2002; Appiah 1996). For the purpose of this study, however, the distinction made is very basic and simplistic, inasmuch as the division is being based on functional literacy or illiteracy, vis-à-vis the ability to read or write (White 2011:225; Nutbeam 2008:2073).

As stated before, the mining and construction industries offer various employment opportunities for unschooled and illiterate workers. For this reason, the Leon Commission for Health and Safety reports that 84% of general labourers and machine operators in these industries are functionally illiterate (Stanton 2003:70; Creamer 2002:2; Leon 1995:70). While these industries are obviously vastly populated by these unschooled and/or illiterate workers, the employment of highly educated engineers and the like is also necessary. The diversity of employees in this

instance thus sees a continuum of literacy levels from workers who cannot even write their own names to those who are qualified on a postgraduate level.

The reality for internal safety communication in these industries is that all employees (regardless of their literacy or position) need to be reached in order to see them empowered to work safely. Those employees who are illiterate need to receive the same message, in the same intensity, as those employees who are highly qualified. This entails that the internal safety communication channels used by organisations in these industries need to be mindful of the literacy diversity and should ensure that all employees, regardless of their literacy level, receive and understand the safety communication message. According to Greeff (2010:66), this inevitably means that many channels traditionally suited to the communication of safety-related messages (as in other industries) are rendered useless for a large majority of the mining and construction workforce.

These kinds of obstacles, paired with the need for adequate safety standards, naturally impact on all internal safety communication endeavours in these industries, along with all other aspects described above. This impact is discussed below.

2.3 THE ENVIRONMENT OF THE SOUTH AFRICAN MINING AND CONSTRUCTION INDUSTRIES

In the above overview of the South African mining and construction industries, it is briefly argued that environmental factors have the potential to impact on an organisation as well as on this organisation's internal safety communication. In order to explore this aspect further, this section advances on the above overview by discussing the entire organisational environment faced by these industries, thereby highlighting the impact it potentially has on internal safety communication within organisations.

When discussing an organisation's environment, many categorisations or paradigmatic approaches have been suggested; the most common being, arguably, the SWOT analysis, which looks at *strengths, weaknesses, opportunities* and *threats* within the organisational environment. The problem with using this kind of

categorisation in this instance is the fact that it requires a specific object in order to discuss the *strengths, weaknesses, opportunities* and *threats* of the environment as they pertain to that specific object (Mengel, Sis & Halloran 2007:2225; Rizzo & Kim 2006:119; Dyson 2004:361). As this section is more concerned with gaining clarity on the general situation of the mining and construction industries in South Africa (and its impact on communication therein), this approach would not take all into account. Likewise, approaches, such as those suggested by Du Plessis, Bothma, Jordaan and Van Heerden (2003) (addressing the *external, internal* and *sales environment*), that of Clark, Varadarajan and Pride (1994) (with the *focal, organisational* and *decision-maker environmental attributes*) or the paradigms of assessing communication within the organisation (see for example McKenna, Richardson & Manroop 2010; Yanow & Ybema 2009 or Alvesson, Ashcraft & Thomas 2008) are too narrow for the discussion to follow, which aims to clarify the entire sphere in which the mining and construction industries are encapsulated, in which internal safety communication has to function.

In order to truly take in the broader view of the mining and construction industries, the systems approach was utilised, as it treats the interrelatedness of environments (both internally and externally) to the organisation, including aspects such as the communication therein (Kurtyka 2005:30; Angelopulo 2002:40; Ledingham & Bruning 2000b:13). This approach will give the meta-categorisation that will be supplemented by the classification in terms of the *micro, macro* and *task environment* of the organisation (as from Kokt (2009:794), Jiang (2009:155) and Vecchiato and Roveda (2010:100)) in order to take the general categorisation from the systems approach to a more specific discussion of the mining and construction industries. Lastly, and discussing the impact that these environments have on the communication endeavours of an organisation within these industries specifically, the *infrastructure, culture* and *media environment* are contextualised based on the classification of Sriramesh and Verčič (2009). Rensburg (2003:145) supports the classification of Sriramesh and Verčič (2009) and elaborates on it by making this classification applicable to the South African context, while Le Roux (2008:264) further advances this by noting its importance in the understanding of communication endeavours in the South African platinum mining context, accounting for its use in the current research, which takes place in a related field.

It is as a result of these classifications that the next sections of this chapter make use of a deductive approach in explaining the environmental influence of the mining and construction industries' internal safety communication (Johnson-Laird 2010:8; Rips 2008:187). This is due to the fact that the systems approach promotes the broader understanding of interrelatedness of environments in general, with the *micro*, *macro* and *task* environments explaining the specific influence of these environments on organisations and the *infrastructure, culture* and *media environment*, providing an even more explicit understanding of communication within these environments. The use of these three approaches simultaneously – as a new method of classification of these sections of literature – thus serves as the conditions for the discussions to follow, as none on their own were deemed adequate to discuss the environment of the mining and construction industries.

2.3.1 The systems approach

The systems approach is a progeny of the systems theory classified as the meta-theory of this research and discussed in detail in Chapter 3. Although it is elaborated on in said chapter, in essence it can be said that the systems theory, inter alia, deals with interrelatedness, as it examines individual entities in their greater connected context (Kurtyka 2005:30). The systems approach, on the other hand, although analogous in many ways to the systems theory and used interchangeably by many scholars, is specifically suited to the discussion of an organisation's environment. The systems approach can hence be used to offer a framework for understanding organisations and their effective operations within a greater context – for example the industry (or industries) under which they are classified (Kurtyka 2005:30; Angelopulo 2002:41). According to Ströh (2007), Landman and Angelopulo (2006), Kurtyka (2005), Angelopulo (2002) and Ledingham and Bruning (2000b), the systems approach classifies all entities as systems that are part of some kind of hierarchy, where all necessarily have subsystems (at the lower end of the hierarchy) and supra-systems (at the higher end of the hierarchy). This concept is graphically presented in Figure 2.1.

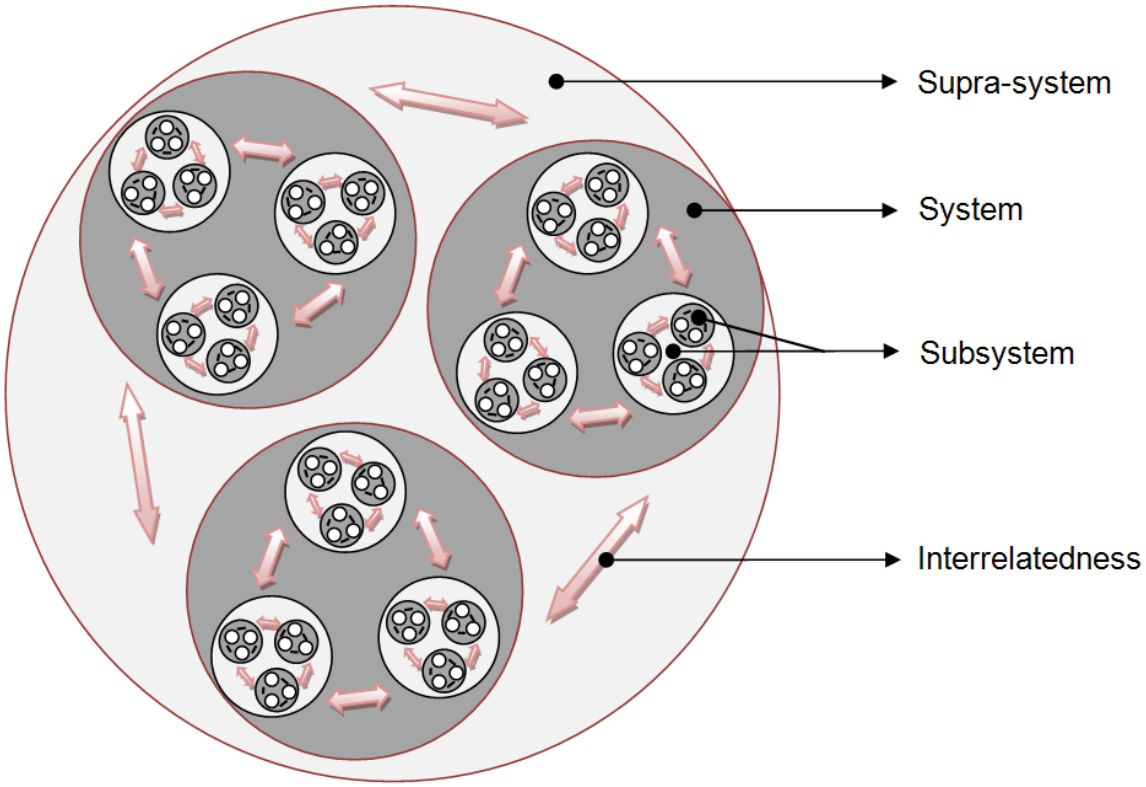


Figure 2.1: The concept of systems

From this approach it is clear that all supra-systems, systems and subsystems are interrelated and interdependent, and the whole is always greater than the sum of its parts. In this hierarchy, the higher-level systems will always be more complex than the lower-level systems. A system is classified by the vantage point of the classifier, a subsystem can be made a supra-system with systems and subsystems itself, depending on the viewer. Still, due to the interrelated and interdependent nature of systems, if a system wants to avoid entropy and would like to function in relative order, it should have permeable boundaries that allow the exchange of information or energy with its environment. This done, the system will necessarily be dynamic and, therefore, be adaptable and flexible, responding to any changes, alterations or variances in the other systems that it is related to (Ströh 2007; Landman & Angelopulo 2006; Kurtyka 2005; Angelopulo 2002; Ledingham & Bruning 2000b).

For the purposes of this research, the mining and construction industries of South Africa can be seen as a system. Within this system, various subsystems exist, for example the organisations such as mines and construction sites. Supra-systems are

also found in this system, for example the South African political and economical arenas. What is important to take note of is that each one of these systems (albeit a supra- or subsystem) influences the other and as the one changes, so too should the others. As a system does not have a choice but to be open (to avoid entropy), it should adapt to all the other systems that it has contact with (Ströh 2007; Kurtyka 2005; Angelopulo 2002; Ledingham & Bruning 2000b). This means that if a subsystem, such as a mine or construction site (which is in its turn also a system with subsystems – for example internal safety communication) is to be successful and avoid entropy, it should be open and adapt to the demands of its system – the mining and construction industries in this case, which in their turn adapt to the supra-system, for example the South African political and economical contexts. In order to illustrate this, the example can be given that the human right to safety is an aspect that sits in the supra-system of the South African political and governing spheres (Stevens 2003:168; South Africa 1996b:Chapter 2). This right is enforced in the mining and construction industries, as they operate within this supra-system. In turn, the mining and construction industries, as a system, then requires that mining and construction organisations, which are subsystems, also adapt and respond to this human right to safety. As the organisation adapts to it, so the smaller systems within it should also change – for example the communication of that organisation and then eventually the internal safety communication therein.

This phenomenon also elucidates the occurrence that sees internal safety communication becoming one of the organisation's strategic goals, as incidents and accidents (especially fatalities) force the political and legal supra-system to put pressure on the mining and construction industries as a system, which in turn sets ultimatums in place for subsystems: organisations. If these organisations are to avoid entropy, they should align their own systems to this as well – for instance their internal safety communication.

Although the systems approach is efficient in explaining the interrelatedness and relationship between a system and its environment, one of its many shortcomings is that it does not explain what power environmental factors potentially capitulate on a system (Ströh 2007:221; Stacey 2003:403). It is for this reason that the systems approach is used to give a general background and broad understanding of the

nature of the involvement of the environment of the mining and construction industries, the organisations therein, and specifically the internal safety communication within these organisations. However, in order to explore the impact of the environment further, the micro, macro and task environments of organisations within the mining and construction industries are examined in the next section.

2.3.2 The macro, micro and task environments

In the previous section, a broad understanding of the system, that is the mining and construction industries of South Africa, was obtained. The place of internal safety communication within this system was highlighted and understood, as it was recognised that all aspects and entities (systems) within this system are interrelated and interdependent. To explore this understanding further, but to make the discussion thereof more specific, this section focuses on the macro, micro and task environments of an organisation, which have the potential of impacting on internal safety communication.

In defining exactly what constitutes an organisation's macro, micro and task environments, the literature is diverse, as there is an agreement that the boundaries flow into one another, and the classification therefore relies on the purpose or the field of the classification. In literature relating to marketing communication, for example, the *task* environment is defined as something almost synonymous to the *market environment* (cf. Garces, Conejo, Garcia-Bertrand & Romero 2009; Varadarajan, Yadav & Shankar 2007; Nanpeng, Chen-Ching & Tesfatsion 2007; Gordijn & Akkermans 2006). For the purposes of this study, and this section specifically, the classifications dealing with organisational communication in its general sense are used, as the purpose here is to discuss and clarify the impacts of environments on organisations within the mining and construction industries of South Africa, and specifically internal safety communication in those organisations. The next three sections therefore clarify, classify and discuss the macro, micro and task environments of an organisation as defined from an organisational communication perspective. Figure 2.2 below gives a graphical representation of these environments, as formulated from the classifications for this research and based on the work of Vecchaito and Roveda (2010:1527), Cant (2010:60), Smit (2007:64),

Bates (2007:16) and Fitzen (2006:2). In this figure, it can be seen that the *macro* environment impacts on the task as well as the *micro* environment, with the task environment impacting on the micro environment, and the micro environment impacting on the task environment, while the latter two do not have a direct significant impact on the macro environment. To further this understanding, each one is subsequently discussed.

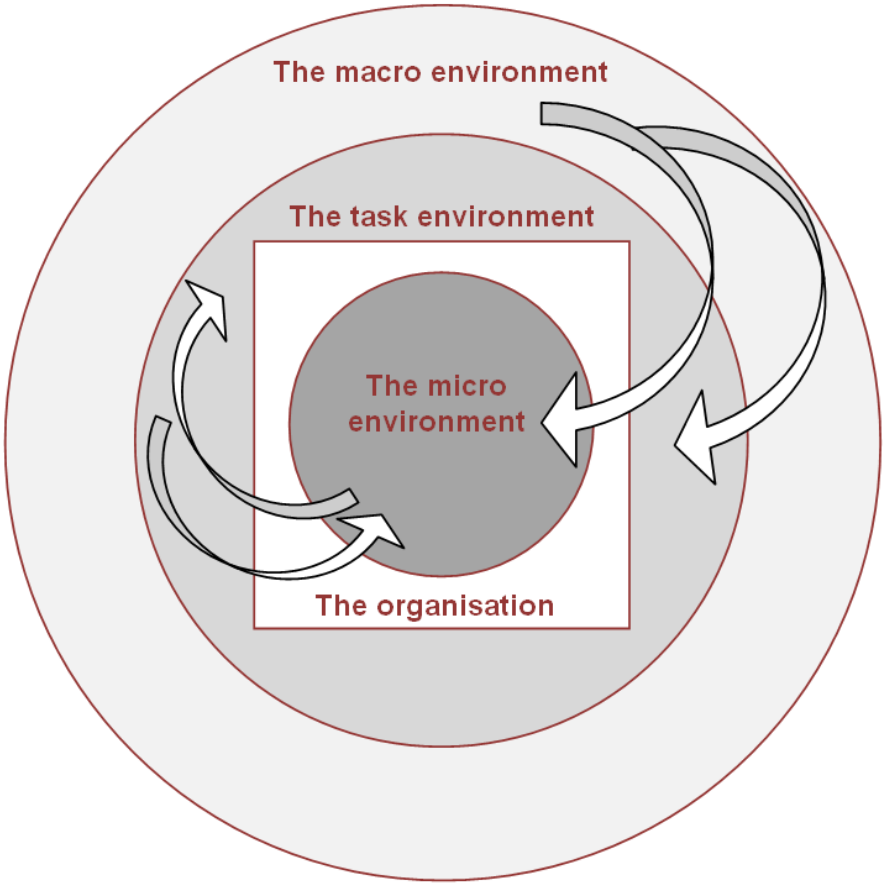


Figure 2.2: The macro, task and micro environments

2.3.2.1 Macro environment

The broadest classification of the environments that impact on organisations, such as those in the mining and construction industries of South Africa, is the macro environment. The macro environment is classified as one that exists externally to an organisation and is sometimes referred to as the general environment of an organisation. Within this classification of environments fall the economic, physical, political, technological and social-cultural environments of an organisation (Vecchaito

& Roveda 2010:1527; Cant 2010:155; Jiang 2009:155; Kokt 2009:794; Smit 2007:67; Bates 2007:16; Fitzen 2006:2).

- **Economic environment**

The economic environment of an organisation impacts not only on the financial success of an organisation, but also on all operations within that organisation (Vecchaito & Roveda 2010:1527; Cant 2010:155; Jiang 2009:155; Kokt 2009:794; Smit 2007:67; Bates 2007:16; Fitzen 2006:2). As is elaborated on in Section 2.2 of this chapter, the South African mining and construction industries can be regarded as the economic backbone of the South African economy (Camco Trade and Industrial Policy and Strategies 2010:1; SSA 2010b:3; Davenpoort 2005). The experience of an organisation within the South African mining and construction industries is thus that it forms part of an industry that contributes greatly to the South African economy, and without which the economy will undoubtedly suffer. Due to the position these industries fill in the South African economy, organisations therein are viewed as very lucrative, profitable and affluent. These organisations, in general, are therefore regarded as having many resources at their disposal, ranging from human capital to financial capital (Thomas White 2010; Austin 2008:587; Frankel, Smit & Sturzenegger 2008:640; Stanley st Labs [sa]).

It is, therefore, expected that these organisations can afford to spend resources (financial, human or otherwise) on operational aspects deemed to be important for the success of the organisation. If the organisation regards safety and internal safety communication as important, the perception is that it will be able to allocate enough resources to such communication in order to render it successfully. Put differently, if the organisation does not allocate enough resources to an aspect such as safety, the perception could arise that the organisation is not as concerned about safety as about other aspects of its operations.

- **Physical environment**

Very closely linked to the economic environment of an organisation within the mining and construction industries is its physical environment, which is also referred to as its

ecological environment. According to Smith (2007:71), "[t]he physical environment contains the limited natural resources from which an organisation obtains its raw materials and it is also the receptacle for its waste". The reason why the mining and construction industries of South Africa are so rich in monetary resources and can contribute so greatly to the country's economic environment is because the country is rich in mineral and natural resources in its ecological or physical environment. This obviously impacts positively on any organisation in these industries but, conversely, so too does the move towards conservation and the 'green' culture that organisations are faced with.

This aspect is one that impacts on organisations within the mining and construction industries of South Africa, as these industries are seen to be continuous offenders in the disturbance and exploitation of natural resources. Organisations in these industries thus have to be vigilant and employ strategies and activities that enforce the careful utilisation, rather than exploitation, of these resources. Due to these issues, the governing bodies of the South African mining and construction industries require persons to be responsible for all environmental (i.e. physical and ecological) aspects concerning the organisation. Many, if not most, organisations, therefore, employ an SHEQ (Safety, Health, Environment and Quality) practitioner or officer. The same person responsible for the safety in an organisation is, therefore, in many cases the link between the organisation and some of the demands relating to its physical or ecological environment.

- **Political environment**

The political environment and coupling governing sphere of an organisation have a potential to impact greatly on it (Vecchaito & Roveda 2010:1527; Cant 2010:155; Jiang 2009:155; Kokt 2009:794; Smit 2007:67; Bates 2007:16; Fitzen 2006:2). This is relevant for the mining and construction industries of South Africa, as the political environment, with the democratisation in 1994, brought along many changes in these industries. Before this change, black workers were in most instances seen as expendable labour units in organisations in this industry (Feinstein 2005:100; Harlow 2003:224; Trapido et al 1998:306; Yudelman 1983:311). This meant that these

workers (who make up the greater majority of the workers corps) were not always treated according to the rights they are now entitled to as human beings.

Since this shift in the political environment, the governing bodies of these industries (respectively the Department of Mineral Resources and the Department of Labour) have implemented various changes to ensure that the rights of all employees are respected. One example, which is discussed in more depth above under point 2.2.1.3 and below under 2.3.4.1, is that racist language usage (which of course influences communication in organisations) has been combated (Naudé & Le Roux 2005:6; Githiora 2002:164).

However, the most notable shift with respect to the purposes of this study is the shift towards safer mining and construction. The change that is evident in these industries is that from a production-driven focus to a safety-driven focus. This is evident in the fact that the governing bodies of these industries are compelled to cease all production activities if safety is found to be lacking. One example of this, from the platinum mining industry, reported by Reuters (2012), is a 300 000 ounces or $500 m loss in production in 2011 due to safety-related stoppages by the Department of Mineral Resources. Although these stoppages cost global production an approximate 5%, the Department was adamant that employees' safety was more important (Reuters 2012).

Furthermore, apart from revenue loss, the management of an organisation can be personally held responsible for incidents and/or accidents that befall employees of that organisation. Janse van Vuuren (2011) sums this up by stating as follows: "The heat is on mining CEOs to make greater strides in safety as the threat of jail sentences loom over executives found guilty of contravening safety regulations". To ensure that this is not an empty threat, the Department of Mineral Resources has allocated R145 million for the criminal prosecution of safety infringements in this industry, which is, according to Wessel Badenhorst, a leading safety law expert of Werksmans Attorneys, "a huge amount" (Werksmans Attorneys 2011).
This kind of pressure from the political environment on the organisations that fall within the mining and construction industries of South Africa is something that the organisations will not only be mindful of, but also something that they will have to

address in respect of their internal systems – one of which being the internal safety communication that they employ.

- **Technological environment**

According to Smit (2007:68), "[t]echnology is involved in every process of a business organisation, from manufacturing to marketing to managing". The technological capabilities of organisations thus influence all strategic aspects of such organisations, from planning through to implementation. In the mining and construction industries an almost polar duality is seen in terms of their technological environment.

On the one hand, these industries are at the cutting edge of technological innovation and change, due to the fact that some of the country's best engineers and innovators serve the mining and construction industries (by being either employees or contractors) (Metso 2012; Vogt, Durrheim & McGill 2011:iv). This is seen in the constant renewal of technologies to improve or better the practices of organisations in these industries, which is evident in the mechanisation of mines that led (and is still leading) to the reduced need for human workers (Fischetti 2011:93; Atei, Khalokakaeï & Hossieni 2009:150).

On the other hand, however, the mining and construction industries are also beset with the challenge of a lack of communication technology. In terms of the nature of the work done in these industries, relatively few employees have access to offices with computers that are, for example, linked to the network or intranet of the organisation. This is because the majority of employees work at the proverbial coal face – that is to say on site, and not in an office environment, which is the norm for most organisations. Even if all employees had access to new communication technologies (or even 'older' communication technologies), not all employees would be able to make use thereof, as many of them are illiterate (for further discussion of this issue, see Section 2.2.1.4). This means that many channels of communication, deemed effective in other organisations would not suffice in the average organisation in these industries where they would not reach all workers, which is detrimental to internal safety communication.

- **The socio-cultural environment**

Closely linked to the last point above, the socio-cultural environment influences the organisation and its strategy in various ways or, as stated by Smit (2007:70), "it affects management indirectly through people as consumers and through employees its ultimate effects on the strategy of an organisation should not be underestimated". Many individuals in the mining and construction industries in South Africa form part of a very distinctive socio-cultural group, specifically in terms of the migration of workers. As discussed in Section 2.2.1.1, many employees in these industries do not originate from the place where they work – rather, they live temporarily at the operation where they work and then go home at intervals to 'visit' the family home. Coinciding with a migrant workforce is, arguably, one of the greatest socio-cultural factors impacting on the mining and construction industries, namely the aspect of HIV/Aids.

According to Stablum (2009) and Greeff (2010:64), a migrant workforce could result in an elevated employee HIV/Aids infection rate. Cutlip et al (2002:11) contextualise the impact of HIV/Aids on organisations in South Africa by stating that "AIDS is accelerating more quickly in Southern Africa than anywhere else in the world. The region is confronting human and economic devastation on an unprecedented scale, because 10% of its workforce is already infected by the virus". Stablum (2009) adds to this that the infection rate "among South African miners is now nearly double that of the general working population". In terms of safety in these industries, it is remarked that workers feel that they risk their lives every day to earn money; unprotected sex, therefore, seems a minor hazard – this is deepened by the attraction of sex workers to the industry (linked to the migrant nature of workers) (Ntimbane, as cited in Stablum 2009).

Furthermore, safety and internal safety communication in these industries are impacted by the fact that any accident and/or incident is "intensified with respect to danger to mortality, not only to the person infected, but also to those around him/her" when HIV/Aids is brought into the equation (Greeff 2010:63).

2.3.2.2 Task environment

The task environment of an organisation falls within the macro environment, but as it is not yet part of the organisation itself, surrounds the micro environment and therefore the organisation (see Figure 2.2 above) and comprises suppliers, intermediaries and competitors (Vecchaito & Roveda 2010:1529; Cant 2010:37; Jiang 2009:155; Kokt 2009:794; Smit 2007:63; Bates 2007:16; Fitzen 2006:2). This environment mostly presents the organisation with threats, but also poses opportunities, if handled correctly (Smit 2007:63; Fitzen 2006:2). The parties in the task environment are discussed next as applicable to the mining and construction industries of South Africa.

- **Competitors**

Every organisation is faced with some form of competition in its task environment. Arguably, the first natural form of competition is organisations that supply the same goods or services, and, therefore, compete for the same share of profits in its task environment. However, as Cant (2010:34) summarises, this is not the only competition that an organisation faces, as “organisations [do] not only compete for a share in the market for their product, but also with other organisations for labour, capital, entrepreneurship and material”.

This is true in the mining and construction industries of South Africa as well. As was mentioned in Section 2.3.2.1 referring to the economic environment, these industries are deemed to be two of the most, if not *the* most lucrative industries in the South African economy. It is, therefore, natural to see different companies vie for their place in this environment (including labour, capital, material, entrepreneurship, etc.), which is a proven profitable one.

When different competitors contend in the same task environment within the mining and construction industries of South Africa, safety in the organisation can become a concession or a hindrance. Apart from the fact that the governing bodies of the mining and construction industries prosecute individuals or organisations that do not comply with their minimum safety standards, they also regulate and correspond with

all organisations regarding more serious safety incidents and accidents. In this, organisations are compelled (by law) to report serious safety infringements to these governing bodies (Werksmans Attorneys 2011). If, for example, a mineworker is injured, and this injury turns out to be an LTI , the organisation is compelled to report this injury to the Department of Mineral Resources. Depending on the severity and root cause of this injury, the Department might investigate further (apart from the safety investigation that had to be done by the organisation internally). In any event, these reportable safety incidents and/or accidents become part of an organisation's official safety record, in both the mining and construction industries, which forms part of tender bargaining and the like. This record can, therefore, either become a concession, or bragging counter, used to compete in the task environment, or a hindrance to successful competition.

It is hence clear that concern for safety of an organisation in the mining and construction industries could influence how competitive it is in its task environment. Yet again, it is argued that the safety endeavours of the organisation can either contribute to or hinder its successfulness (financial and otherwise) in this respect.

- **Suppliers**

The main influence of the task environment on an organisation revolves around the role of the suppliers of an organisation. Suppliers in this sense equate all entities that support the organisation in terms of inputs, and on which the survival of the organisation is dependent (Vecchaito & Roveda 2010:1529; Cant 2010:60; Smit 2007:64; Fitzen 2006:2). Suppliers in the mining and construction industries range from entities supplying materials (for example machinery) to the shareholders of the organisation. These shareholders are, according to Cant (2010:37), suppliers of capital and in this sense one of the most important supplier groups in these industries. Smit (2007:64) underlines the importance of the influence of suppliers on an organisation by stating that "[i]f one considers that in South Africa about sixty cents (60 per cent) in every rand is spent on purchases from suppliers, their importance as a variable in the environment becomes clear". In this statement, the obvious influence of suppliers is seen: In order to be successful, an organisation has

to ensure that it receives the right input at the right time at the right price. If an organisation is not *au fait* with this, it might impact negatively on its success.

For the purposes of this study, the influence of safety and internal safety communication on suppliers and the influence of suppliers on safety and internal safety communication on organisations within the mining and construction industries need to be highlighted. In order to understand the potential magnitude of the impact that these two entities (suppliers and safety) could have on each other, the widely published example of the 33 trapped Chilean miners (in 2010) can be used. On 5 August 2010, a gold and copper mine near the northern Chilean city of Copiapó caved in, trapping 33 miners for over 69 days (the longest known time that miners have survived trapped below ground). The story quickly became international news, with the human aspect of the story (rightfully) taking precedence. It is only after the proverbial dust settled from the drilling rescue that the full impact of this safety incident on the organisation and shareholders specifically (being the most influential supplier group (Smit 2007:64)) could be evaluated (Barrioneuvo & Hauser 2010; MacDonald 2010). According to Barrioneuvo and Hauser (2010), MacDonald (2010) and Lane (2010), in the general sense, the rescue operations cost the Chilean government between $10 million and $20 million. The manner in which the government of that country plans to recover some of the costs is from the San Esteban Primera mining company which owns the mine. Specifically though, this will be done by taking legal action “against the assets and shareholders of the mine” (Lane 2010) – a very negative financial and otherwise impact on these shareholders. Conversely, for the shareholders of the organisations that aided in the rescue of the miners (in other words helped the mine out of the safety crisis), a positive impact was seen, as summarised by the headline in the Kansas City Star: “Layne Christensen shareholders enjoy the Chilean miner rescue”. Layne Christensen refers to the Mission Woods drilling company that was “instrumental in helping to free the trapped” Chilean miners, and whose stocks increased amply as a result thereof (The Closing Bell: Layne Christensen shareholders enjoy ... 2010).

The negative impact on the shareholders as suppliers of the San Esteban Primera mining company was apparently as a direct result of the control fraud and dire safety record of the mine (Black 2010; Lane 2010). This safety infringement, intensified by

the dire safety record (see the section above about competitors as well) eventually impacted negatively not only on the shareholders as suppliers, but also on all suppliers and systems of the organisation. Ultimately, the mine "has been ordered to shut down permanently" as a result of its wanting safety standards (Black 2010). Once again it is seen how the safety aspect in an organisation has impacted on its success – the epitome of a negative impact, in this case.

- **Intermediaries**

Intermediaries are defined as all and any entities that bridge the distance between the manufacturer and the consumer, which includes anything from wholesalers to commercial agents and brokers to even spaza shops (Cant 2010:36). In the mining and construction industries of South Africa, a large group of intermediaries (with the absence of this wholesaler, retailer, etc. culture, which is almost unique to these industries) is subcontractors. Subcontractors in these industries are organisations contracted to manage a specific task or operation on behalf of another organisation (such as a mine or other construction company) (Hebblewhite 2009:13; Abrams 2008:2). The organisation that contracts this subcontractor then becomes known as the client organisation. Put differently, this means that a client organisation – for example Anglo Platinum or Wilson Bayly Holmes-Ovcon (WBHO) – will subcontract another organisation to manage a part of or an entire operation on its behalf, much in the same vein of outsourcing as seen in other industries. Specifically linking to the aims of this study, it is important to discuss the impact on, and of, safety and internal safety communication with regard to this intermediary.

When an organisation in the mining and construction industries hires or makes use of a subcontractor, the client (or hiring) organisation is still held responsible for the safety of that operation – even though the work is technically done by another organisation. This translates to the fact that the client organisation has to set measures in place in order to monitor, regulate and manage the safety of the subcontractors in order to prevent it from getting into trouble.

With this kind of liaison and management, communication is naturally of the utmost importance in order to have the safety standards of the client company practised and

upheld by the subcontracting company. If the communication between these two organisations fails and the safety standards suffer, the client company can face fines, imprisonment or even possible shutdown (as was elaborated on in the sections above).

2.3.2.3 Micro environment

The micro environment of an organisation is also referred to as the internal environment, as it points to the internal business environment of an organisation itself (Cant 2010:155; Smit 2007:67; Bates 2007:16). According to Smit (2007:63), this is the main environment in which organisational variables, such as communication, operate, as "those variables which are largely controlled by the organisation itself" (Cant 2010:28) are included here. Cant (2010:28) and Bates (2007:14) summarise this by stating that the mission and objectives, the organisational functions, the management tasks and strategy as well as the ownership interests and the goals of the organisation form part of the micro environment.

What is clear from the discussion of the macro and task environments of organisations in the mining and construction industries is that safety and internal safety communication need to form part of the organisations' mission and objectives, their functions, strategies and goals – all the aspects that make up the micro environment. If organisations fail to include internal safety communication, they could suffer substantial financial loss, or may even cease to exist. Over and above this, if the safety of those organisations is neglected, the individuals responsible for the formulation and implementation of the organisational mission, objectives, functions, strategies and goals could even face imprisonment (Janse van Vuuren 2011; Werksmans Attorneys 2011; Creamer Media 2010:2; Prinsloo 2010:1).

Sriramesh and Verčič (2009:2) state that the impact that the macro, micro and task environments (as discussed above) have on an organisation's communication endeavours specifically can be better understood by looking at three predominant factors, namely the *infrastructure*, *culture* and *media environment* of the country in which the organisation operates. Rensburg (2003:145) supports the classification of

Sriramesh and Verčič (2003:2) and elaborates on it by making this classification applicable to the South African context, while Le Roux (2008:264) furthers this by noting its importance to the understanding of communication in the South African platinum mining context.

2.3.3 Infrastructure

According to Sriramesh and Verčič (2009:2), infrastructure as environmental variable impacts on organisational communication through three interrelated aspects (originating from the micro task as well as the macro-environment). These aspects are the level of economic development, the political system and activism prevalent in the country.

2.3.3.1 Economic development

The economic development of a country, according to Sriramesh and Verčič (2009:6), presents opportunities as well as challenges to organisational communicators, one challenge being the importance ascribed to organisational communication. More developed economies tend to favour strategic organisational communication more than developing economies, because developing economies tend to share the mindset that scarce resources "need to be spent on more pressing needs that are central to an organization's activities and that bring tangible returns" (Sriramesh & Verčič 2009:6; Sriramesh & Duhé 2009:368; Hallahan et al 2007:4).

Although South Africa can be considered as having a developing economy, it is also one of the most developed economies in Africa, producing 40% of sub-Saharan Africa's GDP (Rensburg 2003:154), of which the mining and construction industries are responsible for around 9% (Camco Trade and Industrial Policy and Strategies 2010:1; SSA 2010b:3). The Chief Executive Officer of Xstrata, Mick Davis, described as being a "top mining leader" (Creamer 2010:1), states that South Africa is at the financial centre of the international mining and construction industries.

With the importance of the mining and construction industries in the South African economy evident, the natural progression is that strategic organisational

communication, traditionally ascribed to more developed economies, should follow. Still, this kind of opportunity is weighed down by challenges inherent to a developing economy, such as poverty and illiteracy – two variables that have a direct impact on the strategies and techniques that are open to be used by communication practitioners (Sriramesh & Verčič 2009:6; Podnar, Lah & Golob 2009:341). As discussed in depth in Section 2.2.1, in the mining and construction industries, illiterate workers cannot be ignored in communication endeavours, as they account for the majority of the workforce (Creamer 2002:2). It is also these workers that are mostly working at ground-level in the most hazardous working conditions. Internal safety communication to these employees is therefore, for the most part, seen to be excelled to higher importance while being forced to communicate the same safety message all across the spectrum of employee literacy in an organisation.

Apart from these economic challenges excelling internal safety communication, the political system of the South African government further drives adequate internal safety communication, as Rensburg (2003:155) notes that any organisation aiming at economic success needs to be in close relation with the South African government.

2.3.3.2 Political system

According to Sriramesh and Verčič (2009:3), the political condition of a country affects the economic decisions taken therein, and vice versa. Notwithstanding this interdependence, the political system of the country also influences the kind of communication that is, or that is authorised to be, practised therein by organisations and individuals alike (Sriramesh & Verčič 2009:6; Sriramesh & Duhé 2009:369). The interplay between the political forces (the government of a country) and the organisations within that country represents the challenge of communication with multiple stakeholder groups with “overlapping and often conflicting interests” (Sriramesh & Duhé 2009:373).

This phenomenon is evident in the mining and construction industries of South Africa, where the influence of the Department of Mineral Resources and the Department of Labour over internal safety communication is apparent in its

governing policies that make adequate safety a prerequisite to organisations being allowed to operate in the country (Greeff 2010:6; Macharia 2008). Safety communicators within these organisations are faced with the task of incorporating the viewpoints of not only the organisation and its employees but also the government in their policies (Sriramesh & Duhé 2009:373; Sriramesh & Verčič 2009:6). According to Sriramesh and Duhé (2009:374), the extent of the government's role in the communication of an organisation will, for the most part, be an adversarial one, depending on the nature and severity of the communication topic.

In the case of internal safety communication specifically, the nature of the communication topic is very severe (being that it can literally amount to a life or death situation), which in turn sees government being relentless and unyielding in their governing thereof. Internal safety communication, therefore, has to be equally unyielding because the Mine Health and Safety Act (No. 29 of 1996) as well as the Occupational Health and Safety Act (No. 85 of 1993) makes provision for criminal prosecution of the mismanagement of safety in the mining and construction industries (South Africa 1996:sec 7.82; South Africa 1993:sec 44).

2.3.3.3 Activism

Activism, as it pertains to the practice of communication, is defined by Kim and Sriramesh (2009:86) as being related to problem-solving actions by groups or individuals who unite around problematic situations created by organisational activities. Sriramesh and Verčič (2009:6) further state that the extent to which individuals will take part in activism is directly proportionate to the extent to which their livelihood is threatened.

When dealing with the aspect of safety in the mining and construction industries of South Africa, it is not only the livelihood of the employees that is in jeopardy, but also their health and lives. It is for these reasons that employees exercise activism in the form of safety strikes – for example in June 2009, when an industry-wide strike on safety standards was undertaken in protest to the fatality rates in the mining and construction industries (ICEM 2009; DME 2009; Greeff 2010:6; Macharia, 2008).

Rensburg (2003:158) also comments on this by stating that South Africa as a country has a high level of activism, as in 2000 the South African economy lost an "estimated 1.4 million human days to strikes and stay-aways". In line with this universal embracement of activism by the populace of South Africa in general, the most active union was the National Union of Mineworkers (Rensburg 2003:158).

2.3.4 Culture

Culture permeates through an organisation through its employees who have different backgrounds, turning the organisation into a unique environment in every instance and is, therefore, admitted as the second major environmental factor in Sriramesh and Verčič's (2009:7) classification. It is in this way that the culture of employees influences the organisational or corporate culture particular to their organisation. Although the aspect of organisational culture is dealt with in greater depth in the following literature chapters, what is important to focus on in this chapter is the role that the South African mining and construction contexts play as far as culture is concerned.

Rensburg (2003:159) states that South Africa is seen to be "extremely heterogeneous with an abundance of cultures and subcultures", which, according to Lustig and Koester (2003:12), will inherently influence the way an organisation communicates and the way that these communication messages are interpreted. In the context of safety communication in the South African mining and construction industries, this holds even more credence, as these industries represent cultural diversity to an intensified degree with the inclusion of migrant workers. Migrant workers (as explained above under 2.2.1.1) account for the intensified cultural diversity due to the fact that they originate not only from the various provinces of the country (which have different cultures in itself), but also from neighbouring countries of South Africa and even the rest of the world (Le Roux 2005:6).

Based on the fact that culture impacts on the way that recipients interpret a message sent to them (Lustig & Koester 2003:12), the organisational communicator will have to be cognisant of the cultural diversity in the organisation, as they will influence the way communication messages will be sent and received (Sriramesh & Verčič

2009:7; Lustig & Koester 2003:12). The most notable way in which culture influences communication in the organisation is through the different languages that intrinsically go hand in hand with it (Greeff 2010:66).

2.3.4.1 Language

The well-known and documented Sapir-Whorf hypothesis was the first academic contribution to call attention to the integral relationship between language, thought and culture (Perlovsky 2009:518; Koener 2008:174; Whorf 1940:230). In the field of organisational communication, this notion is perpetuated where it is accepted that along with an organisational culture, an organisation will also have its own language. Just as the culture of the organisation is influenced by the differing cultures of its employees, so too is the organisational language influenced by the languages spoken by the employees of the organisation (Piekkari, Vaara, Tienari & Santti 2005:330; Lustig & Koester, 2003:225).

In the South African mining and construction industries, diversity in terms of the languages spoken by employees, as discussed before, culminates in the use of the *mining language* Fanakalo (see Section 2.2.1.3). It was indicated that this language was created due to the fact that so many different cultures and languages were thrown together in the mining and construction industries, resulting in the amalgamation of these languages to make up a new language – particular to these industries. In recent years, however, this language has been ruled as a racist language and English has replaced it as the *lingua franca* of these industries (Naudé & Le Roux 2005:6; Githiora 2002:164).

Communication in these industries subsequently has to adapt to this change in language, which includes two notable influences. Firstly, the fact is that many workers on ground level are not proficient in this language, although communication practitioners (including safety personnel) are forced to use it in the conveyance of messages, which leads to the fact that many workers will not be reached by the communication if other interventional steps are not taken (Greeff 2010:160). Secondly, due to workers' inaptitude in the English language, these workers are

sometimes seen as illiterate or unintelligent, while they are actually not – as argued in Section 2.2.1.4 (Bates 2009:15; Naudé & Le Roux 2005:6).

Notwithstanding these perceptions, language, according to Barker and Gaut (2002:31), is used in organisations such as those in the mining and construction industries to fulfil three functions: it is used to label, to interact and to transmit information.

Internal safety communication in the mining and construction industries will use language in the first instance to *label* in terms of identifying an act, object or person in order to avoid ambiguity (Barker & Gaut 2002:31). Taking a very basic example, the use of the term *PPE* in the corporate or organisational tongue of these industries (see Section 1.2.13 for a full definition) refers to personal protective equipment – the specialised clothing and equipment used by employees for their protection against safety hazards (Greeff 2010:21). PPE will include aspects such as hard-hats. Still, the English term *hard-hats* (which should be the preferred term, being English) is so seldom used, that the term for it in the *de facto* language, Zulu or Fanakalo, namely *makarapa,* has become widely embraced, being used by the entire populace of South Africa. At the Fifa World Cup of 2010, for example, these *makarapas* were used as fan paraphernalia and the word has even been included in the Oxford Dictionary subsequent to the conclusion of the World Cup (Oxford 2011). Against this diversified use of language, the safety personnel make use of pictorial representations of these objects as well, as the language labelling proves to be a difficult task (also trying to include illiterate employees). An example of graphical representations used for labelling on signage can be seen below in Figure 2.3, the first representation thereon being that of a hard-hat (*makarapa*).

Figure 2.3: Graphical instead of language labelling (Greeff 2010:147)

In the second instance, language is used to *interact*, which in this context would mean the communication and sharing of ideas and emotions, as related to safety (Barker & Gaut 2002:31). However, the diversity in terms of languages and cultures of employees in these industries (once the obstacle of understanding has been overcome) makes interaction a delicate process. Each culture and language will have a different set of rules to govern the act of interaction. For example, according to Naudé and Le Roux (2005:60), "some of the African cultures use vivid descriptions and examples in their communication". However, internal safety communication rather makes use of direct language, void of any vivid descriptions so as to avoid ambiguities, which is often perceived by employees as abrupt and rude (Greeff 2010:66).

Closely related to the above, communication is in the third and last instance used to *transmit information* from one person to another (Barker & Gaut 2002:32). When the above difficulties with regard to language diversity are taken into consideration, however, it becomes evident that the transmission of information through one single language can be problematic. This is even further intensified when the transmission has to be done through differing media or channels, which is discussed next.

2.3.5 Media

Sriramesh and Verčič's (2009) last environmental variable to impact on the communication of an organisation is the media in the organisation's environment.

When focusing on this variable, two sets of media have to be distinguished: firstly, the mass media (originating from the organisation's macro environment) and secondly, the internal media or channels of communication (originating in the micro environment of an organisation).

2.3.5.1 Mass media

Sriramesh and Verčič (2009:12) state that communicators have to recognise the power of mass media over organisational communication in particular. This is due to the fact that the way in which an organisation is portrayed in the mass media influences the way an organisation is perceived externally, which impacts on the way in which this organisation is inclined or forced to communicate (Sriramesh & Verčič 2009:6; Sriramesh & Duhé 2009:368). The South African media in general currently have freedom of expression in the highest form, which includes the fact that events, discussions and/or disputes, if not handled internally in the organisation, can be moved to play out in the media – in the so-called court of public opinion (Sparks 2009:195; RWB 2012). With regard to safety in the mining and construction industries, this amounts to headlines such as "*152 workers in SA die in mining accidents this year already*" – Beeld (Roestoff 2009:11); "*Death toll rises to 25 in Virginia mine blast*" – Business Day (Reuters 2010:2); "*Union concerned about latest mining deaths*" – Mail & Guardian (Union concerned ... 2008:1) and "*Safety under spotlight*" – Business Day (Mabanga 2009:3). This kind of media exposure has implications for the safety operations of the organisation and subsequently the way in which internal safety communication is employed internally.

2.3.5.2 Internal media

Internal media, on the other hand, refers to the channels of communication generated and used internally in an organisation, specifically aimed at employees as target audience with communication to and from this group its main purpose (Friedl & Verčič 2011: 85; Greeff 2010:18; Johnston & Pearson 2008:22). Leonard, Van Scotter and Pakdil (2009:851) as well as Freitag and Picherit-Duthler (2004:476) are of the opinion that the internal media used by an organisation are influenced mostly by the characteristics of the recipients of this communication, insofar as the recipient

characteristics dictate what channels are appropriate or apposite. In terms of the mining and construction industries specifically, Creamer (2002:2) and Chilwane (2009:12) argue that the characteristic impacting most heavily on the use of internal media is illiteracy.

As discussed in Section 2.2.1.4, the Leon Commission for Health and Safety reports that 84% of general labourers and machine operators within the mining and construction industries of South Africa are totally or functionally illiterate and cannot be reached through internal media that require them to read or write (Stanton 2003:70; Leon 1995:70). In answer to this problem, organisations in these industries employ internal media that make use of visual representations in order to communicate to these employees, and supplement all written communication with verbal relays (see for example Figure 2.3 above). Although this second amendment is implemented with some success, internal media that utilise visual representations are not always as effective as they are thought to be, as many employees' illiteracy incorporates visual illiteracy as well (Greeff 2010:160). The bottom line of the impact of this environmental variable is that the internal media that can be used by safety personnel are limited (Sriramesh & Verčič 2009:6).

2.4 CONCLUSION

The entire disposition of this chapter is that the communication practitioner has to be led by the specific and unique environmental characteristics of the mining and construction industries when making decisions regarding internal safety communication. This communication has to succeed, as the governing bodies of these industries expect safety to be of a high standard in order to allow the organisations therein to operate at all. One of the first environmental characteristics that impacts on the success of this is illiteracy, as it is a trait of the economic development of the country that impacts on the internal media choices made by safety personnel. Although many employees in these industries – a vast majority – are illiterate, this still does not mean that these employees do not have a voice on matters that concern them – matters such as their safety. This is seen under the topic of activism which, contrary to initial impressions, can be a supportive factor to

the communication of safety information, as the communication is excelled towards being two-way symmetrical.

The excelling of internal safety communication is also an aspect that should be seen as important and even imperative in organisations in the mining and construction industries, as the mismanagement of safety can lead to criminal prosecution in terms of the Mine Health and Safety Act (No. 29 of 1996) and the Occupational Health and Safety Act (No. 85 of 1993). Notwithstanding this importance, the management of this aspect is plagued by obstacles in these industries, the most notable of which being the diversity of the employees therein. This diversity manifests in the differing cultures and languages spoken by employees, intrinsically complicating consistent communication. One major way in which internal safety communication is impacted is by the internal media used by safety personnel. The internal media used are limited by the high levels of illiterate workers in these industries.

In this chapter, a general overview and contextualisation of the mining and construction industries of South Africa are given to lay the general groundwork for the understanding of internal safety communication within this paradigm. In an inductive manner, the following three chapters of the literature review focus on the problem of internal safety communication by investigating this phenomenon from a theoretically sound perspective. The next chapters focus on communication theories that direct and dictate communication in general, and focus on the specific traits of internal safety communication. These chapters lay the theoretical grounding and foundation for the model for internal safety communication in the mining and construction industries of South Africa.

CHAPTER 3
INTERNAL COMMUNICATION THEORY DEVELOPMENT: THE SYSTEMS THEORY AS META-THEORY

3.1 INTRODUCTION

In the previous chapter, an orientation was given of the mining and construction industries of South Africa. It was argued that safety has become one of the major organisational goals for any organisation functioning in these industries, as they not only administrate the personal safety of the employee body, but also the safety of the organisation in terms of longevity. Subsequently, the importance of internal safety communication was emphasised, as it was argued that safe work practices need to be relayed from competent persons (in this case safety personnel – see Section 1.2.15 for a definition) to the general workers at the coal face.

The literature review chapters, starting with this chapter, focus on how internal safety communication should be conceptualised and executed, based on previous studies and literature in general, in order to give a sound theoretical base to this research. These chapters thus focus on answering research questions 1 and 3, namely:

- *What are the current proposed methods, models or theory for internal organisational communication according to the literature?*
- *What are the unique characteristics of internal safety communication?*

These chapters focus on the predominant theories that informed the phenomenon of internal organisational communication (as for the purposes of this study) chronologically as they developed from the systems theory. This chronological classification of the theories was done in terms of the development of the paradigmatic thinking and not necessarily the publication dates (for example, some publications were interrupted due to aspects as diverse as the Second World War). The focus is on the progression of the understanding of internal organisational communication and along with this the growth of the understanding of internal safety communication, with emphasis on the progression and points of contact between the

theories. The section below introduces all of the theories discussed in the three literature review chapters, explaining in an introductory manner the development of the theories that are discussed.

3.2 INTERNAL ORGANISATIONAL COMMUNICATION THEORY DEVELOPMENT

The notion of systems is “as old as European philosophy” (Von Bertalanffy 1972:407) and has been adapted to explain many contexts. It can be traced throughout the reasoning and philosophy that shaped (especially) Western ideology and knowledge, but it was coined for the first time as a systems theory by Von Bertalanffy (orally in the early 1930s and then in literature after the Second World War) (Leydesdorff 2010:67; Luhmann 2008:23; Walby 2007:450; Von Bertalanffy 1972:407). The mass appeal that the systems theory holds can be moderately attributed to the fact that it explains, at its simplest form, the phenomenon that sees aspects that are in contact with one another and relate to and then become interrelated to one another in some way. The systems theory is the first to explain and concretise in the most rudimentary, yet comprehensive way that variables in a system are related to others – suggesting that on some level there is a relationship between them (Luhmann 2008:23; Walby 2007:450; Von Bertalanffy 1972:407). This theory is therefore both a baseline and a fundamental classification that paved the way for the creation and development of many theories and realisations. It is due to this fact that the systems theory and thinking was the basis of the literature review for this study (specifically the adaptations to the social sciences, for example by authors such as Luhmann).

Having ascertained that systems (however they be defined by the deliberator) are interrelated and form part of a hierarchy, the foundation was laid for elaborations within the field of organisational communication. Many theories indeed developed from the systems theory, such as the organisational theory, the general communication theory and the chaos theory (see for example Baran and Davis (2012), Bechky (2011), Sinai (2010) King, Felin and Whetten (2010), Windahl,

Signitzer and Olson (2009); Mortensen (2009); Jones (2007) and Grunig and Hunt (1984)). For the purposes of this study, the most important development out of the systems theory is the stakeholder theory. The stakeholder theory, prompted by the systems theory's preposition of interrelatedness of systems and subsystems, argues that if the prepositions of the systems theory are assumed, subsystems should be defined as all aspects and variables with which the organisation (as a system) comes into contact. This then naturally ascribes all constituency groups as important to the organisation – not only just shareholders (which was the dominant stance at the time). From the systems theory, theorists such as Freeman (1984) developed the concept and later the theory of stakeholders, which justly claims that an organisation is interrelated (a remnant of the systems theory) to more groups than just shareholders, that they are interrelated with all constituencies and that these constituencies can be defined as stakeholders (Jensen 2010:33; Freeman et al 2010:30; Angle et al 2008:154; Laplume, Sonpar & Litz 2008:1153; Freeman, Wicks & Parmar 2004:365).

Building on this realisation that stakeholders are a subsystem of an organisation that needs to be managed, theorists such as Ledingham and Bruning (2000b) state that the interrelatedness and the need for management imply that a relationship needs to (and inherently does) exist between an organisation and its stakeholder groups (Greenwood & Van Buren 2010:426; Banerjee, Dasgupta & Kim 2008:2508; Ledingham & Bruning 2000b:45). The stakeholder theory then grows to explain that it is through communication that relationships are managed and maintained between an organisation and its stakeholders, but does not explain (to the full and concrete extent) what this relationship or the communication that governs it should be like. Within this void the relationship management and the excellence theories developed.

In order to establish a benchmark for organisational communication efforts that can be seen as the ideal, the International Association of Business Communicators (IABC) funds a study to uncover the tools and prerequisites of excellent organisational communication, which became known as the excellence theory (Downs, DeWine & Greenbaum 2004:57; Grunig & Hon 1999:3; Grunig 1997:286; Dozier, Grunig & Grunig 1995:vii).

Many of the same authors involved in the excellence study aided in the development of the relationship management theory (Downs et al 2004:57; Grunig & Hon 1999:3; Grunig 1997:286; Dozier et al 1995:vii). The relationship management theory sets and explains the elements and types of relationships that can and could exist between an organisation and its stakeholders. This is used in conjunction with the foregoing theories to explain and describe the relationship, aided by communication (as from the excellence theory), that inherently exists between an organisation and its stakeholders (as from the stakeholder relationship and stakeholder theory), as these parties to the relationship are interrelated systems that are part of the same hierarchy (as from the systems theory).

These theories, however, only view internal organisational communication from the vantage point of the organisation. The last progression to be taken to the full understanding of this phenomenon, holistically, was to view it from the side of the recipients of the communication message. The communication satisfaction literature (which is discussed last) was thus formulated (Zwijze-Koning & de Jong 2007:263; Rubin, Palmgreen & Sypher 2004:114; Downs & Hazen 1977:64).

The progression of these theories as well as their contact points, as discussed above, is depicted graphically below in Figure 3.1. In each instance the core guiding principle of the theory is given and the progression of these core principles to the formation of the next theory is subsequently specified, as it relates to internal organisational communication and the purposes of this study.

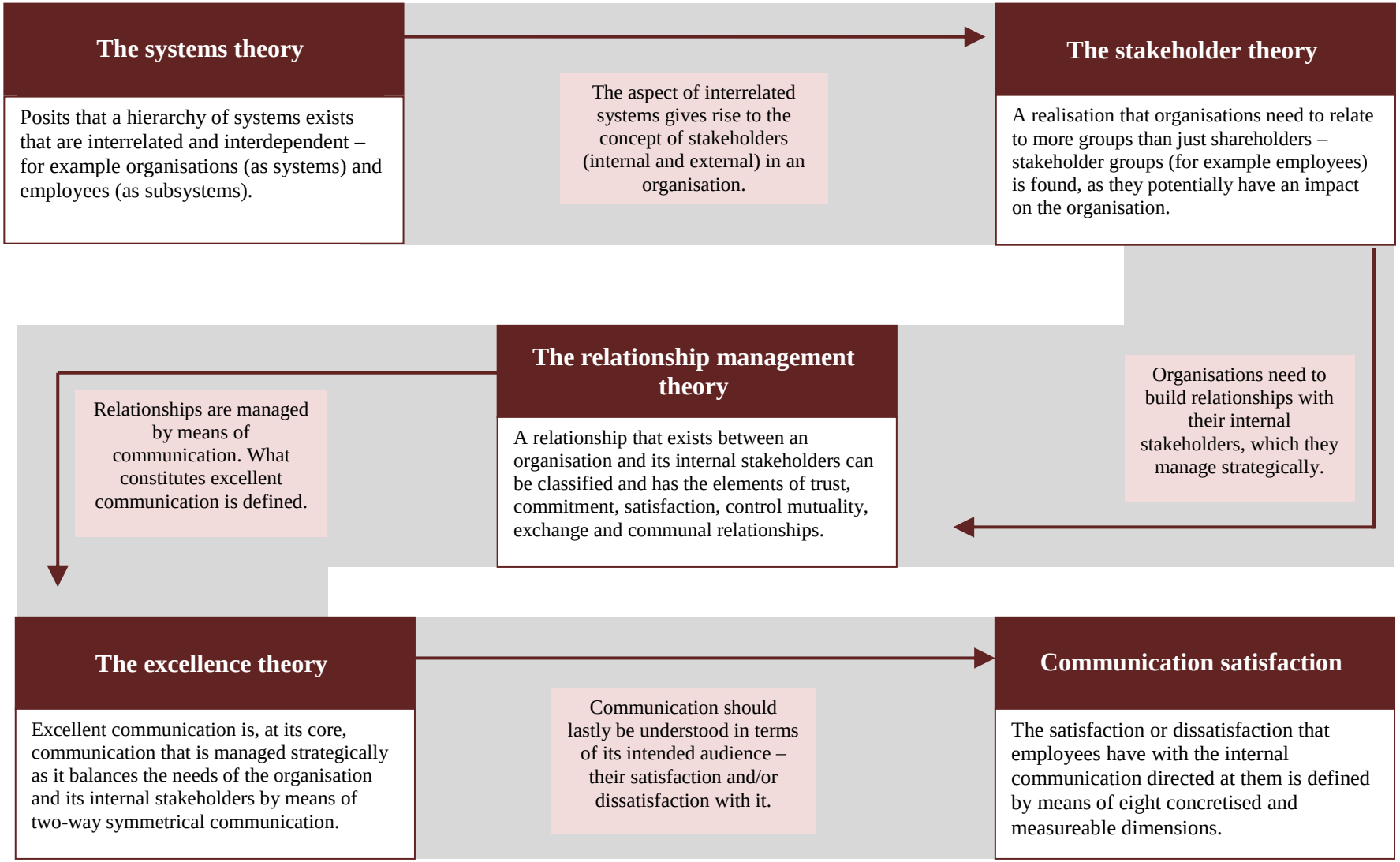


Figure 3.1: The development and application of relevant theories to internal organisational communication

Each of the theories depicted above is subsequently discussed. As the systems theory is the baseline for the progress of all the theories that developed subsequently, and as the theory itself therefore explains the other theories and their use, the systems theory can be seen as the meta-theory of this research and is discussed in this first chapter of the literature review. Chapter 4 focuses on the stakeholder and relationship management theories, while Chapter 5, the last of the literature review chapters, centres on the excellence theory and the literature on communication satisfaction.

3.3 THE SYSTEMS THEORY

In the words of Von Bertalanffy (the pioneer of the general systems theory) (1972:407): "In a certain sense it can be said that the notion of system is as old as European philosophy", as it shaped the understanding and progression of "philosophical-scientific thinking". The notion had been carried forward in an inherent and implied fashion; however, not being explicitly defined and concretised until the late 1920s, when Von Bertalanffy first questioned its nature (somewhat as a reaction to the reductionistic and mechanistic approaches to scientific study (Burns & Deek 2010:4)) in terms of biology (which was his field of specialisation) and wrote:

> Since the fundamental character of the living thing is its organization, the customary investigation of the single parts and processes cannot provide a complete explanation of the vital phenomena. This investigation gives us no information about the coordination of parts and processes. Thus the chief task of biology must be to discover the laws of biological systems (at all levels of organization). This view, considered as a method of investigation, we shall call 'organismic biology' and, as an attempt at an explanation, 'the system theory of the organism'. (Von Bertalanffy 1928:64)

This "system theory of the organism" (noting the singular use of the word *system* as Von Bertalanffy used it) was the germ of what later grew to be the general systems theory (Von Bertalanffy 1972:410).

The general systems theory is seen as "one of the main intellectual movements of the 20th century" (Burns & Deek 2010:4) and is based on the synergistic effect that posits that, in terms of systems, the whole is always greater or more than the sum of

its parts (Burns & Deek 2010:4; Mulej 2007:347; Kurtyka 2005:30; Hammond 2003:103; Katz & Kahn 1978:3; Almaney 1974:35; Von Bertalanffy 1968:154). This realisation is resultant from the theory's examination of individual entities in their greater, connected context.

In order to comprehend the basis of the general systems theory, three characterisations and designations, basic to this theory, need to be understood. According to Burns and Deek (2010:4), Mulej (2007:347), Kurtyka (2005:30) Hammond (2003:103) Katz and Kahn (1978:3) and Von Bertalanffy (1968:154), the general systems theory firstly puts forth that any set of interrelated contexts or entities can be viewed and defined as a *system*. This system is part of a hierarchy and, therefore, consists of subsystems below and supra-systems above (also called meta-systems in some literature). This hierarchical classification (although linear in its ordering) is not stagnant, as it changes as per the vantage point of the classifier. A subsystem can be seen as a system in its own right, with various subsystems of its own, just as a system can be seen as a subsystem of a system greater than itself. In Chapter 2 this was graphically represented in Figure 2.1. Secondly, and as a result of this viewpoint of systems, the general systems theory posits that all systems (albeit a sub-, supra- or standard system) that come into contact with one another are on some level and to differing degrees interrelated. This interrelatedness goes hand in hand with interdependency, which sees the systems necessary to one another for survival. As a result of these interrelationships (including them into the equation), the whole of the system can be seen to be greater than the mere sum of its parts. Thirdly, the general systems theory builds forth on this by stating that all systems need to be studied as a whole, going against the reductionist approach, which would rather see the entity broken down into its smallest components to be analysed independently (Mulej 2007:347; Kurtyka 2005:30; Katz & Kahn 1978:3).

After the wide-spread acceptance of the general systems theory, it was realised that these three basic characterisations and designations used to examine biological aspects can also be made applicable to various other fields of study (Liu, Forrest & Vallee 2009:1247; Walby 2007:449; Mulej 2007:348). The application to other fields saw the general systems theory alter and modify itself to include an array of aspects and supplement understandings of systems. In the field of communication science,

an increase in systems research was evident in the late 1970s and early 1980s by noted communication scholars such as James Grunig and Peter Monge, in line with the social sciences interpretation of scholars such as Luhmann and Habermas (Bausch 2001; Leydesdorff 2000; Habermas 1985; Luhmann 1984; Monge 1982; Katz & Kahn 1978; Grunig 1975; Almaney 1974).

The resultant and following research not only accepted and employed the basic characterisations and designations of the systems theory, but also turned to its basic propositions in the examination of organisational communication, in order to forward the understanding of this phenomenon. The following section therefore focuses on these prepositions of the systems theory and discusses it from an organisational communication perspective.

3.3.1 Prepositions of the systems theory

A system is defined by the vantage point of the definer – as such, one man's system is another man's subsystem. In a study such as this thesis, which focuses on internal organisational communication, various systems and subsystems can be defined. The most common stance taken in literature is to define the organisation as a system and then the communication therein as a subsystem. Although this is a valid approach, and although this approach offers much information about the communication endeavours of an organisation, the research for this study focuses specifically on internal safety communication. As such, internal safety communication is viewed as the system under discussion in the literature review chapters – unless stated otherwise.

The propositions of the systems theory in terms of internal safety communication as a system are hierarchy, interrelatedness, holism, stability, self-regulation, adaptability and equilibrium and openness. In the sections to follow, these propositions are discussed from the seminal and supplementing works of Burns and Deek (2010:4), Samoilenko (2008:282), Walby (2007:449), Wadsworth (2007:154), Angelopulo (2002:42), Skyttner (2001:45) and Bausch (2001:43).

3.3.1.1 Hierarchy

Based on the three basic characterisations and designations of the systems theory, the first preposition thereof is hierarchy. As explained, various systems are defined within the systems theory: systems, subsystems and supra-systems. These different systems are represented in a hierarchical order with the larger, more complex systems at the top of the hierarchy, encapsulating within it the lower level systems. Moving from the complex higher level systems towards the lowest level of the systematic hierarchy, the systems will become more simplistic and mechanistic in nature (Walby 2007:449; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43). In Figure 3.2, systems are graphically represented by the author in terms of their hierarchical preposition, with the supra-system at the highest level and the subsystems at the lower ends.

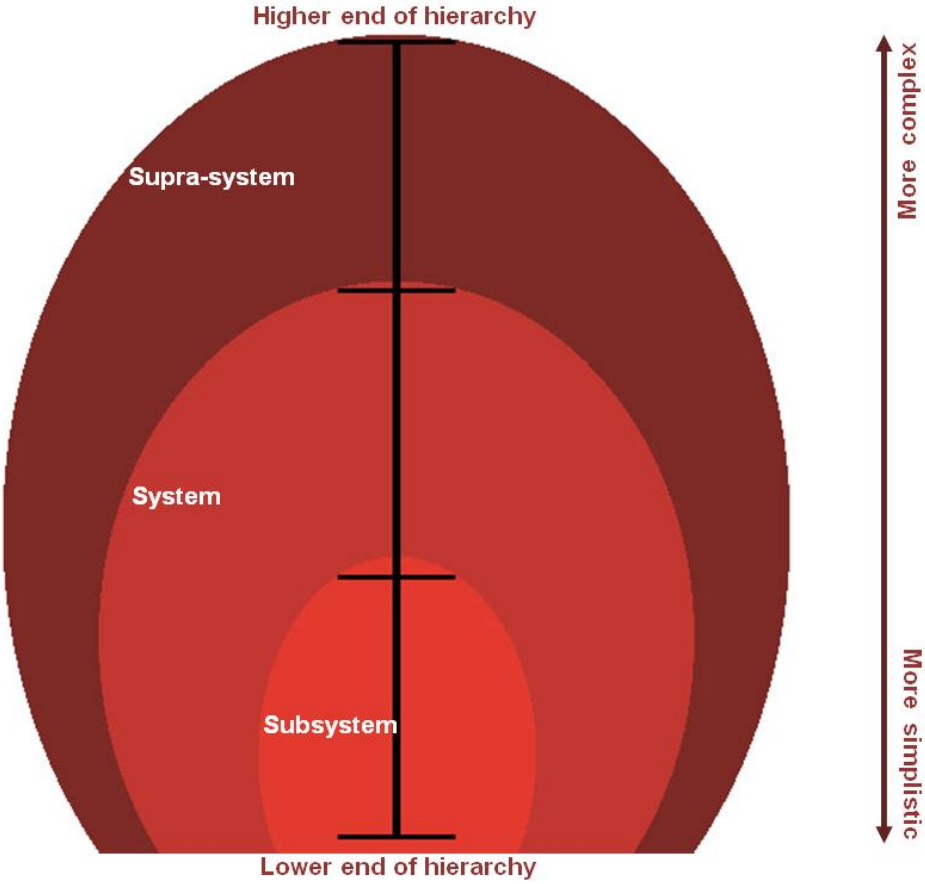


Figure 3.2: The hierarchy of systems

If internal safety communication is viewed as a system, this preposition, therefore, necessitates that there will be supra-systems higher or above its functioning as well as subsystems functioning below it. Although the focus of this study is not on these other systems, it is pertinent to take note of the fact that in a typical organisational setting, internal safety communication as a system will have various subsystems, for example organisational safety culture, and as a supra-system all internal organisational communication. Alongside internal safety communication there will also be other systems, for example internal production communication, which will function on the same hierarchical level. In the mining and construction industries of South Africa, these two systems, as an example, do not always work well side by side, as it is the sentiment of many employees of these industries that when one wants to excel safety, production is hampered, and when one wants to excel production, safety is hampered, as a greater production output (in the short term) can be achieved when the constraints of working safely are not practised[§] (Greeff 2010:75; Mohamed 2002:377).

When this kind of duality is found in systems working on the same hierarchical level, the sentiments and assertions of the system directly above that are followed – the stance of the supra-system of internal organisational communication will be the one followed by all systems thereunder – including internal safety communication and internal production communication, if the entire system is to find equilibrium. This last aspect addresses the relationship between the different systems in the hierarchy, which is the next proposition of the systems theory.

3.3.1.2 Interrelatedness

Interrelatedness is another preposition of the systems theory based on the basic characterisations and designations of this theory (Burns & Deek 2010:4; Samoilenko

[§] See, for example, this sentiment being voiced by mining houses with statements such as "Anglo American Platinum and Lonmin both reported a fall in mined output in the final three months of calendar 2011, citing increased safety-related stoppages imposed by the country's Department of Mineral Resources" (Mining News 2012) and "Amplats, the largest producer of metal, said yesterday that ... safety stoppages at its mines hits production hard" (Mining Safety 2012). In this it is seen how safety is made the singular culprit for a fall in production output over an extended period in time, while many factors arguably impact on this output, such as trade and industry relations (for example supplier activity), human resources (the individuals mining), environmental factors, et cetera.

2008:282; Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43). From the systems theory perspective, unrelated and independent entities cannot constitute a system. Interrelatedness as proposition therefore firstly suggests that all systems that have contact with one another necessarily influence one another, in other words, each subsystem within a system influences the system and its fellow subsystem while the system itself influences its subsystems (Burns & Deek 2010:4; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43). Secondly, the supra-system also influences the system (and the system the supra-system), which then has a chain reaction and sees the subsystems change. The simple fact is thus that change in one system unavoidably constitutes change in other systems (Burns & Deek 2010:4; Samoilenko 2008:282; Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43).

As a result of this interrelatedness, interdependence of systems is encountered where systems become dependent on one another for survival – one system cannot operate if other systems are not in place to help it do so (Burns & Deek 2010:4; Samoilenko 2008:282; Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43).

For example, the interrelatedness of internal safety communication as a system with internal production communication as another system in the same supra-system is evident in the example used above, as the one influences the other, sometimes in a negative manner. Notwithstanding the sometimes negative effect of the interrelatedness, these systems are still interdependent. If internal production communication falls away, and it is thus not communicated to employees in the mining and construction industries how they should go about their work, internal safety communication will also necessarily fall away. If the procedure for work is not communicated to an employee, the *safe* way in which that procedure should be carried out cannot be communicated either.

This leads to the third and last aspect of interrelatedness, namely that all the systems that fall within a larger system have to work together towards mutually defined and observed goals (Burns & Deek 2010:4; Samoilenko 2008:282; Walby

2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43). It is the responsibility of the systems higher up in the hierarchy to define and set these goals, as well as the behaviour that governs it. This is mainly due to the fact that influence from the higher-end systems impacts directly on those lower down in the hierarchy, while the lower-level systems do not have as much influence on the higher-end systems (Burns & Deek 2010:4; Samoilenko 2008:282; Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43). As depicted in Figure 3.3, the strongest influence to be exerted between systems is from a higher-end to a lower-end system, while the second-strongest is between systems on the same level, and the weakest is from a lower-end system to a higher-end system. It is important to keep in mind that influence from lower- to higher-end systems is still possible, although it will not be as strong and/or direct, which means it might have to move via the system directly above it in the hierarchy before it can reach the higher system. In this figure the author depicts the influences carried out on the different systems by means of curved arrows, with the darker colours indicating strong influence and the lighter colours indicating weaker influences.

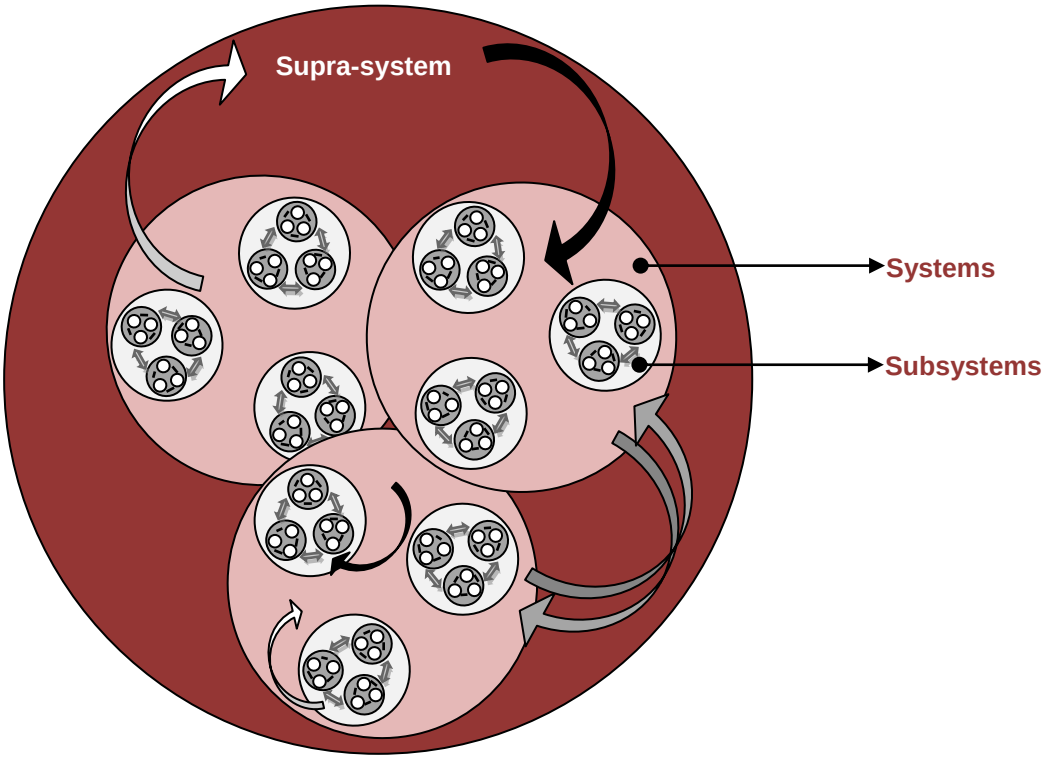


Figure 3.3: Influences of systems on one another

Internal safety communication within the mining and construction industries thus needs to be heedful of the fact that other aspects within the organisation (for example production communication) have the power to influence it, while it has the power to influence these aspects in turn. In order for internal safety communication to function in a successful manner, it will need to work alongside these other systems, and allow for goal setting by higher-end systems to see that all lower-end systems work together towards the same goals.

This aspect was also highlighted in the preceding chapters, in the discussion of the influence of the governing bodies of the mining and construction industries. Mention was made of the fact that the Department of Labour as well as the Department of Mineral Resources sets certain safety standards to be followed by organisations to be allowed to operate. Considering these as systems, it can thus be said that within the system of the mining and construction industries fall the governing bodies, namely the Department of Labour and the Department of Mineral Resources. These two governing bodies exert their influence on all organisations that fall within their domain, establishing general and basic procedures that need to be followed in order for the production of these organisations to be seen as safe. These organisations then have to pass on this influence to all entities of the organisation, including communication, which in turn influences its own systems, including internal organisational communication, which finally influences its subsystems, of which internal safety communication is one.

This scenario illustrates the hierarchical as well as the interrelated and interdependent natures of systems. Another aspect that can be seen, but which has not yet been elaborated upon, is that of holism.

3.3.1.3 Holism

Holism is at the core of the systems theory, as it is the notion of holism that sees the whole to be greater than the sum of its parts. At the antithesis of holism stands reductionalism or narrow specialisation, where entities are broken down and studied or approached in terms of their single and most simple state – not taking the influences of entities on one another into consideration (Burns & Deek 2010:4;

Samoilenko 2008:282; Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43).

In terms of the interrelatedness of systems as discussed above, holistic properties that are not possible to detect by means of reductionalistic or specialised analysis are "possible to define in the system" (Skyttner 2001:49). Angelopulo (2002:42) clarifies this by stating that "[t]he complex organisation of the whole creates manifestations which do not exist where the parts of the system are considered separately", basically pointing to the fact that the interdependence and resultant inherent relationships between the parts of the system adds to the understanding and overall utility and purpose of the system as a whole.

These inherent relationships do not only need to be *studied* because of the concept of holism, but also *exist* (to a greater degree) because of the concept of holism. This is due to the fact that holism dictates that a whole is greater than the sum of its parts, and in turn also conditions that the parts aspire to be figured together in order to create the whole (Burns & Deek 2010:4; Samoilenko 2008:282; Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43). Basically, the parts of the system want to work together to form a whole, as due to their interdependent nature it is in their best interest to do so.

In the scenario given of the systematic interaction in the mining and construction industries that sees safety legislation and goals followed through from the top of the hierarchy to the lower-end systems in this hierarchy, holism is also present. It is as a result of the holism of the system that all parts of the system strive to work together to obtain the legislatory product of safety. This is due to the interrelated nature of the systems, as the organisations (subsystems to this system) realise that their interrelatedness to the systems higher up in the hierarchy (for example the regulatory bodies) compels them to work together in a holistic manner within the demands of these systems. This points to the fact that research into internal safety communication in the mining and construction industries will have to be done in a holistic rather than a reductionistic manner. A further aspect that can be realised by looking at the scenario of the safety and legislation goals set by the supra-system is that of stability.

3.3.1.4 Stability

Stemming from the holistic and hierarchic nature of systems, the opposing reality of systems – one that Angelopulo (2002:42) calls “bi-polarity”, is that a system is at the same time a whole and a part. Because of this bi-polar nature, every system has two tendencies under stability: an *integrative* tendency and a *self-assertive* tendency. In the scenario described above, an *integrative* tendency is seen, as this tendency moves the system towards functioning as part of the whole in order to preserve stability of the system (Burns & Deek 2010:4; Samoilenko 2008:282; Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43). Organisations adhering to and integrating safety regulations set by government into internal safety communication in the organisation are operating in an integrative manner (integrating themselves into the bigger system) in order to be stable. If the organisation does not integrate itself in this manner, it faces the threat of an unstable system, which could lead to government shutting down operations of that organisation – as explained in the previous chapter.

Conversely, a system also has a *self-assertive* tendency wherein it will strive towards preserving its individual autonomy (Burns & Deek 2010:4; Angelopulo 2002:42). This means that it will be assertive in terms of its own requirements and instead of conforming to the demands of the whole, will have the whole conform to its requirements (Burns & Deek 2010:4; Angelopulo 2002:42).

In the example above regarding the acrimony between production and safety (and its corresponding internal organisational communication), the self-assertive tendencies of systems can be observed, as safety communication asserts its requirements on production communication (and vice versa) when these two interdependent systems need to function together within a greater system. If one of these two systems does not yield to the requirements of the other, the system will not be able to function in a stable manner. In this context it could mean conflicting communication messages that hamper beneficial behaviour from employees.

Production and production communication are systems that also need to function within the greater system, namely the mining and construction industries, which

assert safety as a priority for all systems lower in their hierarchy. With this pressure from higher up in the system, as well as that on the same level (from internal safety communication), the likelihood is that production communication will yield and accept the assertions of internal safety communication and give up or alter its own self-assertive tendencies in order to maintain stability in the system as a whole.

This aspect points to the stable and flexible nature of systems: As stability permits the system to function in a holistic manner over time, flexibility in turn permits alterations in the system in order to allow it to adapt to its changing environment. Flexibility is therefore seen in the behaviour of production communication as a system, where the environment in which it functions (mainly the mining and construction industries) has changed in terms of a stronger commitment to safety. Flexibility thus allows systems such as production communication to adapt to this change in environment. Yet again the bi-polar nature of systems is seen here, where it is due to flexibility that stability in a system can be gained (Burns & Deek 2010:4; Samoilenko 2008:282; Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43).

3.3.1.5 Self-regulation

Every system is thought to display self-regulation. Self-regulation channels the actions and outputs of the system towards a desired state or goals. At the lower end of the systematic hierarchy, the desired goals and state will be as simplistic as its counterparts on the higher-end will be complex (Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43). These higher-end systems will, however, not only convey complex goals, but will also be responsible for setting greater parameters within which the lower-end systems will need to operate (Burns & Deek 2010:4; Samoilenko 2008:282; Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43). This is exactly what is seen in the example above where the governing structure of the mining and construction supra-system sets parameters within which lower-end systems such as safety and production have to operate.

These parameters will gauge and guide the outputs of the systems, as systems will have to function within these (exercising flexible and stable patterns) in order to reach their own desired states and goals. This is allowed by the interrelated and interdependent nature of these systems, as the parameters set by higher-level systems are interrelated and thus mirrored to some degree by the goals of the lower-end systems (Burns & Deek 2010:4; Samoilenko 2008:282; Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43).

Applying this to the example above, the parameters set by the governing structures of the mining and construction industries (the supra-system) shape the goals and envisioned desired state of systems such as organisations that function within these industries as well as their subsystems, for example safety and production. In lieu of this, organisations set stricter safety goals for employees to follow due to their interdependence on the mining and construction industries and its parameters with regard to the control that is exercised by the governing body, as displayed by their output feedback, for example the organisational safety records.

3.3.1.6 Adaptability and equilibrium

In the discussion directly above, the adaptability of systems is also seen. It is because of the adaptive nature of systems that organisations in the mining and construction industries change in terms of the parameters set by their governing bodies, which in turn influences their internal safety communication. This ‘change’ that the organisation and communication make therein is consequently due to its adaptive and dynamic nature (Burns & Deek 2010:4; Samoilenko 2008:282; Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43). This preposition of the systems theory classifies all systems as emerging structures in process, rather than static structures. As all systems are interrelated, interaction between these systems is inevitable – the systems around a system (alongside which they have to function) can also be identified as their environment and this environment changes constantly. In order for a system to stay or form part of its environment, it will have to adapt just as continually to the changes brought on therein. If a system does not respond to or change in terms of its environment, a state of entropy could be entered (Burns & Deek 2010:4; Samoilenko 2008:282;

Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43).

Entropy is defined as “the amount of disorder or randomness present in any system” (Skyttner 2001:49) and a system can only function in it for a finite time before it will eventually degenerate. In order not to do this, a system will rather want to adapt to its environment and when it does, a state of equilibrium or negative entropy (also referred to as negentropy) can be reached. Equilibrium is the state of a system where all subsystems, structures and entities that exist therein do so in terms of interrelated and mutual stableness. If change is brought on in this system and it is able to adapt, the flexible nature thereof will allow it to return to the previously experienced equilibrium (Burns & Deek 2010:4; Samoilenko 2008:282; Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43).

In terms of internal safety communication in the mining and construction industries as a system, this preposition predicts that change will drive this system towards adapting more often than not. If internal safety communication desires a sustainable existence, it will not resist adaptability (which would lead to entropy), but will rather embrace it in order to return to a state of equilibrium.

Still, new advancements in the systems theory challenge the notion that this state of equilibrium is a norm that a system *returns* to once change is adapted to. It is rather argued by authors such as Walby (2007:450), Wadsworth (2007:155), Angelopulo (2002:40) and Skyttner (2001:49) that change and the subsequent adaptation could drive a system forward *beyond* the previously experienced equilibrium, to a state of dynamic equilibrium. This aspect is seen in the assertions of the excellence theory as well (which is discussed in detail in the following literature review chapters). For example, this theory states that changes such as activism by unions in an organisation create turbulent environments that excel the internal organisational communication towards greater excellence (Grunig & Grunig 2008:290, Downs et al 2004:57). It is therefore seen here that in terms of internal safety communication as a system, change in a system can excel it beyond the previously experienced

equilibrium and in the lexis of the excellence theory towards excellence or greater excellence.

Whether from the view that a system returns to equilibrium or is pushed to dynamic equilibrium, the literature is united in the view that any system must adapt, and in order to do so it needs to be able to classify itself as an open system (Burns & Deek 2010:4; Samoilenko 2008:282; Walby 2007:449; Wadsworth 2007:154; Angelopulo 2002:42; Skyttner 2001:45; Bausch 2001:43). This, as the last proposition of the systems theory, is discussed next.

3.3.1.7 Openness

As is alluded to in many of the prepositions above, a distinction between open systems and closed systems is necessary in the systems theory. The open or closed nature of a system depends on the separation or contact that a system maintains with its environment. If a system separates itself from its environment, that is to say that it is not in feeling with alterations in the systems that surround it, it is considered a closed system and one that is heading towards entropy (as explained above) (Burns & Deek 2010:4; Walby 2007:449; Angelopulo 2002:42). In contrast, if a system is in constant contact with its environment for the exchange of information, it will be classified as an open system. Under this general classification of open systems many subcategorisations have also been identified. For example, Alderson (1957) categorises open systems as atomistic, ecological or organismic, while Jantsch (1973) posits that systems can be classified as mechanistic, adaptive and/or inventive. Layton (2007), in line with Jantsch (1973), identifies purposeful, structured, emergent and/or random systems. Each of these categorisations refers to and is used to describe a different phenomenon within organisations or organisational settings. Because this research is aimed at looking at internal safety communication as the specific phenomenon under inspection, the categorisation of Angelopulo (2002) is rather elaborated on, as it holds as focus organisational communication (in a South African context) and from this formulates three categorisations of open systems. These three categorisations, which centre on the behaviour of an open system after it has responded to change, alterations or developments in its environment, are physical systems, organismic systems and phylogenetic systems

(also referred to as psychological or socio-cultural systems in some literature) (Angelopulo 2002:44).

Physical systems are systems that, after adapting or altering to changes in their environment, return to the equilibrium experienced prior to the change in the environment. *Organismic systems* are not defined in terms of equilibrium, but rather in terms of homeostasis, where homeostasis is the state where the system does not return to a previous state, but rather evolves further within the parameters of the system, still maintaining the structure of that system. Lastly, a *phylogenetic system* is defined by morphogenesis, where the system yet again does not return to a previously experienced state, but changes to such a degree that even the structure of the system might change due to changes in its environment (Angelopulo 2002:44).

Any open system has the potential to enter into any one of these categorisations, depending on the nature of the change experienced. If the change in the environment is substantial enough, any open system has the potential to become phylogenetic and through morphogenesis change its entire structure, and in so doing has to redefine itself in terms of its greater systems, their hierarchies and the like. Correspondingly, if a change in the environment of a system is reticent enough, the system might react to maintain equilibrium and in so doing be categorised as a physical system. Most changes in the environment, however, are in terms of homeostasis, where changes further equilibrium in the system while still maintaining the structure of that system. Most changes in internal safety communication will thus fall within this categorisation, where the structure of internal safety communication will not necessarily change, although (if managed correctly) the change could lead to an improved or enhanced state, further than the equilibrium previously experienced.

Having said that, the *sine qua non* of open systems is that they will always be dynamic in nature. The predictability of their behaviour during and after change depends on whether they change in a linear or non-linear fashion (with linear being associated with physical systems and non-linear changes with organismic and phylogenetic systems). Over and above this, the change in the system also allows for a deterministic (predictable) or probabilistic (unforeseen) effect (Angelopulo 2002:42; Bausch 2001:43). As is the case with the categorisations of open systems

above, more simplistic changes will tend more towards deterministic and linear effects, while more complex changes will more often result in non-linear or probabilistic effects.

However, the change affects a system and however that system is defined as a result of the change, certain variables exist in an open system that define it, along with its dynamic nature. These variables are evident in the work of Katz and Kahn (1996; 1978), who delineated the open systems theory specifically in terms of organisations. These variables are the importation of energy (also referred to as the input), the throughput, the output, systematic cycles of events, negentropy, equilibrium and homeostasis, differentiation, integration and equifinality. As the aspects of the systematic cycles of events, namely entropy (and negentropy), equilibrium and homeostasis and integration as interrelatedness and interdependence have already been discussed previously, the next section of this chapter focuses on the remaining variables of open systems.

- **Variables of open systems**

The remaining variables of open systems as defined by Katz and Kahn (1966; 1978) – input, throughput, output, differentiation, integration, feedback and equifinality – are discussed below, based on Schneider and Bowen (2009), Pavlovich and Corner (2009), Wooliscroft (2008), Glisson, Schoenwald, Kelleher, Landsverk, Hoagwood, Mayberg and Green (2008), Skyttner (2001) and Katz and Kahn (1966; 1978), with the viewpoint of internal safety communication as the system under discussion.

Input, *throughput* and *output* are seen as the three stages of an open system. Input (or the importation of energy, as it is labelled in some literature – cf. Skyttner (2001) Katz and Kahn (1966; 1978)) is originally defined as “the energy the organization imports from other institutions, people, and the environment” (Katz & Kahn 1966:23). Pavlovich and Corner (2009:221) put this practically within the sphere of organisational communication and state that “this stage considers the supplies the organization takes in to make its products and how and from whom it chooses to source these”, defining the employees tasked with communication in the organisation as an example of such a source. In the consideration of internal safety

communication as a system and employees such as safety personnel as elements in the input stage, Schneider and Bowen (2009:157) state that this input should be considered in terms of *input via selection of employees*, *input via the socialisation of employees* and *input via customers*. Under the *input via selection of employees*, Schneider and Bowen (2009:158) explain that it is "difficult to overestimate the importance of the attributes people bring to their work organizations as an influence on what that" organisation achieves. In this, ability can be seen to be the single best predictor of performance and the achievement of objectives when employees are considered in the input stage of systems. As discussed in Chapter 2, the task of communicating safety information within organisations (internal safety communication) is very often entrusted to persons competent in terms of safety practice and legislation, but not necessarily in terms of communication and its accompanying aspects. This further underlines the necessity and contribution of this study, where the output and overall success of internal safety communication as a system is dependent on the input of employees – specifically their ability in the conveyance of this task. A theoretically grounded yet practical and comprehensive model for internal safety communication as well as a measuring instrument in the form of a quantitative questionnaire for its researching is therefore important if the output of this system is to be successful.

Apart from the abilities of employees, in the input stage specifically, differentiation and integration are also aspects that impact on a system. In any system differentiation exists, as different parts of the system are tasked with areas of specialisation for which they are responsible. The same applies to an organisational setting where different specialisations exist in each organisation. In organisations within the mining and construction industries of South Africa (as was explained above and in the previous chapter), two main specialisations are seen: safety and production. In the input stage of open systems, the differentiation or specialisation of subsystems within a system is noted and understood, and the importance of integration alongside it is also emphasised. If the input stage of systems is to be successful, integration across specialisations is necessary. Within a system, integration of input efforts needs to exist where the input from one subsystem should not be contradictory to the input of another subsystem, especially not when the output is aimed at the same entity. In terms of the two specialisations highlighted

above, this means that the input from employees in terms of safety should not wield a contradictory message to that of production, as these two subsystems are aimed at the same entity, the same employee body. Basically, the input from safety communication should not contradict that of production communication, as employees will then be confronted with conflicting messages that might hamper successful output in terms of their own tasks, which is detrimental to the organisation in a whole.

This ties in with the input generated by means of the *socialisation of employees* where, as in the focus of this study, employees are socialised in terms of the safety ethos of the organisation, both formally and informally (Pavlovich & Corner 2009:221; Schneider & Bowen 2009:158; Katz & Kahn 1966:23). Formal socialisation takes place in an organisation regarding the training that employees receive – for example, in terms of safety in the mining and construction industries, induction programmes where employees are trained with regard to the workings of the organisation, including the safety and production activities (and their importance). Informal socialisation, on the other hand, happens as employees are influenced by their interactions with their peers and supervisors as well as their observations with regard to what happens around them (Pavlovich & Corner 2009:221; Schneider & Bowen 2009:158; Katz & Kahn 1966:23). Again, conflicting socialisation messages are possible where an employee might be made aware that 'safety comes before production' in the formal training he/she receives, but might be socialised differently in the informal observations of the functioning of the organisation. This aspect influences the input that this employee will make concerning safety in the organisation (and then internal safety communication specifically), as the general ethos of the organisation will guide the value of the contribution. In a practical example, if a safety officer observes that safety is not regarded as highly as production in an organisation, he/she will not necessarily feel empowered to excel safety and internal safety communication as much as if this was not the case. In organisations within the mining and construction industries, where production is valued more than safety, input from safety staff is often disregarded or even stilted if it conflicts with the production outputs. One example that features many times in the narratives of safety personnel of these industries is that they (competent safety staff) are by law entitled to stop all production if the site or activities in or of an organisation

are found to be unsafe (South Africa 1996:sec 23; South Africa 1993:sec 34). Still, when this right is exercised, more often than not production staff or management overrules this input and it is subsequently disregarded. If this is the case, employees will be socialised by the input they are allowed, or accepted to make, which might be (certainly as in the example above) much less than ideal.

In the third and last instance, *input via customers* is also an important aspect with regard to the focus of this study (Pavlovich & Corner 2009:221; Schneider & Bowen 2009:158; Katz & Kahn 1966:23). Customers, in this sense, refer to the end users of the service or product of the system. In the case of internal safety communication as a system, the general employees to whom the internal safety communication are directed are seen as the customers. Schneider and Bowen (2009:158) are of the opinion that the customers become co-producers of the input made in the system, as their needs, expectations and general participation influence the input made. It is for this reason that employees in organisations within the mining and construction industries should fulfil their role in the system of internal safety communication by voicing and communicating their needs and expectations in order to see them regarded in terms of the safety process in the organisation. The onus does not only fall on general employees in this instance, as safety staff and management need to implement the necessary channels for feedback that will allow these employees to become co-producers of the input of internal safety communication in their organisations.

The needs of employees are just as important in the throughput stage of open systems, where the input is transformed in terms of internal processes and various conversion activities in the organisation into the outputs of the system (Pavlovich & Corner 2009:221; Schneider & Bowen 2009:158; Katz & Kahn 1966:23). In terms of internal safety communication in organisations within the mining and construction industries as a system, the throughput stage would entail the safety staff (in most cases safety officers) transforming the input into safety processes and procedures to be used in internal safety communication – therefore to be used to generate the communication that is to be the system's output. Systems will be generated that will allow for the transmission of safety messages throughout the organisation, as well as systems for feedback. These systems differ as greatly as the number of

organisations within the mining and construction industries, although some aspects are governed by law. One example of such an aspect (governed by law) that is altered by the inputs of the system and thus has to go through the throughput stage before it is to be an output of the system is safety meetings (in industry and practice often referred to as *toolbox talks*). These meetings are designed to be held every working day – preferably before the production shift for the day is to start – and have a specific and different topic each day, depending on the input (including the requirements) of the system (in terms of the Mine Health and Safety Act No. 29 of 1996) and the Occupational Health and Safety Act No. 85 of 1993)). Safety staff is to convert this legal requirement into a format and arrangement fitting for their specific organisation and system (mindful of the inputs), still in terms of the parameters set by law.

Once the transformation in terms of the internal safety communication systems is made in the throughput stage, the output of the system has to be generated – in this study, the internal safety communication product – as the output stage is defined as the "outcome yielded by the throughput process" (Schneider & Bowen 2009:163). Schneider and Bowen (2009:136) and Pavlovich and Corner (2009:121) are of the opinion that when communication in an organisation is the output of the system, this output is measured in terms of the communication satisfaction of those that the communication is aimed at – in this case the employees of the organisation. The in-depth investigation of the concept of communication satisfaction, however, progressed later in organisational communication literature (as it was not part of the original classification of the variables of the systems theory). It is therefore discussed in depth in Chapter 5 specifically, as it formed a considerable part of the contribution of this study as the measuring instrument and theoretical framework that will be developed to include aspects of communication satisfaction. Whatever the exact focus of the evaluation may be, the variables of the systems theory emphasise the need for feedback as a major part of all three stages of open systems. If the feedback takes place after the output has been generated and distributed, the entire process doubles over on itself and starts again (with the input generated from the feedback being implemented in the throughput and the output subsequently changing as an effect thereof).

According to Cozier (2010:509), Berryman and Kindlmann (2008:47), Toth (2007:75) and specifically (referring to its initial classification) Monge (1982:250), Farace, Monge and Russel (1977) as well as Monge (1977:24), when communication is the result of the output of a system, its feedback can be described in terms of simple communication networks. Herein, three forms of *feedback loops* (as they are described in these sources) can be identified: the first *self-loops*, the second *mutually casual loops* and the third *indirect loops*. In figures 3.4, 3.5 and 3.6 below (adopted from Monge (1982:250), Farace et al (1977) and Monge (1977:24)), these three loops are graphically represented.

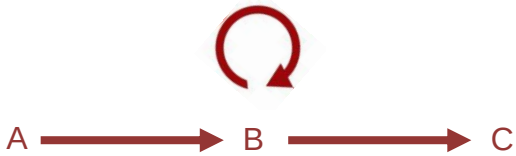


Figure 3.4: Feedback loops: Self-loops

Figure 3.5: Feedback loops: Mutually casual loops

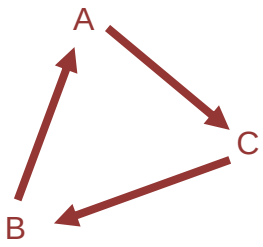


Figure 3.6: Feedback loops: Indirect loops

These feedback loops from the open systems theory take the form of simple sociograms that, in a basic and simplistic manner, can be described as reflective linkages that indicate who is speaking to whom, or who is speaking about what to whom (Cozier 2010:509; Monge 1982:250; Farace et al 1977; Monge 1977:24).

The first feedback loop above, the *self-loop,* depicts a variable influencing itself at a later point in time (from the initial input); generating the feedback accordingly and resultantly is classified, in terms of organisational communication, as emitting asymmetrical communication (see Section 1.2.6 for a definition). Internal to an

organisation, this kind of feedback loop in most cases (Ströh 2007:75) represents some form of internal dissent in the organisation and could, for example, signify an influential clique or group in the organisation or even a rumour in one of the internal stakeholder groups of the organisation.

The second feedback loop depicted above is the *mutually casual loop*. This loop might be the most basic of all feedback loops (in terms of the open systems theory or otherwise), as it depicts two variables influencing each other, either simultaneously or with some relatively small time lapse. A mutually casual loop is classified as the only one of the three loops that will mostly wield symmetrical communication and it basically depicts one entity within an open system giving feedback to another in almost any context.

The third and last feedback loop is the *indirect loop*. This loop also veers more towards asymmetrical communication and basically depicts "three or more variables [that] are sequentially arranged so that each is affected by its predecessor and in turn affects its successor, with the last variable in the loop affecting the first variable in the loop" (Monge 1982:250). Specifically in terms of internal organisational communication, this feedback loop represents an entity within this system that holds more information than the other two depicted, but which requests information from one of the two entities. This entity has to gather, in its turn, information from the last entity before giving its feedback to the entity with the most information. This last entity does not have the opportunity to give direct feedback to the entity with the most information and it is in this instance that the information becomes asymmetrical.

Internal safety communication within organisations in the mining and construction industries can be represented (in different instances, situationally) in terms of all three feedback loops. As indicated in the previous chapter, internal organisational communication in the mining and construction industries of South Africa is hierarchical in nature. In this situation, communication flows in line with the hierarchical ordering of the organisation and very few opportunities are created for free-flowing communication where the strict hierarchy (mostly in terms of the post gradings in the organisation) needs not be followed. In the first and third feedback

loops (the asymmetrical ones), this is predicted. If an employee, for example, wants to offer input concerning safety in the organisation to the safety officer, this employee will have to do so by way of his/her supervisor. In the case of self-loops, the flow can be presented as indicated in Figure 3.7 below.

Figure 3.7: Self-loops (example 1)

More often than not, taking the self-loop (in the middle) into consideration, in terms of internal safety communication, the self-loops in the open system will be represented as in Figure 3.8.

Figure 3.8: Self-loops (example 2)

Herein, the dissent is reformulated into the system by the safety officer, which then represents a form of input moulded into output (still in the form of feedback to the system) into the management (in this case internal safety communication management) of its system.

The second asymmetrical loop and the third feedback loop, classified as indirect loops, make provision for both the contingencies depicted above, where dissent is not present. As an example, the feedback loop could be presented as in Figure 3.9.

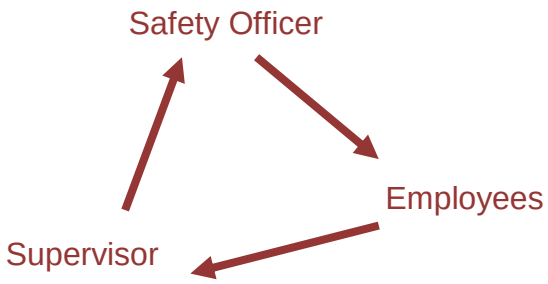


Figure 3.9: Example of indirect loops

In this instance, the safety officers are naturally the entities with the most information and they find feedback from supervisors who generate this feedback based on that of employees. Still keeping to the hierarchical nature of communication within these industries, the employees do not offer direct feedback to the safety officers (although information is received from them) – the feedback is rather offered to their supervisors, who relay the message.

Some instances are created where the employees are offered the opportunity to communicate directly to safety officers or even management without the communication having to move through the hierarchical processes (for example at a *toolbox talks* meeting). It is in this instance that the last feedback loop takes shape and the communication is seen to be symmetrical, as depicted in Figure 3.10.

Figure 3.10: Example of mutually casual loop

All three feedback loops work towards the same end or objective, specifically feedback from the system to be used as input to improve or excel the output of the system. Herein the variable of equifinality is seen. Equifinality, which stands at the opposite end of multifinality, is the variable of open systems that allows for alternative ways for attaining the same objectives from differing initial conditions (Cozier 2010:509; Monge 1982:250; Farace et al 1977; Monge 1977:24). The examples of the three feedback loops above are understood and discussed here with regard to internal safety communication (as it is the primary system phenomenon under investigation), but the feedback does not necessarily have to be in terms of 'human' communication, also in line with the variable of equifinality. Many system entities have the power to offer feedback that is not in a human or verbal form. For example, within a system of internal safety communication in an organisation in the mining and construction industries, an accident or incident offers feedback about the system of safety communication. If a preventable incident or accident takes place, the possible feedback from this could be that the internal safety communication regarding the aspect that the accident or incident was about might

not be sufficient. To take a practical example: If there is an accident where an employee hurts him-/herself due to faulty tool use, the safety officer will have to look into the feedback from this accident and decide whether this was due to insufficient communication regarding proper tool usage (in this case the self-loop will be employed). This aspect shows the distinction between the technical and substantive purposes of these feedback loops. In its *substantive purpose*, these loops can be used to describe the communication exchanges between people in the system (such as most of the examples used above) (Cozier 2010:509; Monge 1982:250; Farace et al 1977; Monge 1977:24). In its *technical purpose* it can be used to describe influences exerted by consequent variables (as in the example above about the accident) on antecedent variables (such as the existing communication on tool usage in the example used above) (Cozier 2010:509; Monge 1982:250; Farace et al 1977; Monge 1977:24).

Although these three feedback loops can be used to describe and explain many of the feedback contingencies in the internal safety communication systems, it is argued that they are limiting, mostly due to the number of loops and their descriptive nature. Firstly, the limiting number of feedback loops does not sufficiently explain the vast number of contingent possibilities of feedback within an open system. These loops also do not offer space for resultant or ensuing and consequential feedback, and furthermore, do not offer any distinction between the different origins (in terms of entities of systems, subsystems or supra-systems) and how these feedback loops should be classified as a result of its origin (Is some feedback more important than others? Are some to be heeded and others not?). Secondly, these feedback loops are merely descriptive in nature and as such can only be used to ‘map out’ the flow of feedback within open systems, and do not, in a prescriptive manner, offer knowledge about the different handlings of the feedback generated as a result thereof. It is for this reason that further evolution of the principles of the systems theory was needed, before these could be seen to explain the phenomenon of communication between systems and entities within systems completely. Consequently, many theories ensued based on the principles of the systems theory.

3.4 CONCLUSION

This chapter was the first of the literature review chapters and focuses on the theories, assumptions and suppositions that exist in the literature on concerning internal organisational communication. It centred on discussing the systems theory as meta-theory and in so doing orientated the study in terms of its theoretical base.

The chapter commenced by motivating the choice and discussion of all theories used in this study to explain and describe or inform the phenomenon of internal safety communication as a form of internal organisational communication specifically by, in an introductory manner, noting the progression of the line of thinking that established the understanding of internal organisational communication as it is today. Herein, the progression from the systems theory to the stakeholder theory through to the relationship management and excellence theories and lastly communication satisfaction was indicated.

It was argued that the systems theory is the meta-theory for this study, as it frames and informs the usage of all other theories and is the inaugurate of the literature review chapters and the entire focus of the first chapter. The discussion of the systems theory revolved around three aspects. Firstly, the discussion of the three basic characterisations and designations of the systems theory, which outlined the core assumptions of the theory, and without which the systems theory could not be called into being. Secondly, the main focus of this chapter was on discussing the prepositions of the systems theory, which gives insight into and understanding of the theory as a whole. Thirdly, as a subset of the last preposition of the systems theory, the openness of systems within organisational communication settings was discussed.

These aspects discussed under the systems theory was done within the viewpoint of internal safety communication as a system. From this it was argued that internal safety communication in the mining and construction industries of South Africa hold a place within a greater (and lower) hierarchical system, with which it is interrelated and thus interdependent. Hence, internal safety communication should strive to the facilitation of holism within its greater connected system, as this is how stability

within systems is created. This should be done by means of self-regulation and adaptability with the view of equilibrium – and in terms of the purposes of this study, more often than not, dynamic equilibrium. This, however, can only be done if internal safety communication as a system maintains permeable boundaries in light of being an open system and facilitating the inputs, throughputs and outputs of the organisation.

It was then argued that internal safety communication should not only be concerned with itself as a system, as all communication within organisations has the opportunity and even the responsibility to act as maintenance and adaptive mechanisms, as it acts to govern in its system, yet again in line with its function in the openness of the system.

This gave the basis of the literature discussion and orientated the nature of internal safety communication and its interactions with various variables. This discussion is expanded on in the next chapter, which deals with the progression of the notions of the systems theory into the stakeholder concept and theory, resulting in the stakeholder theory and then, as a development from it, the relationship management theory.

CHAPTER 4
INTERNAL COMMUNICATION THEORY DEVELOPMENT: THE STAKEHOLDER AND RELATIONSHIP THEORIES

4.1 INTRODUCTION

As discussed in the previous chapter, the literature review for this thesis was directed in terms of the chronological development of the relevant theories from the systems theory, which is the meta-theory for this research. The previous chapter was dedicated to understanding this theory which, as meta-theory, supplements the understanding of all other theories and their usage in this research.

Chronologically and for the purposes of this research, it was argued that the subsequent development from the systems theory was the stakeholder theory, which connects to the interrelated nature of systems to forward the understanding of organisations and their contact with constituency groups. As the current research is mainly aimed at understanding employees as constituency group, this theory proves to be vital to investigate. Although the stakeholder theory has its origins outside the field of organisational communication as specific field, the revelations thereof is arguably more important to this field than most others – the reason for this being that the stakeholder theory, for the first time, identifies more groups than just shareholders who are worthy of organisational management's attention and as such identify more groups that the organisation needs to contract with (Freeman 2000:171). If it was not for this insight, the process of organisational communication would merely have been the relaying of profit shares to shareholders. However, the field of organisational communication is as specialised as it is due directly to the understanding that organisations need to link and thus communicate to various groups who make up constituencies of the organisation. It is due to this importance of the stakeholder theory that notable scholars in the field of organisational communication (such as Grunig and Huang (2000); Broom, Casey and Ritchey (2000) as well as Ledingham and Bruning (2000b)) advance the understanding of the stakeholder theory by investigating the relationship between an organisation and

its stakeholders, as facilitated through communication, which the stakeholder theory alludes to but does not truly unpack. From this, the relationship management theory is conceptualised.

The relationship management theory, born within the field of organisational communication, therefore, justly focuses on the relationship between the organisation and its constituencies, as well as the communication that enables it. These two theories are the focus of this chapter, starting with the stakeholder theory, which is discussed directly below in terms of its origin, its bare essentials, the basic problems it aims to reconceptualise as well as its classifications. Following this, the last part of the chapter focuses on the relationship management theory by discussing its origin and elements.

4.2 THE STAKEHOLDER THEORY

Opinions on the origin of the word 'stakeholder' are as diverse and numerous as the abundance of literature that surrounds it. The earliest reference to it (or at least the underlying idea thereof) seems to date back to 1932 with the author Dodd (1932) reflecting on a case study of the organisation *General Electric* (Freeman et al 2010:50; Preston & Sapienza 1990; Dodd 1932:1146). The actual word, according to Freeman et al (2010:30), first featured in an internal memorandum of the then Stanford Research Institute in 1963, in the context of generalising (and to some extent countering) the idea of the stockholder or shareholder being the only interest group that an organisation should be accountable and responsive to. In terms of this generalisation, another term was found to be needed to describe those groups without whom the organisation could not operate, yet who do not have shares or stock in the organisation. The term *stakeholder* was therefore identified and then defined as "those groups without whose support the organization would cease to exist" (Freeman et al 2010:50). Per this definition, all constituencies who have a stake – not necessarily only a share – in the organisation were for the first time identified and named. Furthermore, a shareholder or stockholder is seen as one kind of stakeholder group, although many more exist.

Since the defining of this term, many extensions and configurations surrounding it and its approaches in business have been conceptualised and published. For the purposes of this research, however, the seminal works surrounding the development of Freeman's (1984) stakeholder theory will be followed, as it is these works that, in its purest form portray and illustrate the theory and its meanings in business as it grows from the systems theory and aids in the understanding of internal organisational communication. This is especially necessary in terms of the discussion of this theory, as Agle, Donaldson, Freeman, Jensen, Mitchell and Wood (2008:159), Freeman et al (2004:365) and Freeman (2000:171) point to the fact that this theory has been misinterpreted many times and, therefore, misconstrued. It is, therefore, necessary to be selective in terms of the sources consulted in a discussion of the stakeholder theory; a task that is somewhat simplified in terms of the involvement of Freeman. Freeman is not only deemed the 'father' of the stakeholder theory, but also its "senior trustee" (Laplume et al 2008:1158) and publishes copiously on the topic in this role, including commentaries on other stakeholder theory publications. Basically, therefore, the discussion of the stakeholder theory will be sourced from seminal and additional works (mainly by Freeman as author), supplemented by those works that closely and directly reflect the assumptions and statements of that theory. The discussion focuses on introducing the stakeholder theory, as it developed in terms of Freeman's conceptualisation; the notion of value contribution; the bare essentials of the stakeholder theory; the basic problems that the stakeholder theory tries to solve or reconceptualise; the classification of the theory itself; and the systems perspective of the theory.

4.2.1 Freeman's stakeholder theory and the notion of value contribution

The beginnings and eventual conceptualisation of Freeman's stakeholder theory are largely attributed to the author's early career at the Busch Centre at the University of Pennsylvania under the noted systems theory scholar, Russell Ackoff, where the "stakeholder concept was very much in the air" (Freeman et al 2010:52). After many developments and progression in the author's career, Freeman (after one aborted attempt at a book and many published essays) wrote his now noted and renowned book *Strategic management: A stakeholder approach* in 1984 (Freeman et al 2010:52; Laplume et al 2008:1153; Freeman 1984). This seminal work for the first

time described and discussed the stakeholder theory in terms of a business and business ethics paradigm. From Freeman et al (2010), Laplume et al (2008), Jones et al (2006), Freeman et al (2004) and Freeman (1984) the basic aspects of this theory (as outlined and in some instances coined in this book) are discussed in this section.

At the most basic and simplest level, the stakeholder theory was proposed as an alternative to the dominating stockholder-based theories of the time, and saw organisations manage their business in such a way as to take into consideration the interests of all their constituencies, not only their shareholders or stockholders. It is from this view that Freeman (1984) classified the radical notion (which is now almost seen as common sense) that any organisation needs to be heedful of more groups than just those who offer the organisation compensation in monetary terms. From this, the conception has emerged that different groups exist in organisations, groups that add value and contribute to the workings of an organisation and in such a way have some kind of a stake in the organisation although they may not have any stock therein. Freeman resultantly offered “a pragmatic approach to strategy that [urged] organizations to be cognizant of stakeholders to achieve superior performance” (Lamplume et al 2008:1153). This implies that the interests of stakeholder groups are joint to that of the organisation because these groups jointly create value in the organisation and the organisation in turn therefore must focus on how “value gets created for” every stakeholder group (Freeman et al 2010:9).

The stakeholder theory is fundamentally a theory that concerns itself with the potential optimal functioning of an organisation in a descriptive, prescriptive, instrumental and managerial way (Freeman et al 2010:54; Freeman et al 2004:76). This optimal functioning can only be reached once the organisation is described in terms of its stakeholder relationships, because it is realised that stakeholders do not merely contribute in monetary terms as do shareholders, but contribute in terms of value to the organisation, which makes the management thereof even more complex. The first definition of a stakeholder is derived from this view where, in a general strategic sense, it is defined as “any group or individual that can affect or is affected by the achievement of a corporation’s purpose” (as Freeman et al (2010:54) retrospectively remark).

It is realised that supporting stakeholder interests is in the best interest of an organisation, as the value that the organisation receives from these constituencies hangs in the balance. Supporting stakeholder interests is thus not a matter of social responsibility – it is a matter of capitalism, as it is in the hands of these stakeholders that an organisation's corporate objectives are achieved (Freeman et al 2010:54; Jensen 2010:32; Freeman et al 2004:76). In order for an organisation to create value for its stakeholders, "executives must understand that business is fully situated in the realm of humanity ... [and that] stakeholders have names and faces and children" (Freeman et al 2010:29) and unless the needs of these stakeholders are understood, an organisation is not in a position to formulate corporate objectives "which would receive the necessary support for the continued survival of the organisation" (Jensen 2010:32). If stakeholder groups have an effect on the survival of the organisation, it is furthermore realised that some groups have more of an effect than others. The stakeholder theory therefore makes an advanced distinction between primary and secondary stakeholders (Freeman et al 2010: 52; Laplume et al 2008:1153). Primary stakeholders are identified as those individuals without whom the organisation will cease to exist, and without whose contribution the organisation cannot possibly be successful. Secondary stakeholder groups, on the other hand, denote those groups on whom the organisation has an impact, but whose impact on the organisation is limited or relatively small (Freeman et al 2010:54; Jensen 2010:32; Laplume et al 2008:1153; Freeman et al 2004:76). It is realised that an organisation needs to, on a close and continued basis, interact with especially primary stakeholder groups, as it is these groups that allow the organisation to make a value contribution to be productive, successful and competitive in the marketplace. Important to note in terms of the purposes of this study is that employees are regarded as one of the most prominent primary stakeholders within any organisation.

Notwithstanding the realised importance of stakeholder analysis and management, many organisations in the past paid, and presently still only pay 'lip service' to the idea and concept of stakeholder management and analysis, largely due to the fact that it is difficult to identify tangible, direct and practical pay-offs from this. The stakeholder theory frames the alternative of not managing stakeholders as low-value contribution, resulting in poor or failed goal attainment, as well as the emergence of issues within the organisation – something that any organisation can scarcely afford

(Freeman et al 2010:54; Jensen 2010:32; Freeman et al 2004:76). It should also be realised that these issues arise and emerge from and through the behaviour and interactions of stakeholders. The polar truth is thus that if the organisation does not manage and analyse stakeholders on its own accord, the behaviour of the stakeholders will often compel the organisation to do so, after some form of negative activity.

Based on this, Freeman et al (2010:60) summarise basic points that précis the general aspects of the stakeholder theory as described and discussed in the 1984 seminal work *Strategic management: A stakeholder approach*:

- No matter what an organisation stands for or what its eventual purpose is, it must take into account the effects of its actions on others and their effect on the organisation.
- Doing the above inherently implies that the organisation should have an understanding of stakeholder behaviours, values and background or contexts.
- New structures, processes and business functions need to be applied and, very importantly, new strategic planning processes need to be put in place in light of the stakeholder analysis, as described in the two points above.
- The interests of these stakeholders need to be balanced over time.
- There needs to be an understanding that stakeholder relationships exist and function on a rational process and day-to-day level of analysis. It is for this reason that it needs to be taken into account as described above.
- There are a few “well-defined ways to think about stakeholder management or focal points that can serve as answers to the questions” of the stakeholder management analysis.

These answers, kin to the bare essentials of the stakeholder theory, as phrased by Freeman et al (2010), are discussed next.

4.2.2 The bare essentials of the stakeholder theory

The bare essentials of the stakeholder theory, as classified by Freeman et al (2010:6), revolves around four aspects: the separation fallacy, the integration thesis,

the responsibility principle and the open question argument. Starting with the former two, these four are discussed in related pairs, as based on Freeman et al (2010:6), Angle et al (2008:163); Jones et al (2006:33) as well as Freeman (2000:172).

4.2.2.1 The separation fallacy and the integration thesis

The separation fallacy (or separation thesis, as it is referred to in some, especially earlier, literature) is a fallacy that the stakeholder theory claims originates from within our erroneous understanding of business and some spheres of society. This fallacy basically states, as in the words of Freeman (2000:172), that "the discourse of business and the discourse of ethics can be separated so that sentences like 'x is a business decision' have no moral content and 'x is a moral decision' have no business content". The fallacy is thus created that there is an inherent separation between business actions or decisions and moral actions or decisions.[**] This fallacy therefore constitutes that the term *business morality* or *business ethics* is, by nature, an oxymoron.

The stakeholder theory contests this statement as a fallacy with the integration thesis when it states that "it doesn't make any sense to talk about business without talking about ethics and […] it doesn't make much sense to talk about ethics without talking about business" (Angle et al 2008:163). In its simplest form, the integration thesis states that aspects of business and ethics need to be seen and practised in an integrative manner, as it makes business sense to act in an ethical manner due to one reason: Both business and ethics have at their core human beings who need to be considered in both instances.

In the mining and construction industries of South Africa, the separation fallacy is often witnessed, where organisations might view safe work procedures as an ethical action that hampers or impedes business outputs (mostly in terms of production – as mentioned many times in the preceding chapters). Therefore, a decision to work safely is often immediately seen as one that is at odds with production or business

[**] Moral actions, in this context, mainly refer to the management and consideration of stakeholder needs. In terms of the purposes of this study this, for example, includes considering employees' (as a stakeholder group) safety and internal safety communication needs.

outputs. According to the stakeholder theory, this is a fallacy in need of rejection, and one that needs to be substituted by an integrative thesis, where working safely (the ethical item) and being productive (the business item) should be seen in an assimilated manner as one and the same thing. In practice, the negative business consequences of not working safely have been seen in organisations having their right to operate revoked by the governing bodies of these industries (which is on the extreme end of the scale), in the weighty output loss when employees *down tools* due to unsafe conditions or in fines being levied against an organisation.

The reverse is also true, namely that practising production in a safe manner (that is safe production practice) is beneficial to the organisation – not only due to the fact that actions and consequences such as those mentioned above will be deterred, but also because the stakeholder group involved (the employees) will be motivated to greater value contribution to the organisation, as it is understood that their safety (their wellbeing) is something taken into consideration in the organisation.

4.2.2.2 The responsibility principle and the open question argument

The third and fourth bare essentials of the stakeholder theory are the responsibility principle and the open question argument. The responsibility principle is worded by Freeman (2000:172) as follows:

> The basis for ethics, or the moral point of view, is that most people, most of the time, take, or want to take, responsibility for the effects of their actions on others. And, if they did not, then what we call 'ethics' and 'morality' would be meaningless.

This principle holds forth that persons in organisations who make the decisions that govern and gauge the activities of those organisations generally want to take responsibility for those decisions. This principle then gives rise to the open question argument, which revolves around this responsibility.

The open question argument states that, in lieu of the responsibility principle, any strategic business decision that is made in an organisation needs to be pre-empted by three questions (even though they might lead to controversial answers): (1) *For whom is value created and value destroyed, or who is harmed or benefited by this decision?*; (2) *Whose rights are enabled by this decision, and whose are not?*; and

lastly (3) *What kind of person would I be if I make this decision in this way?* (Freeman et al 2010:6; Freeman 2000:172).

Although the last question is one of personal responsibility, the two preceding questions are valuable in terms of safety in the mining and construction industries of South Africa. If the answer to any one or both these two questions indicates that the safety of employees will be compromised in some way (even though it might add value in another sphere), this decision should be rejected as it goes against the morality of the organisation; as such, the value contribution that can be made, in terms of the integration thesis.

Having understood the bare essentials of the stakeholder theory, which lines the base of its contribution, the three basic problems that this theory tries to solve or at the least reconceptualise are now discussed.

4.2.3 Basic problems reconceptualised by the stakeholder theory

According to Freeman et al (2010:4) and Freeman et al (2004:364), the stakeholder theory was developed to solve or reconceptualise three problems in business and business thinking: firstly the problem of *value creation and trade*, secondly the problem of *ethics of capitalism* and thirdly the problem of *managerial mindset*.

The problem of *value creation and trade* originated from business theorists attempt at comprehending the vast and varied contexts in which businesses have to operate. The question was asked how value creation and trade are possible in a world where so many contexts (national, industry and societal) shift and alter the business relationships in organisations. Based on the bare essentials of the stakeholder theory, it was realised that the stakeholders of the organisation are responsible for the value creation of the organisation, and as such, that it is in the best interest of the organisation to regard the needs and requirements of these stakeholder groups. Solving the problem of value creation thus lies in the integration thesis, as organisations now realise that value is not created by making ‘business decisions’ void of moral or ethical implications, as this decision in itself is counterproductive in terms of the business objectives that this decision aims to serve.

Turning to the business objectives of organisations within the mining and construction industries of South Africa, this implies that 'business decisions' best serve the business objectives of the organisation once it is realised that those decisions that forward and include ethical and moral behaviour are in fact those that best serve and advance the corporate objectives of the organisation. Putting this to safety issues (which can be seen as moral and ethical issues in these industries), the stakeholder theory posits that it is those business decisions that advance safety and safety issues that add and create the most value for the organisation.

In line with this preposition, the second problem that the stakeholder theory addresses is the *ethics of capitalism*. In the conceptualisation of the stakeholder theory – a time when "capitalism became the dominant means of organizing value creation and trade" (Freeman et al 2010:4) – the effects and impacts of capitalism on other realms and spheres of society came into the forefront of investigation and exploration. Thinkers and theorists came to the realisation that offering only an economic understanding of capitalism presented a very narrow and partial view of it. It is within this void that the stakeholder theory permits that the view of capitalism (yet again in line with the integration thesis as well as the responsibility principle) needs to take aspects of morality and ethics into consideration. This should manifest in an integrative manner, as capitalism impacts on human beings that have "names and faces and children" (Freeman et al 2010:29). Again, the understanding of economics, business and the general impact of organisations can arguably only be complete once the stakeholder relationships of that organisation are understood.

The third and last problem of the stakeholder theory is the problem of the *managerial mindset*. The problem of the managerial mindset acts on how managers "should develop their people so that they can be successful in the twenty-first century" (Freeman et al 2010:29) business context. The answer is once again found in terms of the integration thesis of the stakeholder theory, where managers need to realise that business and ethics are closer to being synonyms than an oxymoron. The problem of the managerial mindset can therefore be solved by the responsibility principle and the open question argument, where the mindset of management should be led by the impact that this mindset and resultant decisions have on stakeholders, their interests and thus by proxy the value creation of the organisation.

In terms of the mining and construction industries of South Africa, the impacts that 'business decisions' have on the safety of stakeholders should thus lead the managerial mindset of the organisation and thus the decisions that are made. According to the stakeholder theory, this would then necessarily forward the value creation of the organisation and the reaching of business and corporate objectives.

4.2.4 The classifications of the stakeholder theory

Over a decade after the publishing of Freeman's (1984) seminal work on the stakeholder concept and theory, Donaldson and Preston (1995) offered classifications of the stakeholder theory in practice that aided in forming a concrete and comprehensive understanding of all the facets of this theory. In their work, the stakeholder theory is classified as simultaneously being descriptive, instrumental, normative and managerial. Based on the work of Freeman et al (2010:9), Laplume et al (2008:1159), Friedman and Miles (2002:17), Jawahar and McLaughlin (2001:399) and Donaldson and Preston (1995:66), these classifications are subsequently discussed.

4.2.4.1 The descriptive stakeholder theory

The stakeholder theory is regarded as a descriptive theory in that it describes what an organisation is, and also as a constellation of "cooperative and competitive interests possessing intrinsic value" (Friedman & Miles 2002:17). Although not many literature contributions have been made in terms of the descriptive side of the stakeholder theory, Brenner and Cochran (1991) are credited with being the first theorists to write on the descriptive nature of the stakeholder theory, as they stated that "the stakeholder theory of the firm posits that the nature of an organization's stakeholders, their values, their relative influence on decisions and the nature of the situation are all relevant information for predicting organizational behavior" (Brenner & Cochran 1991:462). The stakeholder theory is seen as descriptive, as it describes the importance of stakeholders in terms of the organisation and its value creation. If the organisation is heedful and mindful of its stakeholders and the stakeholder relationships that it harbours, then the value creation of the organisation will prosper, and vice versa.

In terms of the mining and construction industries of South Africa, the stakeholder theory states that organisations within these industries need to take their stakeholders and stakeholder relationships into consideration in terms of all business operations if these organisations are to create value. Furthermore, it is stated in this theory that "values which are highly weighted should be favored in actual choice situations" (Jawahar & McLaughlin 2001:399) and that this weighting is calculated by means of the justice of the stakeholders' claims. In these industries it can be argued that no more just claim, and thus no more weighted value, can exist than the safety of employees in industries that are notoriously dangerous and yield the worst mortality rate of employees than any other in this country (DoL 2011; DMR 2009). What this theory thus states is that safety aspects need to feature in all business decisions made in any organisation operating in these industries. By nature, these decisions and the resultant actions will necessarily need to be communicated, just as the safety aspects feature in the overall organisational communication decisions and actions taken.

4.2.4.2 The instrumental stakeholder theory

The instrumental stakeholder theory "establishes a framework for examining the connections, if any, between the practice of stakeholder management and the achievement of various corporate performance goals" (Donaldson & Preston 1995:67). Basically, as an instrumental theory, the stakeholder theory relates the means and the ends, the means is sustainable stakeholder relations and the end is marketplace success. Linking back to the integration thesis, the instrumental theory synthesises ethics and business by stating that organisations that contract with their stakeholders – by means of mutual trust and cooperation – will have a competitive advantage over organisations that do not. Donaldson and Preston (1995:67) concisely articulate this by stating that "corporations practising stakeholder management will, other things being equal, be relatively successful in conventional performance terms". It is in this articulation that the integration thesis is illustrated, as being ethical (being mindful of stakeholders and managing them in an ethical manner) makes good business sense, and the term *business ethics* can no longer be viewed as an oxymoron, but rather as tautology.

Organisations within the mining and construction industries of South Africa that manage stakeholders and their needs – safety and safety communication being at the height of these – will therefore, in terms of the instrumental nature of the stakeholder theory, be more successful than those who do not. Hence, internal safety communication management for stakeholders is seen as an aspect that aids the organisation in terms of its goal attainment and in so doing in its competitiveness in the marketplace.

4.2.4.3 The normative stakeholder theory

Arguably, most literature on the stakeholder theory is concerned with the normative classification thereof. The normative stakeholder theory describes how organisations *should* behave in terms of stakeholders and stakeholder management. In terms of its normative classification, the stakeholder theory holds the acceptance of three normative ideas (Freeman et al 2010:9; Laplume et al 2008:1159; Friedman & Miles 2002:17; Jawahar & McLaughlin 2001:399; Donaldson & Preston 1995:66). Firstly, stakeholders are defined as those constituencies or constituency groups that have a stake (not only shares) in the organisation and whose interests the organisation holds or should hold. Secondly, theorists prescribing to the normative nature of this theory accept that stakeholder groups should be treated and regarded with an inherent underlying moral or ethical substructure. Thirdly, the normative stakeholder theory holds forth that stakeholders are of intrinsic value to the organisation, and that they and their needs should be regarded for their own sake and not for the sake or interests of any other group (Freeman et al 2010:9; Laplume et al 2008:1159; Friedman & Miles 2002:17; Jawahar & McLaughlin 2001:399; Donaldson & Preston 1995:66).

With respect to the purposes of this study, these three normative ideas can be rephrased and amended to the following: Firstly, employees of an organisation (as a constituency group that has a stake – a very large one – in the operations of the organisation) should be regarded as a stakeholder group whose interests the organisation should consider. Secondly, these employees of organisations within the mining and construction industries of South Africa should be treated and regarded with an inherent and underlying moral or ethical structure, which unquestionably

includes the consideration of these employees' safety and internal safety communication needs. Thirdly, the consideration of these employees' safety needs should be done for its own sake, and not for that of any other stakeholder group, as these employees offer intrinsic value to the organisation and without their contribution, the organisation cannot add as much value as it should be able to.

4.2.4.4 The managerial stakeholder theory

Closely related to the normative attributes and ideas described above, the stakeholder theory "recommends attitudes, structures, and practices that, taken together, constitute stakeholder management" (Donaldson & Preston 1995:67). Freeman et al (2010:9) add to this by stating that the managerial stakeholder theory focuses on how to manage a business effectively and denote that 'effective' in this context refers to creating as much value for the organisation as possible, and this is done by means of stakeholder management. Furthermore, stakeholder management implies paying attention to the legitimate interests of all identified stakeholder groups in all strategic and business activities of an organisation. The managerial stakeholder theory hence states that all business activities should intrinsically hold the interest of all relevant stakeholder groups (Freeman et al 2010:9; Laplume et al 2008:1159; Friedman & Miles 2002:17; Jawahar & McLaughlin 2001:399; Donaldson & Preston 1995:66).

For the purposes of this study, this implies that all business decisions made and fulfilled in organisations within the mining and construction industries of South Africa should intrinsically hold, inter alia, the safety interests of employees. This means that even decisions on production activities need to be made with the safety interests of employees as stakeholder group in mind. Moreover, all organisational communication decisions, strategies and the like should be preceded by an investigation and consideration of the safety communication interests of the employees.

This adds to the value of this study and the foregoing classifications of the stakeholder theory: It is stated in every instance that the internal safety communication needs and interests of employees as stakeholder groups should be

included in all business operations of the organisation. This can, undoubtedly, only be done once there is a clear understanding of what constitutes effectual internal safety communication within these industries and this country – the very aspect that this study aims at describing and concretising for the first time in the literature.

4.3 THE RELATIONSHIP MANAGEMENT THEORY

The stakeholder theory works in on the systems element of interrelatedness to conceive the presupposition that an organisation needs to build and maintain relationships with all constituency groups, defined as stakeholders, if the organisation wants to survive competitively (Freeman et al 2010:6; Angle et al 2008:163; Jones et al 2006:33; Freeman 2000:172). The main criticism against this theory is that it does not expand on the relationship between the organisation and its stakeholders. It is within this void that the relationship management theory developed. This theory developed in the early and late 1990s and revolves around defining and concretising the organisation–stakeholder relationship (Ledingham 2003:183; Grunig & Hon 1999:11). In order to discuss this theory comprehensively, this section is structured to discuss the development and basic aspects of the relationship management theory, the elements of measurement for relationships and the stages and forms of relationships.

4.3.1 The development and basic aspects of the relationship management theory

According to Broom, Casey and Ritchey (2000:4), the literature is “replete with references to relationships that neither define the concept nor indicate how to measure them”. This is the problem that the relationship management theory tried to overcome in its conceptualisation, as many discussions and measurements existed for the measuring of short-term communication outputs, but not for the long-term organisation–stakeholder relationship (Grunig & Hon 1999:2). The formation of this theory (or the relational perspective, as it is also named) evolved from theoretically based notions (see for example Toth & Trujillo (1987) and Toth (1995)) to early empirical testing (for example in Broom and Dozier (1990) and Grunig, Grunig and Ehling (1992)) to the seminal work of Grunig and Hon in 1999 on commission from

the Institute of Public Relations, that grew into what is now referred to as the relationship management theory.

The evolution described above and the subsequent commission from the Institute of Public Relations refer to the importance of understanding organisation–stakeholder relationships (Brønn 2007:377; Ledingham 2003:183; Grunig & Hon 1999:7). Similar to the stakeholder theory, the relationship management theory aims to explain organisational effectiveness in terms of reaching organisational goals and within this realises that the "complete answer to the question of what makes an organization effective" (Grunig & Hon 1999:7) does not only lie in measuring the achievement of organisational goals, but also in the relationship with stakeholders, which makes the achievement of these goals possible (Brønn 2007:377; Grunig & Hon 1999:7).

More comprehensible, Grunig and Hon (1999:8) state that this excelled goal attainment is possible due to the fact that organisations that maintain relationships with their stakeholders are able to generally make better decisions regarding goal setting and attainment, due to the fact that they "listen to and collaborate with stakeholders before they make final decisions rather than simply trying to persuade them to accept" it after the fact. In this statement, the influence of the stakeholder theory is clearly evident, as it allows the involvement of stakeholder needs in terms of the setting of organisational goals. The relationship management theory, however, adds the clarification that it is only through communication that this kind of relationship is possible. Linking the aspect of building relationships and achieving organisational goals through communication to stakeholders, Brønn (2007:378) states that "[o]rganisations that communicate effectively with publics develop better relationships because management and publics understand one another and because both are less likely to behave in ways that have negative consequences on the interests of the other".

Ledingham (2003:183) argues that communication can be viewed as the strategic management function that facilitates the organisation–stakeholder relationship that affects the organisational mission, goals and objectives. According to Grunig and Hon (1999:11), this is not only in terms of both parties deciding on and being involved in the process of setting the goals, mission and objectives, but also the fact

that a good relationship between the organisation and its employees will "increase the likelihood that [stakeholders] will be satisfied with the organization and their jobs, which makes them more likely to support and less likely to interfere with the mission of the organization". Moreover, Ledingham (2003:183) and Grunig and Hon (1999:10) state that good organisation–stakeholder relations keep stakeholders from engaging or participating in negative behaviours such as strikes, protests, litigation or negative publicity, thereby saving organisations money by reducing the costs of pressure campaigns, boycotts or lost revenue resulting from these behaviours. It is through this buy-in and withholding of negative behaviour that good organisation–stakeholder relationships can lead to "competitive advantage because they are valuable, rare, difficult to imitate and hard to be substituted" (Brønn 2007:379) and those organisations that thus put in the effort, are rewarded.

This links to the argument that organisation–employee relationships (regarded as one of the primary relationships that an organisation can have) will therefore aid the organisation in terms of goal attainment by not only supporting these goals, the mission and objectives of the organisation, but also refraining from negative behaviour such as boycotts, strikes, and so forth. It is hence argued that organisations within the mining and construction industries of South Africa that maintain good relationships with employees will not only have the support of those employees in terms of their safety objectives, goals and mission, but will also see employees refrain from boycotts, strikes, litigation and the like.

Because of the lack of one single definition and by joining the most recognised definitions (those of Ledingham and Bruning (1998), Ledingham (2003) and Broom et al (2000)) into one concise definition, organisation–stakeholder relationships can be defined as the dynamic state that exists between an organisation and its stakeholders in which the actions of either party can impact on the economic, social, cultural or political wellbeing of the other due to the transactions involved in terms of the exchange of resources that lead to mutual benefit and mutual achievement.

Broom et al (2000:17) identify basic and tentative conclusions, which are seen in this study as basic elements or aspects of the relationship management theory. These aspects are the following:

- The formulation of relationships between an organisation and its stakeholders occurs when both parties have expectations of each other, when one or both need resources from each other, when one or both perceive threats from a mutual uncertain environment, or when there is a legal or voluntary necessity to do so. In terms of the focus of this study, it is argued that a relationship does, inherently and necessarily, exist between organisations in the mining and construction industries and their employees as a primary stakeholder group. This is due to the fact that employees as well as the organisation have expectations of each other – safety and accompanying aspects being one of them – and each needs resources from the other in order to meet these expectations.

- Relationships consist of patterns of linkages through which the parties in the relationship pursue and service their interdependent needs. In organisations within the mining and construction industries of South Africa, one of these interdependent needs that link organisations and their employees is that of safety. Employees are linked due to their personal safety and the organisation is linked by means of its organisational goal attainment.

- Relationships are the dynamic results of the exchanges between organisations and stakeholders that manifest themselves as the relationships develop and evolve, yet it can be described at a given point in time. This means that relationships between employees and organisations within the mining and construction industries, which are facilitated through communication exchange, although dynamic, can be described at a given point in time. It is due to this that long-term relational outcomes need not be tested empirically by means of longitudinal studies (as might be expected), but can also be tested cross-sectionally at any point in time, due to the next basic aspect as below. Having said this, more inferences can be made and a deeper understanding emerges from continual, sequential longitudinal study.

- Relationship antecedents and consequences have unique and measureable elements that are defined as being something separate from the participants. The organisation–employee relationships in the mining and construction industries of South Africa can be measured and defined in terms of these unique

elements, which remain constant and unaltered from one employee population to the next.

- Relationship formation and maintenance represent a process of mutual adaptation and contingent responses.

4.3.2 Maintaining organisation–stakeholder relationships

The majority of research concerning organisational communication and relationships has centred on communication for the maintenance of organisation–stakeholder relationships. In light of this body of research, it is argued that not all communication strategies, programmes, activities or techniques are equal in terms of relationship maintenance. To discuss organisation–stakeholder relationships it is not sufficient to only look at the elements that define organisational communication relationships and its accompanying measuring instruments, but also those aspects that support the maintenance of good organisation–stakeholder relationships. According to Grunig and Huang (2000:38), Grunig and Hon (1999:13) and Kelly (1998:38), seven aspects are prevalent in organisational relationship management: *access, openness, positivity, assurances, networking, sharing of tasks* and *acting integratively*.

Access, as the first aspect important for the maintenance of good organisation–stakeholder relationships, posits that good relationships between an organisation and its stakeholders can only be maintained if each party has access to the other. The natural underlying assumption is that, if a party does not have access to the other, these parties cannot be in a relationship with each other. In terms of the focus of this study, this aspect of relationship maintenance suggests that organisations within the mining and construction industries of South Africa need to ensure that management and the management structure of the organisation are accessible to employees. Similarly, employees need to have access to the organisational decision-making processes. When employees form part of the process of decision-making (which will govern all their endeavours in the organisation), they will possibly perceive or maintain a quality relationship with the organisation (Grunig & Huang 2000:38; Grunig & Hon 1999:13; Kelly 1998:38).

The second aspect of relationship maintenance, *openness*, is where disclosure of information is important if organisations expect to have any kind of quality relationship with their stakeholders. This openness makes the relationship transparent and all the parties involved feel that they know what they are 'getting themselves into'. Likewise, openness refers to each one of the parties in the relationship being responsive or open to input from the other (Grunig & Huang 2000:38; Grunig & Hon 1999:13; Kelly 1998:38). In terms of internal safety communication in organisations in the mining and construction industries of South Africa, openness suggests that both the organisation and employees as relevant parties to the relationship need to offer full disclosure to the other in terms of safety endeavours, decisions, information and the like. Furthermore, each party in the relationship needs to be open to input from the other in terms of safety aspects. Both employees and the organisation need to be completely open and honest with each other about aspects of safety in the organisation (for example on the side of the organisation, where decisions come from, and on the side of employees, exactly what the stance of safety is on the 'factory floor') as well as responsive to the other if inputs are made in terms of safety. This does not imply that all aspects suggested by the other party need to be acted upon every time, but that each party is open to the idea of discussion and communication of said suggestions.

Positivity, the third aspect of organisational relationship maintenance, dictates that the organisation–stakeholder relationship should be governed in the spirit of positivity. Hence, each party should provide the other with reasons for caring to ensure that the relationship has a positive foundation (Grunig & Huang 2000:38; Grunig & Hon 1999:13; Kelly 1998:38). Safety in the mining and construction industries of South Africa tends to be an aspect that can be perceived negatively in organisations, as employees can never work completely safely in these inherently dangerous industries. The challenge of safety communication is to base the organisation–employee relationships on positivity and to not let employees think that job safety is an impossible goal. Although 'negative' aspects such as sanctions and reprimanding can be necessary, this is not what the relationship should be built upon.

In the fourth instance, in order to maintain good organisation–stakeholder relationships, *assurances* are needed in the relationship. Assurances are defined as attempts by the parties in the relationship to assure each other that they and their concerns are legitimate. Conversely, if a party to a relationship feels that the other party in said relationship does not regard it and its concerns as legitimate, the relationship between these parties will not burgeon (Grunig & Huang 2000:38; Grunig & Hon 1999:13; Kelly 1998:38). Employees of organisations in the mining and construction industries therefore need to feel that the organisation regards their safety needs and concerns as legitimate concerns. The organisation should not allow these concerns to be reduced relative to any other (for example production concerns), as the perceived legitimacy of that concern is then lowered. Rather, employees need to be assured that their safety needs are legitimate to management and that what is a concern to employees is also a concern to the organisation.

Networking is the fifth aspect of relationship maintenance, as it is suggested that organisations build networks or coalitions with the same groups that, in this case, their employees do (Grunig & Huang 2000:38; Grunig & Hon 1999:13; Kelly 1998:38). One such an example is the organisation networking and building a coalition with unions, which on most accounts are usually activists for safety in organisations within the mining and construction industries of South Africa. If the organisation networks with the same groups as employees, the feeling is that the relationship is rooted in mutual connections and interests, and yet again, it lends legitimacy to the needs of the employees and the relationship as a whole. Apart from this perceived legitimacy, the maintenance of the relationship will be easier for the organisation if it is in touch with the interests of groups that interest (or influence) employees as a stakeholder group (Grunig & Huang 2000:38).

The sixth aspect of relationship maintenance is the *sharing of tasks* that are in the interest of either the organisation or the stakeholder group, or both, by both parties in the relationship. Grunig and Hon (1999:15) state that organisations and the relevant stakeholder group (in this case employees) should “share in solving joint or separate problems”. Safety in the organisation is a problem that the organisation and employees should share in solving. If either the organisation or employees take on

this task by themselves, there is – per definition – no relationship between the parties, as the one acts on its own without a link to the other.

Linked to the above, the seventh and last aspect of relationship maintenance, *acting integratively*, suggests that parties to the organisation–stakeholder relationship should search out common or complementary interests and solve problems together (Grunig & Huang 2000:38; Grunig & Hon 1999:13; Kelly 1998:38). Safety in organisations within the mining and construction industries is arguably a common interest, as employees benefit from working safely by their physical health and wellbeing, while the organisation benefits in terms of its sustained longevity. Making employees feel that safety is a common interest that it holds with the organisation will reinforce the need for the relationship and thus the legitimacy of its maintenance.

Based on an understanding of how organisational relationships can be maintained, the next chronological advance of the relationship management theory was to define, in concrete terms, exactly what the elements are that make up this relationship. The underlying assumption is that, if the organisation understands the relationship with stakeholders, it is in a better position to improve and enhance it. To this end, the abstract nature of the organisational relationship is concretised by breaking it up into six elements (or relationship indicators), theoretically founded from interpersonal relationship literature, and empirically tested by Grunig and Hon (1999) firstly, at four organisations (*Microsoft, Social Security,* the *National Rifle Association* and *General Electric*) and consecutively others around the world. The next part of this chapter focuses on these six elements of relationships in terms of organisational safety and internal safety communication in the mining and construction industries of South Africa.

4.3.4 Elements of organisational relationships

The elements of organisational relationships (used interchangeably throughout the literature with ‘relationship indicators’ or ‘relationship outcomes’) are the epitome of the relationship management theory, as it is these elements that allowed for the first time in communication literature an understanding of the intangible relationship that exists between an organisation and its stakeholders, and moreover, the

measurement thereof (Grunig 2000:41; Grunig & Huang 2000:42; Grunig & Hon 1999:3). In the section below, the elements of relationships, namely *control mutuality, trust, commitment* and *satisfaction* and the types of relationships, explicitly *exchange relationships* and *communal relationships*, are discussed, based on Brunner (2008:74), Brønn (2007:380), Grunig (2006:166) Grunig (2002:2), Ledingham (2003:185), Grunig (2000:41), Grunig and Huang (2000:42) and Grunig and Hon (1999:3).

4.3.4.1 Control mutuality

Control mutuality is defined as "whether the contending parties in a relationship agree that one or both may rightfully influence the other [...] or whether partners agree on the power balance in the relationship" (Grunig & Huang 2000:43). Control mutuality in an organisational relationship is thus concerned with the agreement of power or control designation between the parties to this relationship. This element looks at the control or power balance between the parties in the relationship and whether or not both parties agree to this power or control allotment.

Importantly, this element does not look only at the power or control balance in the organisational relationship, but also at whether or not the parties to this relationship *agree* on this balance or distribution. This is largely due to the fact that, in reality, no organisational relationship will ever truly experience a complete equal balance of power or control. With respect to employees as stakeholder group, consensus is that the organisation will hold the larger share of the power or control in the relationship, while the employees' share might elevate in some instances or at certain times (for example in special circumstances such as strikes or litigations) (Brunner 2008:74; Brønn 2007:380; Grunig 2006:166; Grunig 2002:2; Ledingham 2003:185; Grunig 2000:41; Grunig & Huang 2000:42; Grunig & Hon 1999:3).

This kind of imbalance could be seen as natural, but for stable relationships, each of the parties to the relationship needs to hold a share of the power or control. Three circumstances that amount to *un*stable relationships due to control mutuality are identified by Brunner (2008:74), Brønn (2007:380), Grunig (2006:166) Grunig (2002:2), Ledingham (2003:185), Grunig (2000:41), Grunig and Huang (2000:42)

and Grunig and Hon (1999:3). Firstly, when one of the parties to the organisational relationship is completely powerless, the 'association' cannot meaningfully be called a relationship, as the party with the power will merely be dictating to the one without. In such a circumstance, or one where the asymmetry is reasonably large, good practice would be the inclusion of a trusted third party to mediate the control and power balance, making sure both parties are accounted for in the relationship. Secondly, if the power or control difference is slight with no clear consensus among the parties as to which is sovereign, the temptation of power struggles is experienced, which is not favourable to any of the parties. Thirdly, unstable relationships might be experienced when power asymmetry has at its source experience, information, costs of delay and the like, as in order to function interdependently (a remnant from the systems theory), these aspects need to be eliminated.

A recent example in the mining industry of South Africa of control or power imbalance and its accompanying effects is that of the Aurora mining house, specifically its mines in Grootvlei (Gauteng) and Orkney (North-West). Aurora mining reportedly ran into financial trouble in February/March 2010 (reaching as far as accumulated tax debts, debts to unemployment insurance, debts to the employees' pension fund and many more), which left it in the position to either retrench employees and shut down all operations, or stay open and try to regenerate funds to make up all deficits. The latter was chosen, with employees staying on to work at the mines without compensation. The outcome of this was that the company could not recover enough to pay employees the wages owed to them, not to mention their pension payouts or other aspects and that the case was taken to court (Dlamini 2011; Stein 2011; Baloyi 2010). In this case, the organisation had all the power in the relationship (in withholding these compensations) and the employees very little to none. As said above, theoretical good practice would have been the involvement of a third party to mediate this relationship, seeing a more balanced spread of power in the relationship – this was eventually done with the matter being taken to court. Still the imbalance in the relationship was apparently due to the organisation having all the information – and not sharing it with its employees – and the cost of the delay of the matter only being to the employees and not the organisation (as mentioned above to be the most disreputable elements from theory).

For control mutuality in the case above, both parties to the relationship should have had consensus about not only the situation itself, but also the distribution of power in terms of the relationship. This would have allowed the employees to make an informed choice. In any organisation in the mining and construction industries in South Africa, in terms of safety, communication needs to be employed in order for the relationship to be based on power and control consensus, with employees and the organisation understanding in no vague terms where the lines of power in the organisation lie, and what control is and can be practised by each of the parties in terms of safety.

4.3.4.2 Trust

Trust as an element of relationships is commonplace, for example from interpersonal perspective (see for example Clement (2008) and Massey and Kyriazis (2007)), a marketing perspective (see Pervan, Bove and Johnson (2009), or Kim, Ferrin and Rao (2008)), a commerce perspective (Gan, He, Ding & Varadharajan 2009; Tan & Sutherland 2004) and a knowledge-sharing perspective (MacCurtain, Flood, Ramamoorthy, West & Dawson 2008; Hsu, Ju, Yen, & Chang 2007) to name but a few. Organisation–stakeholder relationships are no different and trust is revered as a very important element in this relationship. Specifically in terms of an organisational perspective, trust is defined as "one party's level of confidence in and willingness to open oneself to the other party" (Grunig & Hon 1999:3).

Trust is seen to be made up of three dimensions: *integrity*, *dependability* and *competence. Integrity* is the belief in the relationship that the actions of both parties are fair and just. The converse is revealed by Grunig and Huan (2000:45) when it is stated that "suspicion undermines favourable growth in a relationship" and this suspicion takes hold when one party in the relationship does not show integrity towards the other. The second dimension is *dependability*, which is defined as the belief of parties in a relationship that the other will do what it says it will do. The third dimension, namely *competence*, is the belief that the parties to the relationship have the ability to do what they say they will do. All three of these dimensions need to be present in a relationship before there will be trust between the parties to this relationship (Brunner 2008:74; Brønn 2007:380; Grunig 2006:166; Grunig 2002:2;

Ledingham 2003:185; Grunig 2000:41; Grunig & Huang 2000:42; Grunig & Hon 1999:3).

Regarding internal safety communication in the mining and construction industries of South Africa, and the subsequent relationships, trust is arguably one of the most important aspects in the organisation-employee relationship. The reason being the fact that employees are literally entrusting their lives to the organisation and have to trust that the organisation is acting in terms of their best interest when safety decisions and actions are implemented. The relationship management theory therefore posits that organisations within the mining and construction industries of South Africa have to show *integrity*, with respect to acting fairly and justly when safety decisions and endeavours are implemented. This means, for example, that the organisation should not regard one group in the organisation's safety and internal safety communication needs as more important than another – as sometimes happens when management is better informed and better equipped for safety (for example with better, more comprehensive information or better PPE) than employees lower down in the organisational hierarchy. When such an occurrence is witnessed by employees, trusting the organisation with their safety needs will be harder, as the organisation might be perceived unfair and unjust, or not acting with integrity.

Organisations also need to be *dependable*, so that employees can believe the organisation when it makes promises or pledges of any kind. The organisation should also not make promises or assurances that it does not have the ability to keep, as this will impact on the *competence* perception that employees hold of the organisation. Fundamentally, organisations should thus "walk the walk" when it comes to safety, and not make any empty promises, as this damages the trust that employees will have in the organisation and thus in the relationship as a whole (Brunner 2008:74; Brønn 2007:380; Grunig 2006:166; Grunig 2002:2; Ledingham 2003:185; Grunig 2000:41; Grunig & Huang 2000:42; Grunig & Hon 1999:3).

4.3.4.3 Commitment

The fulfilment of the three dimensions of trust refers the commitment that the organisation has towards its relationship with employees (as in the case of this study, and stakeholders in general in the broader context). Relational commitment is defined by Grunig and Hon (1999:3) as "the extent to which each party believes and feels that the relationship is worth spending energy to maintain and promote". In organisation–stakeholder relationships, two dimensions of commitment are identified: *affective* commitment and *continuance* commitment.

Affective commitment, which is classified as an affective or emotional orientation, refers to the organisation–stakeholder relationship parties' beliefs in and acceptance of the organisational goals and values, as well as their willingness to exert these in order to achieve these goals and values. *Continuance* commitment, on the other hand, which refers to the commitment of the parties to the relationship to a certain line of action, is defined as the extent to which the parties in the relationship feel committed to this relationship by virtue of the costs that they feel are associated with leaving the relationship (Brunner 2008:74; Brønn 2007:380; Grunig 2006:166; Grunig 2002:2; Ledingham 2003:185; Grunig 2000:41; Grunig & Huang 2000:42; Grunig & Hon 1999:3).

If applied to the focus of this study, organisations in the mining and construction industries of South Africa need to ensure that they demonstrate commitment to the safety goals and values set in the organisation (allowing employees to do the same), along with exerting themselves and employees to reach these goals. Both parties have to show commitment (*affective* commitment) to the safety goals and values of the organisation to make sure that they 'pull their weight' by exerting themselves to the fulfilment thereof. Alongside this, the parties to the relationship should also feel committed to the relationship by virtue of the fact that leaving this relationship is too costly. The organisation needs to establish a relationship wherein safety and safety concerns are attended to, making it impossible for employees to want to leave or deter the relationship, as this would cost too much in terms of personal safety. This would demonstrate *continuance* commitment, where employees feel that they gain in terms of safety if they stay in the relationship and would thus not want to leave.

4.3.4.4 Satisfaction

Satisfaction, as the fourth element of relationships, is defined as “the extent to which each party feels favorably toward the other because positive expectations about the relationship are reinforced. A satisfying relationship is one in which the benefits outweigh the costs” (Grunig & Hon 1999:3). Relational satisfaction is revered by many scholars (for example Donovan-Kicken and Caughlin (2010), Salmela-Aro (2010), Mellor, Stokes, Firth, Hayashi and Cummins (2008), Cann, Norman, Welbourne and Calhoun (2007) and Grunig and Huang (2000)). The reason for the substance of this element is that, through the level of satisfaction of the relationship experienced by the parties thereto, all other aspects are cumulated. This is to say that the degree of satisfaction experienced by the parties to the relationship is an indication of whether or not all other elements to this relationship are present and represented to a satisfactory degree. If, for example, there is no control mutuality, trust or commitment, the parties to the relationship will not be satisfied with it. Conversely, if there is indeed control mutuality, trust and commitment in the relationship to a satiated degree, the level of satisfaction will be higher.

It is in this realisation that organisational relationships are only seen to be satisfying if the benefits of being a part of the relationship outweigh the costs – in other words, that the positive aspects need to be more and more weighted than the negative aspects of the relationship. Referring to this study, a definite and concrete line exists when this calculation is made by employees in the mining and construction industries: If the cost of relating with the organisation is that their personal safety will not be considered, then the cost is (or should be) too great to be part of the organisation and the relationship, as the actual cost could be the employees’ lives.

The remaining two elements of relationships to follow deal with the classification of the relationship as either an exchange relationship or a communal relationship. These two classifications of the relationship management theory are very broad and general and as a result, theorists such as Huang (2005) catalogue smaller distinctions within these two broad classifications (such as mutual communal, covenantal, contractual, symbiotic, manipulative or exploitive). For the purposes of this study, these smaller nuances of the classification of relationships were not

considered, as the study focuses on the relationship outcomes and types that are most conducive to successful safety and internal safety communication between an organisation and its employees, which justifies the use of the broader classification of the relationship management theory.

4.3.4.5 Types of relationships

The two types of relationships described by the relationship management theory (namely the *exchange* and *communal* relationships) might seem to be polar in many ways, but in reality and in practice a combination of the two might be experienced in organisation–stakeholder relationships (with one taking slight or substantial credence).

Exchange relationships are defined as the relationships where the parties thereto provide benefit to each other, because benefit has been extended to them in the past and the expectation is that it will be repeated (Brunner 2008:74; Brønn 2007:380; Grunig 2006:166; Grunig 2002:2; Ledingham 2003:185; Grunig 2000:41; Grunig & Huang 2000:42; Grunig & Hon 1999:3). In basic terms, each of the parties in an exchange relationship will only give benefit to the other if it is felt that the other will give benefit in return, and will continue doing so in future. *Communal relationships* are defined as those relationships that are classified by both parties giving benefit to one another, due to the fact that they are concerned with the other's welfare (Brunner 2008:74; Brønn 2007:380; Grunig 2006:166; Grunig 2002:2; Ledingham 2003:185; Grunig 2000:41; Grunig & Huang 2000:42; Grunig & Hon 1999:3).

In terms of the stakeholder theory discussed previously in this chapter, it was argued that communal relationships prove to be more successful for organisations. Where employees feel that their needs are fully understood and taken into consideration, these employees will forward the value creation of the organisation (see Section 4.2.2). Likewise, Greeff (2010:89) states that, when an organisation is genuinely concerned with its employees' welfare (as in communal relationships), safety and internal safety communication in the organisation will be excelled further than when the organisation only wants a return on its safety investment (as would be the case in an exchange relationship). It is for this reason that it is argued that communal

relationships should be the standard that organisations within the mining and construction industries strive for. It is hence argued that organisations should maintain and build a relationship with employees that holds the perception from the employees' side that the organisation is genuinely concerned about their welfare, and that implementing safety and practising internal safety communications are done in such a way as to take care of the employees' needs, and not due to the fact that the organisation expects something in return for it. Linking back to the principles displayed in the stakeholder theory, this will then excel employees to better output generation by means of value creation, which will lead to better goal attainment for the organisation.

It is clear that the relationship between the organisation and its employees (as stakeholder group) can influence both parties and the contribution that these parties make to each other. In order to truly understand the full effect that an organisational–stakeholder relationship has on all relevant parties observant to it, the stages and forms of relationships, as identified by the relationship management theory, will be discussed next.

4.3.5 Stages and forms of relationships

The stages and forms of organisational relationships are depicted in the *antecedents and consequence model of relationships*, by Grunig and Huang (2000:33). This model was developed parallel to that of Broom, Casey and Ritchey (1997), but focuses solely on organisational relationships, as framed within the relationship management theory – unlike that of Broom et al (1997), which focuses on other theories in this regard.

Grunig and Huang's (2000) *antecedents and consequence model of relationships* revolves around three aspects. Firstly, the model looks at the antecedents or baseline assumptions of the influences of the organisational relationship. This is, secondly, paired with maintenance strategies for each of these antecedents and thirdly, is linked to the relational outcomes that can be expected of each.

This model identifies the behavioural consequences of organisation–stakeholder relationships, as well as the communication strategies for its maintenance. This is graphically presented in Figure 4.1 below:

Situational antecedents: Behavioural consequences on each other	Maintenance strategies	Relationship outcomes
Organisation affects stakeholder	Symmetry Disclosure (openness)	Control mutuality (joint acceptance of degrees of symmetry)
Stakeholder affects organisation	Assurances of legitimacy Participation in mutual networks	Commitment (interdependence, loss of some autonomy)
Organisation–stakeholder coalition affects another stakeholder	Integrative negotiation Cooperation/collaboration	Trust Goal attainment (complementary behaviour)
Organisation–stakeholder coalition affects another organisation	Shared tasks (helping solve problems if of interest to the other party)	Satisfaction/liking
Another organisation affects organisation–stakeholder coalition	Be unconditionally constructive Win-win or no deal	

Figure 4.1: Stages and forms of relationships (adapted from Grunig and Huang (2000:34)).

Each of these three stages (depicted above in its general form applicable to organisation–stakeholder relationships) will now be discussed, from the viewpoint of Grunig and Huang (2000:34), allowing for application to the organisation–employee relationship specific to this research, namely the mining and construction industries of South Africa.

4.3.5.1 Situational antecedents

The first stage of the above model shows the change pressures and their influence on relationships within an organisation, classified as antecedents. This model shows that the relationship between an organisation and its stakeholders does not only influence that organisation and its stakeholders (as is predicted and depicted by the first two antecedents of the model), but has the power to influence other organisations and other stakeholders as well.

With regard to the first two antecedents, this model indicates that the organisation can influence how employees (as a stakeholder group) perceive it and safety within it, just as the employee body has the power to influence the way that the organisation views safety. From the third antecedent onwards, it is realised that this is not the only influence exerted. When the organisation and employee body form a coalition[††] (working from one view of safety), it has the power to influence other stakeholder groups, for example shareholders, into accepting the safety stance of the organisation–employee coalition (Grunig & Huang 2000:34).

Similarly, the organisation–employee coalition has the power to influence another organisation. Making use of a scenario explained previously, organisations within the mining and construction industries of South Africa more often than not make use of subcontractors in their business endeavours. These subcontractors are organisations that work for the overseeing organisation (known as the client). If this organisation and its employees form a coalition in terms of their relationship, the *antecedents and consequence model of relationships* of Grunig and Huang (2000) holds forth that this coalition can influence the way in which this subcontracting organisation sees safety and the way that safety is practised in that organisation.

Furthermore, in terms of the last antecedent, it is seen that another organisation also has the power to influence the organisation–employee coalition. Again, this can be understood in terms of the focus of this study by making use of an earlier example: When the Department of Mineral Resources enforced stricter safety measures on all organisations within the industries, these organisations were forced to absorb these changes into their safety systems, changing their internal safety communication. Subsequently, the relationship between the organisations and their employees was naturally altered along with it. Here it is thus seen how change was brought on in the relationship between organisations and its employees, due to the change in another organisation (the Department of Mineral Resources).

[††] The underlying assumption of this organisation–employee coalition is that it will excel and improve safety, as the equal presence of employees therein will not allow for safety to be diminished or lessened.

4.3.5.2 Maintenance strategies and relationship outcomes

The four maintenance strategies of this model, discussed in greater detail in Section 4.3.2 of this chapter, are recapitulated below, together with their corresponding antecedent, as discussed by Brunner (2008:74), Brønn (2007:380), Grunig (2006:166) Grunig (2002:2), Ledingham (2003:185), Grunig (2000:41), Grunig and Huang (2000:42) and Grunig and Hon (1999:3).

- *Symmetry* and *disclosure* refer to the degree to which the organisation is open in its communication with stakeholders and thus links to that maintenance strategy. It is argued that although it is necessary to "keep some secrets" (Grunig & Huang 2000:42) in an organisational setting, the withholding of information should always be in the best interest of those in less power in the organisation. Therefore, openness in internal safety communication should be the rule of thumb – undisclosed information should only be kept as such if it is in the best interest of employees. It is in this way that the antecedent influence that the organisation has on its employees will be one that promotes rather than harms the relationship. The relational outcome is, therefore, control mutuality, where the disclosure of information, through openness, influences the control or power balance of the relationship.

- In communication between the organisation and its stakeholders, *assurances of legitimacy* should be present. The organisation should acknowledge the legitimacy of its constituencies, as well as their contributions. Systems within the organisation should truly be altered by the inputs of stakeholders for them to feel a legitimate part of the process. For organisations within the mining and construction industries of South Africa, this means that safety processes should be altered according to the input and changes in employees as a stakeholder group. Likewise, organisations should build *networks* with the same groups as their stakeholders to further assure legitimacy. It is once employees feel assured of their legitimacy that they will not only perceive a favourable relationship, but also be able to make a contribution to the organisation worthy of their antecedent influence on said organisation. The relational outcome focused on here is

commitment, as the commitment of employees towards the organisation cannot be guaranteed unless the employees have these full assurances of legitimacy.

- *Integrative negotiation*, the maintenance strategy present when the organisation–employee coalition influences other stakeholder groups, refers to the solving of common or complementary problems of all parties to the relationship in order to reach the goals of these parties. In organisations within the mining and construction industries of South Africa, safety problems (of employees and organisations) influence the other stakeholders in the organisations, making it a priority to other stakeholders. If the safety problems of the organisation are not solved, it could lead to a *shutdown* of the entire organisation, which will be detrimental to all stakeholders. Solving these problems with cooperation and collaborative practices could thus be beneficial to all parties concerned.

- In terms of the antecedent influence that another organisation can have on the organisation–employee coalition, the maintenance strategy is by virtue constructive and cooperative. In this circumstance, if a mutually beneficial situation is not reached, it will be to the detriment of all parties involved. The sentiment above of having all operations shut down due to poor safety records being to the disadvantage of all involved in the organisation is seen yet again.

4.4 CONCLUSION

This chapter focused on the stakeholder theory and the relationship management theory as the two courses from the systems theory – the meta-theory of the research discussed in the first literature review chapter. The discussion of the stakeholder theory enlightened the research in terms of the notion of value contribution by stakeholders denouncing the separation fallacy, which states that ethical actions are not business-orientated and that business decisions have no ethical influence. From these realisations it was argued that safety and internal safety communication in the mining and construction industries of South Africa are issues that should be considered as elements contributing to the value creation of the organisation and as elements forming part of good business decisions and actions, based on the notion

that good safety practice and good business practice cannot be separated from each other.

From the stakeholder theory perspective it was argued that any organisation in the mining and construction industries concerned with its competitive edge in the marketplace should build and maintain relationships with employees as the primary stakeholder group. It was argued that the relationship between employees and their organisation consists of the four elements of control mutuality, trust, commitment and satisfaction and can be classified as being either an exchange or a communal relationship – the latter being the ideal for the bourgeoning of internal safety communication within the South African mining and construction context.

In the relationship management theory it was further stated that the relationship between the organisation and its employees (albeit classified as exchange, communal or a combination of the two) is facilitated by means of effective communication.

This phenomenon of effective communication is elaborated on in the next chapter, which commences with a discussion of the excellence theory, as it describes the criteria for organisational communication to be considered as such. The next chapter specifically discusses the elements of excellent communication as well as those that lead to communication satisfaction, all framed within the South African mining and construction context.

CHAPTER 5
INTERNAL COMMUNICATION THEORY DEVELOPMENT: THE EXCELLENCE THEORY AND COMMUNICATION SATISFACTION

5.1 INTRODUCTION

The previous chapter discussed the stakeholder theory and the relationship management theories, and the last point made was that the chronological development of theories up until that point was yet to yield a theory that would comprehensively discuss the nature of communication and its role within the interdependence of stakeholders as systems and the relationships to form between them (which was the focus up until that point). This chapter fills this void in the understanding of internal organisational communication by focusing on the excellence project. This project, discussed in full in the section below, yielded the excellence theory. Taking the understanding instigated by the excellence theory further, communication satisfaction examines internal organisational communication as from the point of employees as receivers of the communication. Both these theories are discussed in this chapter, with the specific focus on internal safety communication.

5.2 THE EXCELLENCE THEORY

In 1984, the International Association of Business Communicators (IABC) Foundation requested proposals that would address the research question *How, why and to what extent does communication affect the achievement of organisational objectives?* (Grunig 2008:1; Grunig et al 2002:4). A group of public relations researchers including James Grunig, Larissa Grunig and David Dozier proposed to answer this question, framed within an excellence study (this has extensively been done in general management practice – for example in Peters and Waterman's 1982 study *In search of excellence*) (Grunig et al 2002:5; Peters & Waterman 1982).

Having received the grant for the research from the IABC, these researchers set out to answer the research question by firstly doing an extensive literature review (spanning 10 years), secondly a quantitative and thirdly a qualitative empirical testing at over 370 organisations in different countries. The empirical testing was done on the basis of compiling a generic benchmark from which critical success factors of communication could be identified across different types of organisations. Generic benchmarking was used due to the fact that no single organisation or operation could be identified as excellent through and through. The generic benchmarking factors of communication excellence therefore gave a somewhat idealised goal for all organisations to aspire to (Grunig & Grunig 2011:3; Grunig 2008:1; Grunig et al 2002:6; Grunig 1992:219). The result of this research, according to Grunig et al (2002:5), was a "comprehensive, general theory of public relations" and organisational communication in general.

Although some critique has been brought against this claim, for the most part there is agreement on the claim by the excellence study that the generic benchmark offers the literature a model for

- auditing and evaluating organisational communication departments;
- explaining why organisations depend on these departments and how to organise and manage this function for optimal value gain; and
- the teaching of good organisational communication practice to both beginners and experienced practitioners. (Grunig et al 2002:11; Grunig 1992:86)

The teaching of good organisational communication practice is especially valuable for the purposes of this study, mainly due to the fact that the individuals responsible for safety communication in the mining and construction industries of South Africa are not trained or necessarily competent organisational communication communicators – yet they are expected to convey safety messages.

The extensive literature review taken on by the excellence team shows its links to the stakeholder and relationship management theory insofar as finding that organisations can be seen to be effective when they attain their goals. Still, this goal attainment is only truly possible when the organisation sets goals that are "appropriate for the strategic constituencies that are found in the organization's

environment, publics that have the power to constrain the ability of the organization to meet its goals and achieve its mission" (Grunig et al 2002:10). Furthermore, the study found (linking directly to the relationship management theory discussed prior to this theory) that "the quality of relationships with strategic publics is a key indicator" of effective organisations and, moreover, that relationships can only be of quality if, all other aspects of the relationship management theory considered, they are two-way symmetrical (Grunig et al 2002:11).

This last aspect moves closer to the characteristics of communication excellence that this theory proposes as part of its generic benchmarking, but before these specific characteristics are discussed, the theory's general antecedents in the form of the spheres of communication excellence are discussed next.

5.2.1 The spheres of communication excellence

In order to isolate the excellence factor, Dozier, Grunig and Grunig (1995:10) created a graphical representation of the excellence factor in organisational communication by depicting it in terms of three spheres, one inside the other, called the three spheres of communication excellence. These three spheres are a culmination of all factors of communication excellence and provide a general understanding of the theory. The three spheres of communication excellence are discussed in this section to provide a broad-spectrum understanding of this theory. The three spheres of communication excellence are depicted in Figure 5.1, showing that it has at its hub the *knowledge core* surrounded by *shared expectations*, and at the outer rim *participative culture*.

Figure 5.1: Three spheres of communication excellence (Dozier et al 1995:10)

5.2.1.1 Knowledge core

At the hub of the spheres depicting the excellence theory is the knowledge core. This sphere, as the name suggests, talks to the knowledge base of communicators in the organisational setting – the inherent knowledge that the communicator employs in the organisational communication process.

The flow of communication in any organisation requires individuals to employ technical communication skills in the writing, shaping and overall generation of communication content – either for internal stakeholders (as is the case of the focus of this study) or for external stakeholders. According to the excellence theory, it does not matter how skilled, talented or creative these technical communicators are, fulfilling only the technical role of organisational communication does not amount to excellence. The reason for this is that technical communication mostly amounts to one-way communication, with the "communicator providing information from the organization to various publics, but not the other way around" (Dozier et al 1995:12).

For excellence in organisational communication, the knowledge of communicators needs to comprise more than just technical skills. The knowledge of communicators needs to be of such an order as to enable the employment of two-way

communication, which amasses, in terms of this theory, the gathering and collecting of information from organisational stakeholders, such as employees, and the relaying of that information or content to organisational management. Herein communication is not merely one-way, namely sending out information to organisational stakeholders, but also entails gathering information from these stakeholders, thereby essentially offering the opportunity for feedback in the organisational communication process (Kuch 2010:116; Okura, Dozier, Sha & Hofstetter 2009:65; Laskin 2009:41; Williams & Dozier 2008:1; Dozier et al 1995:10).

The communication culpability is furthermore extended by the fact that communication should not only be gathered from stakeholders for the sake of gratifying these stakeholders or for the purpose of using it against them (as would be the case with asymmetrical communication), but also to be interpreted and factored into organisational decision-making and, by proxy, organisational strategies with the purpose of enhancement (Kuch 2010:116; Okura et al 2009:65; Laskin 2009:41; Williams & Dozier 2008:1; Dozier et al 1995:10). This aspect is a remnant of the stakeholder theory, in which it is stated that organisations that want to be successful have to be in touch with the needs of stakeholders and to implement these in the strategies of the organisation. The concurrence of the excellence theory supplements the understanding of this aspect by stating that it is through two-way symmetrical communication that this is ultimately achieved.

In terms of the focus of this study, this first sphere of the excellence theory posits that organisational communicators need to possess the knowledge to implement two-way symmetrical communication in the organisation in order to ensure that employees' perceptions, information and general needs regarding safety and internal safety communication are integral to organisational planning, strategy and decision-making (Kuch 2010:116; Okura et al 2009:65; Laskin 2009:41).

As stated previously, in the mining and construction industries of South Africa, the responsibility of internal safety communication mostly falls to safety personnel who are not necessarily skilled or knowledgeable in the field of internal organisational communication and, therefore, not with respect to two-way symmetrical communication. Still, the excellence theory does unequivocally state that internal

safety communication in the organisation will have to be strategically driven in order to allow for two-way symmetrical communication, with safety personnel not only gathering information from employees, but also being in a position to interpret this information and make recommendations to management, based on this interpretation, for inclusion in all relevant organisational processes.

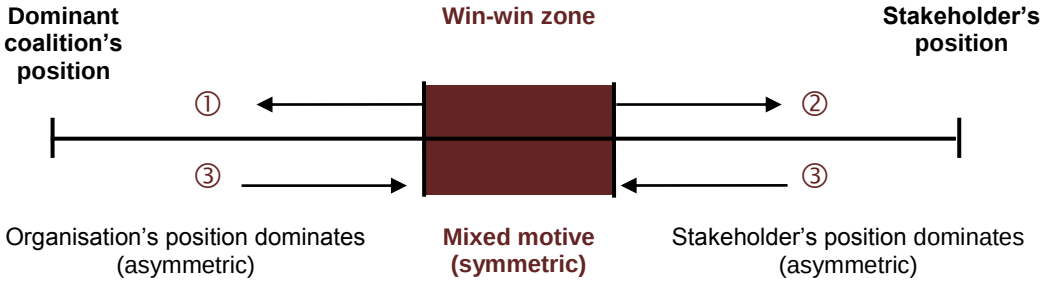
As it would not be feasible to expect all safety personnel in these industries to be trained, competent communicators, in reality two options remain. Firstly, internal safety communication will have to feature in the overall strategic communication processes of the organisation. This is, however, not always possible, for example in small mining or construction houses where there is not a dedicated communication department. Secondly, the safety department itself will, alternatively, have to integrate internal safety communication into its strategising, making sure that at management level, in every department or section, strategic communication is built into the systems that oversee it. This would allow management of the safety department to add internal safety communication into its reporting to the dominant coalition, allowing for the symmetry called for by this theory.

5.2.1.2 Shared expectations

In the excellence theory, it is argued that communicators in the organisational setting need to act in a boundary-spanning capacity, gathering and interpreting information from stakeholders in order to wittingly inform and council management about stakeholder needs (Kuch 2010:116; Okura et al 2009:65; Laskin 2009:41; Williams & Dozier 2008:1; Dozier et al 1995:10). In the above discussion, this was linked to two-way symmetrical communication, where the organisation adjusts its position based on the needs and perceptions of and information from stakeholders.

In recent literature regarding the excellence theory (as well as the model of two-way communication), this has been criticised as an ideal state, which might not always be attainable in practice, because organisations are not always in a position that allows for the inclusion of the needs of stakeholders (cf. Dozier & Lauzen 2009:10 Wood 2006:11; Grunig & Huang 2000:41). This is not possible in all circumstances, as different stakeholder groups could hold different or opposing goals or needs. For this

reason, Grunig et al (2002:357) propose a *new model for symmetry and two-way communication* known as the *mixed motives model*, which is graphically depicted in Figure 5.2 below.



	Type of practice	Explanation:
①	**Asymmetry**	Communication is used to dominate stakeholder to accept the dominant coalition's position
②	**Cooperation**	Communication is used to convince the dominant coalition to cave in to stakeholder's position
③	**Two-way model**	Communication is used to move stakeholders, the dominant coalition or both to the acceptable win-win zone

Figure 5.2: The mixed motive model (adapted from Grunig et al (2002:357))

In the mixed motive model it is indicated that unstable and unsatisfactory relationships exist on either side of the win-win zone, where one party is taking advantage of the other. To the left of the win-win zone, the organisation is taking advantage of its stakeholders and to the right, the stakeholders are taking advantage of the organisation.

In order to avoid the above, the communicator experiences a feeling of mixed motives. The communicator should seek to satisfy the needs of both the organisation and its stakeholders. Once communication enters the win-win zone, both parties' positions and needs are addressed. Here, communication is used to move or shift the perceptions of both parties to an understanding wherein both feel that their needs have been addressed (Kuch 2010:116; Okura et al 2009:65; Laskin 2009:41; Williams & Dozier 2008:1; Dozier et al 1995:10).

In order to fulfil this mixed motives role, the communicator has to be part of the dominant coalition, and thus be part of the top strategising and decision-making group of the organisation. If the communicator is not part of this group, it would be

hard pressed to influence it in accordance with the needs of the stakeholders. As seen in the stakeholder theory, if this does not happen, stakeholders will not be in a position to contribute as much value to the organisation as is possible.

Therefore, in terms of the second sphere of communication excellence, communication will contribute to the organisation's functioning by establishing shared expectations within the organisation. In terms of the focus of this study, this means that the dominant coalition and stakeholders as well as safety personnel responsible for internal safety communication should have a shared understanding and expectation of internal safety communication and its place in the organisation. This can only be achieved if there is a representative in the dominant coalition fulfilling the mixed motives role to meet the organisation's and stakeholders' positions on safety and internal safety communication in the organisation.

5.2.1.3 Participative culture

Cultivating shared expectations in the organisation, as discussed above, lays the groundwork for a participative culture in the organisation. In terms of communication excellence, it can be understood that organisational cultures are as unique as the differing organisations from which they hail. Yet it is found that they are not idiosyncratic in their uniqueness due to the fact that two kinds of organisational cultures are differentiated: participative and authoritarian (Laskin 2009:41; Williams & Dozier 2008:1; Dozier et al 1995:10). In Figure 5.3 below, participative cultures are seen as being open to ideas from stakeholders and the environment to promote equality and teamwork as well as empowerment by means of shared decision-making, with the authoritarian culture being the antithesis in each aspect.

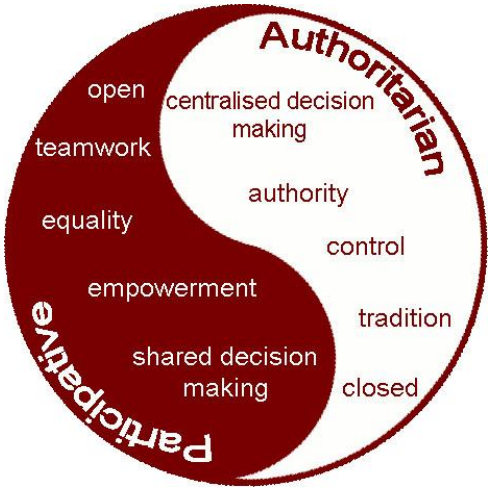


Figure 5.3: Authoritarian and participative cultures (based on Dozier et al 1995:18)

This dimension of openness links back directly to the meta-theory of this research, the systems theory, where openness in systems is upheld as an ideal. So too do the aspects of shared decision-making and empowerment link back to the stakeholder theory, from where it is argued that stakeholders should form part of and be integrated into the decision-making in the organisation. It is therefore argued that participative organisational cultures are seen to be ones more conducive to communication excellence (Williams & Dozier 2008:1; Dozier et al 1995:10). This experienced culture in the organisation is a culmination of all three spheres, because it is argued that a complete participative culture cannot be established in an organisation if there is not a communication knowledge base to empower shared expectations (Kuch 2010:116; Okura et al 2009:65; Laskin 2009:41; Williams & Dozier 2008:1; Dozier et al 1995:10).

In terms of this study, this final culminating sphere therefore prescribes equality, teamwork openness and shared decision-making in terms of internal safety communication in organisations within the mining and construction industries of South Africa. This is largely due to the fact that this promotes a participative culture where excellent communication between the organisation and its employees as stakeholder group is esteemed.

5.2.2 The characteristics of communication excellence

As stated previously, the excellence theory set out to compile a generic benchmark from which critical success factors of communication could be identified across different types of organisations. The result of this generic benchmark is 14 characteristics of communication excellence and three effect outcomes. These characteristics and outcomes are grouped into four thematic categories, which are summarised in Table 5.1 below (after Grunig et al (2002:9) and Grunig (1992:15)).

Table 5.1: Groupings of excellence characteristics

Programme level	Departmental level
1. Managed strategically	2. A single, integrated department 3. Separate function from other communication 4. Direct reporting relationship to dominant coalition 5. Two-way symmetrical communication 6. Senior communicator in management role 7. Potential for excellence as indicated by: a. Knowledge of symmetrical model b. Knowledge of managerial role c. Academic training d. Professionalism 8. Equal opportunity offered to diversity
Organisational level	**Effects of characteristics**
9. Worldview reflects two-way symmetrical communication 10. Management holds power with the dominant coalition 11. Participative culture 12. Symmetrical system of internal communication 13. Organic organisational structure 14. Turbulent environment with activist groups	15. Programmes meet communication objectives 16. Reduces costs of regulation, pressure and litigation 17. Job satisfaction high among employees

The following sections focus on discussing these characteristics, as per their groupings respectively, taken from Grunig and Grunig (2011:3), Hon (2007:10), Grunig et al (2002:10), Grunig and Grunig (2001:313), Dozier et al (1995:3) and Grunig (1992:219). In keeping with the focus of this study, the next discussion is in terms of an interpretation of internal safety communication as a field within the domain of organisational communication.

5.2.2.1 Programme level characteristics

On communication programme level, one prescription is made for communication excellence, namely that communication programmes be *managed strategically*. Strategic management in this case refers to the communicator's role in identifying key strategic stakeholders and communicating with these stakeholders to ensure that their views and voices are represented in the strategic management of the organisation and the making of germane decisions.

Employees are regarded as the strategic stakeholders to communicate to, and it might hence seem that this characteristic is not applicable when it comes to internal safety communication. It is argued here that this is not completely the case. Although it is not necessary for the communicator to identify the overall stakeholder group, it is necessary for the communicator to differentiate (when applicable) between smaller groupings within this larger stakeholder group. Consider, for example, the difference in the internal safety communication needs of those employees working at the 'production face' in the pit of an opencast mine and those working in the administrative department in the mine's offices. In order to ensure that employees' needs are represented in the strategic management of the organisation, it is necessary to take note of these smaller groupings within the overall employee stakeholder group. If distinction is not made between the different groupings in the employee group (and their respective safety needs), the organisation could have the 'wrong' employees taking part in decisions that do not pertain to them – the administrative employees would, for example, not necessarily make the same decisions regarding safety and internal safety communication as would the employees working at the production face.

Furthermore, in the mining and construction industries of South Africa, diversity exists in terms of the employee body. These diversities are so extreme in some cases that the employee body cannot be seen as one single entity that can be communicated to from the same strategy. Taking one example: The literacy levels of employees differ from one end of the spectrum to the other, with everything in-between, as these industries employ workers from those who are completely and functionally illiterate to tertiary qualified engineers and the like (Stanton 2003:70;

Creamer 2002:2; Leon 1995:70). The challenge for strategic management of the internal safety communication function in these industries is thus to identify smaller groupings within the overall employee stakeholder group, separated by these nuances. If this is not done, the internal safety communication programme might not be completely strategically managed, as not all and/or relevant employees are included in germane decision-making and strategising.

5.2.2.2 Departmental level characteristics

This excellence characteristic revolves around the department responsible for it. The first of the seven characteristics encapsulated therein is that the department responsible for communication in the organisation needs to be *a single, integrated department*, as "only in an integrated system is it possible [...] to develop new communication programs for changing strategic publics and to move resources from outdated programs [...] to the new programs" (Grunig et al 2002:15). The department taking responsibility for this function cannot, according to the excellence theory, have management functions other than communication as its primary focus.

This is problematic in terms of organisations in the mining and construction industries, as there is hardly any organisation with a department solely dedicated to safety communication. The internal safety communication of the organisation will either fall under the jurisdiction of the safety department or within the communication department – either way not being a single, integrated department. The excellence theory advises, in such instances, that these organisations provide a mechanism for coordinating the different safety programmes run by different departments or functions. This coordinating mechanism should be able to stand as *a separate function from all other communication* (characteristic 3). This is valuable in terms of the mining and construction industries of South Africa, as it was stated that opposing systems to safety and internal safety communication are experienced in organisations therein. The most notorious opposition is the production system of the organisation, and although these systems need to function interdependently, they sometimes experience opposing goals. This characteristic of the excellence theory (as in the lexis of the systems theory) explains that, in order for internal safety communication to be seen as excellent, it needs to avow its self-assertive tendencies

and function for its own rights in the first instance, and not play a supportive role to any other function in the organisation.

Managing the differing systems with differing tendencies within the larger scope of the organisational setting falls to the dominant coalition of that organisation, and it is for this reason that the excellence theory states – as its fourth characteristic – that the internal safety communication function needs a *direct reporting relationship to the dominant coalition*. This would allow the function the opportunity to 'raise its case' in terms of its self-assertive tendencies, and to ensure that the internal safety communication needs of its employees are taken into consideration in the endeavours proposed and implemented by the dominant coalition.

This can, however, only be done if this function employs *two-way symmetrical communication* (characteristic 5) that allows it to understand the needs of employees through a representative in the dominant coalition.

In order to implement this two-way symmetrical and strategic communication programmes, the excellence theory posits that a *senior communicator should be in the management role* (characteristic 6) whose *potential for excellence* is strengthened by *knowledge of the symmetrical model* and *the managerial role* with *academic training* and *professionalism* (characteristic 7). The main problem is that a qualified and senior practitioner is seldom in charge of internal safety communication within organisations in the mining and construction industries. In such a case, the excellence theory advises that a coordinating mechanism be included to oversee the internal safety communication in the department. If this substitute (in the absence of a single, integrated safety communication department) is present, it can be said that this coordinating function in the organisation needs to be headed by a trained, professional and knowledgeable communication practitioner, as outlined in terms of the requisites indicated in characteristic seven.

The last characteristic classified under departmental level (characteristic 8) is that, within the communication function, *equal opportunity is offered to diversity*. The philosophy behind this characteristic is that the communication department of an organisation needs to be as diverse in itself as its environment. In terms of internal

safety communication, this implies that those responsible for internal safety communication in the organisation need to be representative of the diverse workforce that they serve. As explained above, this can be problematic within organisations in the mining and construction industries with its great diversity. Although the sentiment of the excellence theory is therefore valued in this instance, it is not deemed completely possible in practice in this specific context. Rather, the statement made previously is strengthened here, where it is argued that, by means of strategic management, the internal safety communication function in the organisation should ensure that all smaller diverse groups within the bigger employee stakeholder group are represented in its communication and council to the dominant coalition.

5.2.2.3 Organisational level characteristics

The next set of excellence characteristics (characteristics 9 to 14) are classified under the organisational level, as these characteristics fall under the overall functioning of the organisation and not the communication department (as the previous classification) or the communication programmes (as with the first classification). These characteristics thus frame the communication function in terms of the greater organisational system. The excellence theory puts forward that the organisational context has the power to nurture or impede excellence in organisational communication (Grunig et al 2002:17) – a vestige of the systems theory – and thus explains what the organisational context should look like to aid communication excellence.

The first characteristic under this classification is that the organisational *worldview reflects two-way symmetrical communication* (characteristic 9). What this points to is the fact that the entire organisational system should be reflective and aligned towards two-way symmetrical communication. All processes in the organisation – not only just the communication function – should ally to make two-way symmetrical communication possible, which links to the fact that the organisation should have a *participative culture* (characteristic 11). The participative organisational culture allows for an open atmosphere where teamwork, empowerment and shared decision-making are valued (see Section 5.2.1.3). If the entire organisational culture is

participative, the worldview of the organisation is aligned towards the two-way symmetricality that the communication function strives for. In terms of internal safety communication in the mining and construction industries, these characteristics hence suggest that organisations should cultivate a culture wherein employees consider the sharing of ideas to be something that is encouraged and valued in an organisation. In this way, employees will feel liberated in offering their contributions, in line with the relationship management theory, which is beneficial to both the operation of the organisation and employee morale, as employees feel validated and assured of their worth (see Section 4.3.2).

This aspect ties in with characteristics 10 and 12, where it is made clear that the *internal communication system should be symmetrical* (characteristic 12) but that this symmetricality can only be achieved if the communication function *holds power with the dominant coalition* (characteristic 10). Symmetricality is only possible if the organisational processes take the communication from the relevant stakeholder group into consideration, and this can only be achieved if the dominant coalition (which presides over and decides on organisational processes) are informed and advised in terms of stakeholder needs, attitudes and perceptions.

Counter-intuitively, the next characteristic of the excellence theory prescribes that the *organisational structure should be organic* in nature (characteristic 13), indicating that authority should be distributed throughout the organisational hierarchy, and not centralised at the top. This links to the participative culture in the organisation, as organic organisational structures promote flexibility and encourage stakeholders to initiate change in the organisation. Many organisations in the mining and construction industries are mechanistic, where strict hierarchies are in place. These hierarchies are seen to be necessary due to the intense diversity of the population. Communication in all its forms thus has to be communicated through hierarchical levels due to illiteracy, different language usage and the like in the organisation (Greeff 2010:159).

Change initiated from stakeholders upwards in the organisation ties in with the last characteristic under the organisational level classification, which states that organisations should ideally hold *turbulent environments with activist groups*

(characteristic 14). Although the initial response might be that this is an unexpected driving force, the fact is that activist groups (see Section 1.2.10 for a definition) in organisations put pressure on these organisations, which creates turbulent and complex environments. It is due to the fact that communication has to adapt to these turbulent environments that they are excelled towards making use of strategic and sophisticated two-way communication. As mentioned before, the mining and construction industries of South Africa are beset with activist groups, especially when it comes to employee safety in the organisation (Macharia 2008; Rensburg 2003:154). It is argued that this is beneficial, as internal safety communication is improved by such activism once it is reacted to properly with strategic and sophisticated two-way communication.

5.2.2.4 Effects of characteristics

If the 14 characteristics of excellence discussed above are heeded, the excellence theory predicts three effects in terms of the communication in the organisation. In Table 5.1, these effects are indicated as follows: firstly, that the communication *programmes* will *meet communication objectives* set, as these, secondly, *reduce costs of regulation, pressure and litigation* and thirdly, create *job satisfaction among employees*. In these effects expressed by the excellence theory, vestiges of both the stakeholder and relationship management theory are seen. The stakeholder theory posits that employees are in a position of excelled value contribution once their place and needs in the organisation are validated and taken into consideration (Freeman et al 2010:6; Angle et al 2008:163; Jones et al 2006:33; Freeman 2000:172). The excellence theory proposes that this be done by means of two-way symmetrical communication, with both theories holding forth that this will not only result in the setting of better and more accurate objectives, but that employees will also contribute greater and therefore excel the attainment of goals and objectives.

The relationship management theory, alongside this, states that if the organisation creates and maintains positive relationships with stakeholder groups, it will keep stakeholders from engaging or participating in negative behaviours such as strikes, protests, litigation or even negative publicity (Ledingham 2003:183; Grunig & Hon 1999:10). The excellence theory proposes, yet again, that excellent relationships are

a result of excellent communication and that this excellence will not only hamper negative activities or perceptions, but will also nurture positive ones with ensuing high levels of job satisfaction among employees. To complete the process, the stakeholder theory states that when employees experience satisfaction, their value contribution (and by extension the attainment of goals) will be heightened.

As this theory concerns itself with the organisational communication process and its management, and not (to its full extent) with the effect of this communication on the recipients in the organisation, a further progression in terms of internal organisational communication literature was needed (as explained in Chapter 3). This created the need for the development of a communication satisfaction audit, as discussed in the next section.

5.3 COMMUNICATION SATISFACTION

Communication satisfaction is a construct that can be traced back to the late 1960s to the work of Likert (1967), who reasons that communication is an intervening variable between job satisfaction on the one hand and the realisation of organisational goals on the other (Battey 2010:13; Likert 1967). This aspect ties in with what has been seen from the stakeholder, relationship and excellence theories, although Likert's (1967) deduction or supposition predates these theories somewhat. The stakeholder, relationship and excellence theories hold forth that an organisation that successfully communicates to its stakeholders is an organisation that is in a position to build satisfactory relationships with these stakeholders, enabling the organisation to set goals that are supported by these stakeholders, which eventually leads to the attainment of these goals. Seeing these theories in a holistic way such as this, elucidates the deduction made by Likert (1967).

When taking the above argument to employees as a specific stakeholder group, it can be argued that job satisfaction is almost directly proportional to the productivity of employees, as this is what excels the attainment of organisational goals. Hopper (2009:13) strengthens this claim by stating that employees who are well informed are more likely to understand their "job requirements and expectations of their contribution to an organisation's success" and then be pleased with their jobs at the

attainment thereof. Gray and Laidlaw (2004:427) furthermore state that where employee communication satisfaction is low, “reduced employee commitment, greater absenteeism, increased industrial unrest, higher employee turnover, and reduced productivity” can be expected. This supports the importance of organisations understanding communication satisfaction, and being able to gauge the satisfaction of employees in the organisation.

The problem with understanding the construct of communication satisfaction, however, from its conceptualisation (as from Likert (1967)) to the late 1970s, is that this construct was mostly seen as unidimensional – being a general feeling that employees have towards their total communication environment (Zwijze-Koning & De Jong 2007:263; Rubin et al 2004:114; Downs & Hazen 1977:64). In 1977, the theorists Cal W. Downs and Michael D. Hazen set out to explore the relationship between communication and job satisfaction in depth, and through this came to the conclusion that communication satisfaction is rather a multidimensional construct, as individuals are not either satisfied or dissatisfied with communication, but hold different levels of satisfaction. Downs and Hazen (1977) suggest that this level of satisfaction is gauged by eight dimensions of satisfaction that make the precise measurement and understanding of this concept possible (Gray & Laidlaw 2004:429; Rubin et al 2004:114; Downs & Hazen 1977:64).

Within this multidimensional nature of the construct, it is concisely defined as the socio-emotional outcome experienced by an employee of an organisation resulting from the interaction that this employee has with the various aspects of communication in an organisation (Battey 2010:13; Tsai & Chuang 2009:826; Carrière, Bourque & Bonaccio 2007:61). This socio-emotional outcome (the degree of satisfaction) is influenced by the communication climate, relationship to superiors, organisational integration, media quality, horizontal and informal communication, the organisational perspective, relationship with subordinates and personal feedback (Battey 2010:13; Tsai & Chuang 2009:826; Carrière et al 2007:61; Rubin et al 2004:114; Downs & Hazen 1977:64). These constitute the dimensions of organisational communication satisfaction.

5.3.1 The dimensions of communication satisfaction

The dimensions of communication satisfaction was theorised as a result of quantitative and qualitative investigations by Downs and Hazen (1977). The quantitative investigation yielded 10 factors from the exploratory factor analysis, which were condensed into the eight dimensions describing and concretising organisational communication satisfaction (the factors were also later re-proven in other works – see for example Clampitt and Downs (1993), Downs (1988) and Crino and White (1981)). These eight dimensions (or factors, as they are referred to in some literature as a result of their origin) are subsequently discussed in the context of this study. This discussion will be from Downs and Hazen (1977:66) – as seminal work – and then from Battey (2010:13), Clampitt (2009:58), Hopper (2009:13), Tsai and Chuang (2009:826), Carrière et al (2007:61) Downs and Adrian (2004:115) and Rubin et al (2004:115) as auxiliary and supplementing works.

5.3.1.1 Communication climate

Communication climate, in its general encapsulation, refers to the perceptions that employees hold with regard to the quality of the mutual relations and the communication (events, activities and behaviours) within the internal environment of an organisation, which inspires inferences of the predispositions held by the organisation (Hemmert 2009:14; Bartels, Pruyn, De Jong & Joustra 2007:117; Eisenberg & Riley 2001:307). The communication climate dimension of satisfaction, in terms of this discussion specifically, however, tends to reflect on employees' satisfaction in terms of the general aspects of organisational communication – the general perception that the communication that the organisation creates is thus reflective of the organisation's communication climate. Specialising the above to the purposes of this study Lin, Tang, Miao, Wang and Wang (2008:1038) define *safety climate* as a temporal state that is subject to the perception commonalities shared by individuals in the organisation. They also explain that safety climate "emphasizes how employees perceive the importance of safety in their organisations".

Safety communication climate is therefore defined in the context of this study as the temporal state characterised by the perceptions that employees hold with regard to

the quality of internal safety communication, which emphasises the importance and place of safety in an organisation.

Mohamed (2002:376) states that various other elements reflect on the safety climate of organisations within the construction industry. These are summarised in the model (Figure 5.4) below.

Figure 5.4: Factors influencing safety climate (adapted from Mohamed 2002:376)

From this model, Mohamed (2002:376) argues that safety requires commitment from all levels in the organisation to ensure that employees perceive safety as something that the organisation as a whole is committed to. The safety rules and procedures of the organisation have to be enforced in the organisation and the entire environment of the organisation needs to be supportive of safety endeavours, considering the personal risk appreciation of these individuals and the way that work hazards are appraised by them. To enhance a safety climate, employees should also feel confident in their own as well as their co-workers' safety competence. Lastly,

according to Mohamed (2002:376), work pressure, or production pressure as it is termed in this study, also impacts on safety climate. Employees will perceive the importance of safety in the organisation as measured alongside the pressures of excelling production outputs. If the perception is that production is a greater pressure than safety, the climate will be worse off for it.

From the above, it is clear that employees within organisations in the mining and construction industries will be more satisfied with a climate in support of safety within the organisation. Internal safety "communication in the organization [should] motivate and stimulate workers to meet organizational goals" – in this context safety goals (Downs & Hazen 1977:66).

5.3.1.2 Organisational integration

Organisational integration has a binary directive, where it firstly refers to personal integration into the organisation and secondly to cross-functional integration.

In terms of *personal* integration, employees should receive communication about their work and all that goes along with it, such as policies and benefits, together with personal news about their colleagues and the endeavours of all other departments as well as the organisation as a whole. This will ensure that employees feel more integrated into the organisation. A significant factor to take note of in terms of this personal integration is the vertical internal communication of the organisation, specifically from management to employees. In order to truly integrate employees on a personal level, communication from management has to reflect the 'big picture' of the organisation's operations, as well as how each employee's work fits into this 'big picture' or general operations. Management is consequently expected to communicate to employees how their work contributes to the organisation in order to have these employees integrated into it and to (as a remnant of the relationship management theory) give positive assurances of their worth to the organisation.

Furthermore, integration into the organisation is also needed on the cross-sectional level, where all departments, groups and specialisations within organisations should work interactively to enhance organisational safety goals, even if these departments

are not directly responsible for safety in the organisation. In order to facilitate this, communication mechanisms should be put in place to aid this integration.

Mathis (2008:46) echoes the importance of integration when it is stated that truly successful safety efforts are those that are part of all activities that the organisation undertakes and that "the more apart safety efforts are from day-to-day functions [of an organisation], the less successful they are". Integration is therefore the key to ensuring the success of safety, but this can only be done by means of meaningful and two-way communication between the functions.

5.3.1.3 Media quality

Media quality focuses on communication messages as they travel through several channels of internal organisational communication to reach employees at every level of the organisation. It is important to note how employees *perceive* these communication media in terms of their helpfulness, clarity, quality and quantity.

Previous research concerned with choice of communication media or communication channels in organisations focused on the factors that affect which communication media are chosen in organisations and how effective these choices are likely to be. In this, the factors studied predominantly focused on either the channel or media's capability of conveying task-relevant data or its capability of relaying symbolic meaning (Miller 2006:294; Sitkin, Sutcliffe & Barrios-Choplin 1992:563) (see, for example, Walther (2011) Robert and Dennis (2005), Carlson and Zmud (1999), Kraut and Attewell (1997), Crick and Dodge (1994), Fulk, Steinfield, Schmitz and Power (1987), Daft and Lengel (1986).

In opposition, the dual capacity model of media choice in organisations posits that "the communication of information necessarily involves both data and meaning" conveyance (Sitkin et al 1992:564). In this, the position is taken that all internal organisational communication media inherently possess the ability to carry two kinds of messages: firstly, the media have a *data-carrying capacity*, which relates to the use of the media to convey task-relevant data efficiently and secondly, media also have a *symbol-carrying capacity* (Miller 2006:294; Stikin et al 1992:563). The

symbol-carrying capacity of the communication media mainly manifests in two ways (Miller 2006:294): Firstly, the media are able to convey the "core values and assumptions that constitute the organization's culture" and secondly, the media can attain the status of a symbol away from the actual message that is being transmitted. In addition, this model reflects that communication media choice in an organisation should be reflective of the function of normative and task contingencies and the capabilities of the communicator, that of the organisation as well as of the recipient of the communication. It also depicts the indirect and direct role of communication capability constraints on the choice of channel to be used (Détienne, Cahour & Lefebvre 2010:627; Timmerman & Madhavapeddi 2008:18; Stikin et al 1992:576). These factors are depicted in Figure 5.5 below, showing the determinants that could influence the choice of communication media in order to potentially amount to employee communication satisfaction. Therefore, due to the appropriateness of all of the factors of this model in explaining and exploring communication media usage for internal organisational communication (as for the specific focus of this study), it is used to discuss media quality satisfaction.

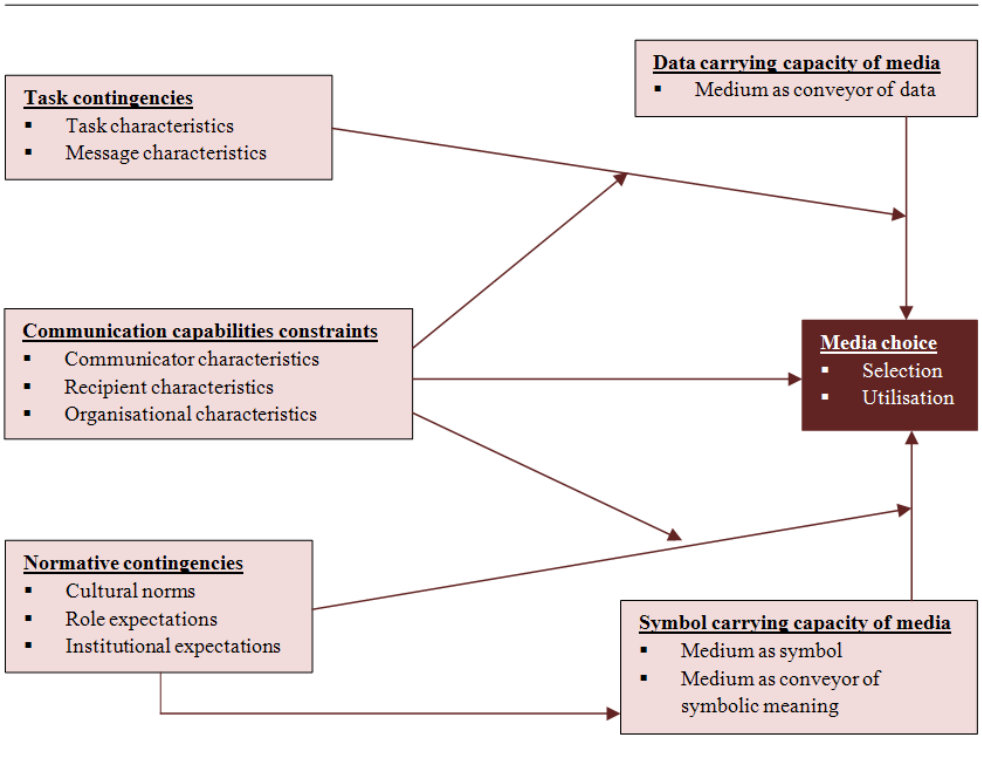


Figure 5.5: Determinants of media choice as adapted from Stikin et al (1992:576)

The aspects depicted above are tersely discussed below based on the research of Détienne et al (2010:627), Timmerman and Madhavapeddi (2008:18), Miller (2006:294) and Stikin et al (1992:576), and are applied to the focus of this study.

- **Task contingency factors**

Task contingency factors are divided into two groups: task characteristics and message characteristics. *Task characteristics* comprise three elements in the choice of communication media: task uncertainty, analysability and urgency. If task uncertainty and analysability are present, an effective and efficient choice of communication media would be a richer media. As from Daft and Lengel's (1986) media richness model, rich media implies a communication media with, firstly, a capability of instant feedback, which secondly makes use of multiple cues, thirdly makes use of natural language and lastly has a personal focus (for example face-to-face communication). When a communication medium has none or few of the above, it is seen as lean (for example a flyer or poster). When urgency comes into play in task-related communication, the "most readily accessible, easily used, and rapid means for conveying" information should be used (Stikin et al 1992:578). In internal safety communication, urgency could be a matter of life and death. The appropriate choice of communication media by organisations in the mining and construction industries could therefore save the lives of employees.

In terms of the *message characteristics*, five elements are identified: complexity, clarity, volume, valence and relevance. Complexity suggests that the communication media should equal the requirements of the message being conveyed. For more complex safety tasks, media allowing for more complete and lengthier messages should be chosen. For message clarity, lean media are sufficient for concrete or specific details, but richer media should be used for more intricate messages. The communication media used by organisations in the mining and construction industries should therefore allow for the conveyance of conflicting data and/or diverse meanings, constantly found in internal safety communication messages.

The volume of data that can be transmitted through a communication media should also be considered when the choice of communication media is made. As with

complexity, the communication media should equal the requirements of the message being conveyed. For vast amounts of textual and numerical data, for example, making use of only oral communication will not be sufficient.

Subsequent to this, valence of the message being conveyed refers to whether the message is bad news or good news. Research suggests that bad news is perceived more clearly by the recipient than good news; therefore, the "soft recess of less clear communication" should be chosen when communicating bad news (Stikin et al 1992:579). In terms of internal safety communication, which holds the importance of distinguishing between life and death, injury or safety, clear message conveyance should be seen as priority; therefore, this specific aspect is not relevant to this study.

Lastly, the message relevance to the recipient has an influence on the choice of media within the organisation. The more relevant a message is to a recipient, the more this recipient's attitude will be influenced by the facts communicated to him/her. As capacity to relay facts is a feature of a medium's data-carrying capacity, it is suggested that the data-carrying capacity of the media choice should be strengthened. For example: A safety message regarding machine safety regulations would be very relevant to machine operators and communication media used to communicate this message to the machine operators should therefore be chosen as a result of its data-carrying capacity.

- **Communication capability constraints**

According to Stikin et al (1992:578), "[t]here are a number of quite significant constraints imposed by characteristics of the communicator, the recipient, and the organization that limit the media selector's range of practical options" of communication media. This is salient in the South African context, as constraints of diversity, illiteracy and so forth should be taken into consideration when this decision is made (Naudé & Le Roux, 2005:3; Rensburg, 2003:159) (refer to Chapter 2). These constraints include the following: communicator characteristics, recipient characteristics and organisational characteristics.

Communicator characteristics that influence media choice include the communicator's flexibility, competence, access, comfort and familiarity with communication media. Communicators will therefore opt to use more frequently those communication media that they have easy access to, that they are comfortable in using, are familiar with and that they are competent in. Communicators who are more flexible in their media choice are perceived as more effective, as the choice of channel does not only rest with their own confidence to manage it, but also with the effectiveness of the channel to convey the message.

Correspondingly, the knowledge and skills levels of the recipients are critically important in determining whether the communication message is received and understood. The utilisation of different media requires different basic *recipient characteristics*. Therefore, it is important to keep it in mind when the decisions regarding communication media are made. The factors of recipient characteristics include educational level, physical capabilities, familiarity with the communication media, interaction history with the communicator and knowledge of the communication context.

This is indicative of how organisations within the mining and construction industries cannot choose communication media that require intense reading when, for example, communicating to illiterate employees as recipients. Still, the characteristics of the recipients can be used to the advantage of message conveyance; for example, when the interaction history with the communicator as a factor is used, it can be seen how safety messages from the construction or mine manager as opposed to a supervisor can add substance and weight to the issue being communicated.

Organisational characteristics also play a significant role in the choice of communication media, specifically the experience, structure, resources, time availability and current needs of the organisation. In any production-driven organisation (such as those in the mining and construction industries), time constraints can prove to be an influential factor in the choice of communication media. The time spent on internal safety communication as opposed to other forms of communication, such as production information communication, will influence the

channel used for this communication. Likewise, the current needs of the organisation might not always hold internal safety communication as most important when production deadlines are looming. This can be intensified by the physical structure of the organisation, which might not be accommodating to many forms of communication as it is – for example a construction site where very few employees have access to communication media facilities such as telephones and computers. All of these factors influence the choice of communication media as well as their effectiveness, including the satisfaction that employees experience at the receiving end.

- **Normative contingency factors**

Normative contingency factors influence the media's symbol-carrying capacity, due to the fact that media, as carriers of meaning, rely on normative definitions of what is meaningful. Normative factors of influence include cultural norms, role expectations and institutional expectations.

In terms of *cultural norms*, the setting of the organisation decides the manner in which communication media as symbols are interpreted or how meaning is assigned to them. In addition to this, the manner in which media are *interpreted* from one organisational setting to the next may differ greatly. In this it is seen how the organisational culture influences the choice of communication media. If it is routine for subordinates to be contacted through one kind of communication medium in an organisation, the use of another channel would assign greater meaning to the message. For example, if subordinates never meet with management face to face, this kind of meeting request might assign the meaning of importance to the message – simply through the use of the channel. Likewise, *role expectations* within an organisation influence the choice of communication media owing to the view of what is appropriate in the organisation in specific roles. Consider the fact that "leaders can convey compassion by using more personalized media, whereas the same approach might be viewed as presumptuous on the part of a subordinate communicating with a high-level organizational executive" (Stikin et al 1992:586).

Institutional expectations see organisations develop a standardised manner and way of communicating by harmonising the expectations and requirements of various external constituencies. “By adopting communication methods that are acceptable to key external groups, the organization can maintain an institutional image of legitimacy that could be essential for continued success” (Stikin et al 1992:586). This factor is significant for any organisation in the mining and construction industries of South Africa, as legislation regarding health and safety is enforced earnestly (Macharia 2008). According to the dual capacity model, this influences the manner in which these organisations will communicate with their employees – for example the use of formalised communication media, which allows the organisation to keep record of internal safety communication (rather than informal channels) should governing bodies ever need proof of any kind.

The model discussed above provides a guide for choosing channels through which to convey safety messages in organisations in order to better the chances that employees will be satisfied with the communication media used to convey messages. Communication in the organisation does, however, not only come from formalised and structured forms of communication, as informal horizontal communication also plays a role.

5.3.1.4 Informal horizontal communication

Informal horizontal communication, in terms of communication satisfaction, refers to the communication between co-workers on the same level, which is not necessarily task-related or controlled by the organisation. This dimension of communication satisfaction concerns how active the grapevine in an organisation is, including the amount and flow of this informal information.

In terms of internal safety communication, this dimension is not always of the utmost suitability, as it is not the ideal method for this kind of communication. The reason for this is that formal communication media are mostly used for safety messages due to the fact that organisations have to be able to account for these messages (to the Department of Mineral Resources or the Department of Labour), which is hard or

impossible to do if it is communicated through informal channels, such as the grapevine.

Another, if not the more important, factor contributing to this fact is that organisations should, as far as possible, try to ensure that information given regarding safety is accurate and trustworthy – yet again not something the grapevine is known for. Therefore, although informal horizontal communication via the grapevine is something that every healthy organisation should encourage (and not something that it will ever be able to stop), it is not deemed the most suitable way to communicate safety information. If it is utilised in this manner, stringent governing procedures regarding this channel should be implemented (to ensure accurateness of messages and the like) – something that is not easily accomplished.

5.3.1.5 Organisational perspective

Organisational perspective is defined by Downs et al (2004:115) as the "information given out concerning the corporation and its goals and performance. It also encompasses knowledge about external events such as new government policies, which impact on the organisation". Organisations have to communicate their goals to employees in order to allow them to align themselves to these goals and their attainment. Based on the stakeholder and relationship theories discussed earlier, it is emphasised that employees should be involved in the planning and strategising phases of goal-setting and should not only be at the receiving end of information about goals. Still, having said this, employees need more information than simply 'what they are supposed to do' (the goals set for them and the organisation). Communication regarding the performance based on these goals is also important and employees need to know how the organisation is performing in terms of its goals to gauge their own performance thereby.

In terms of the focus of this study, this entails that organisations should communicate the safety goals of the organisation to employees (whether or not they had a hand in the setting of these goals) and how the organisation is faring in terms of these goals. In addition, the external factors that impact on safety in organisations also need to be communicated to employees. Employees have to be made aware of aspects that fall

outside the jurisdiction of the organisation, yet impact on the endeavours and practice of the organisation. In terms of safety in organisations in the mining and construction industries, this would, for example, include the conditions of the Mine Health and Safety Act 1996 (No. 29 of 1996) and the Occupational Health and Safety Act (No. 85 of 1993), which drive safety and safety goals in these industries.

5.3.1.6 Superior and subordinate communication

The next two dimensions of communication satisfaction look at the communication flow between superiors and subordinates. Both these dimensions focus on upward and downward communication on more personal levels (meaning not with the organisation as such, but rather in its personified state). In terms of superior communication, this dimension focuses on the satisfaction of employees with superiors and their communication skills. For employees to be satisfied with their superiors and these superiors' communication skills, the communication satisfaction dimension states that superiors should truly listen to communication sent upwards from subordinates. It is only once subordinates feel that their communication is heeded in some way that they will be satisfied with the communication.

Superiors should also be in a position to offer guidance to subordinates with regard to solving job-related problems if the subordinates' communication needs are to be satisfied. This aspect is of greater importance in terms of safety in organisations in the mining and construction industries, as this dimension holds forth that superiors should be able to offer subordinates guidance in terms of safe work procedures if the internal safety communication needs of employees are to be satisfied. What this ultimately means is that internal safety communication should be of such a standard in organisations as to allow competence in terms of the content from supervisors. Internal safety communication in organisations should therefore leave supervisors informed and knowledgeable individuals in order to experience a dimension of communication satisfaction in their organisations.

With respect to communication with subordinates, this dimension looks at the extent to which subordinates are responsive to communication from superiors, and the extent to which they feel responsible for initiating upward communication. In order for

superiors in the organisation to experience communication satisfaction, subordinates should be responsive to (albeit non-compliant with) downward communication and a culture should be created where subordinates feel responsible and apt to the initiating of upward communication. If this exchange is present in an organisation, communication satisfaction could be experienced.

5.3.1.7 Personal feedback

The last dimension of communication satisfaction is personal feedback, where subordinates should receive accurate (personalised) information regarding their performance in the organisation, as the perimeters by which they are judged are clear. This dimension (which directly links to organisational perspective) is important for communication satisfaction as "it is important for employees to be informed of their progression within their job and how they are being appraised" (Hopper 2009:14).

In terms of safety and safety performance of individuals in organisations within the mining and construction industries of South Africa, it is therefore argued that employees always need to be aware of their safety performance due to the fact that poor safety performance could lead to injury or death of the employees as well as those around them. Employees, unaware of how they fare in terms of safety, will not be as content with internal safety communication in the organisation, as this information is important for employees' personal wellbeing. It is therefore important for organisations within the mining and construction industries to build in personal feedback and appraisal systems in their safety structures to allow this dimension to appear in internal safety communication satisfaction.

5.4 CONCLUSION

The literature review chapters for this thesis were formulated around a chronological development of theories to describe and concretise internal organisational communication. This progression started from the systems theory and systems thinking, which gave rise to the idea of interrelatedness, to the stakeholder theory, which took the concept of interrelatedness to stakeholder management in the

organisation. Based on the relationship management theory, it was argued that stakeholders should be managed by means of a relationship facilitated by communication, which the excellence theory elucidates. Based on the view of internal organisational communication as a function in the organisation (as from the systems theory and stakeholder theory) as well as the manner in which it should be devised and formulated (from the stakeholder, relationship and excellence theories), the last theoretical progression was to look at the communication process from the recipient's perspective, as based on the communication satisfaction literature.

In this manner, the literature review chapters of the thesis discussed the aspect of internal safety communication from all three vantage points of the process, the perception as well as the critical incidents perspectives, as was suggested for an exhaustive discussion (cf. Schmid, Floyd & Wooldridge 2010:143; Bycio & Allen 2004:87; Gray & Laidlaw 2004:427; Hunt, Tourish & Hargie 2000:120). The meta-theory of this research as well as the stakeholder theory explains this aspect best in terms of this research, where the communication situation and its relation to organisational work practice is explained in terms of, inter alia, interrelatedness and value contribution. This was followed by the process perspective, which concerns itself with the interaction of communication variables, as explained here by means of the relationship management theory as well as the excellence theory, where the variables of communication as well as their interaction with, and outcomes as a result of, one another were contextualised in terms of the focus of this study. Lastly, the perception perspective, which is based on the premise that employees' perceptions regarding an organisation will change their behaviour towards the organisation and consequently the success of the organisation, was contextualised in terms of the communication satisfaction literature, which focuses on the perceptions held by employees regarding internal organisational communication.

This theoretical underpinning in the literature review chapters and contextualisation chapter preceding them set the scene for the next chapter, which clarifies and discusses the methodology of the empirical part of this study.

CHAPTER 6
RESEARCH ONTOLOGY, EPISTEMOLOGY AND METHODOLOGIES

6.1 INTRODUCTION

The previous three chapters of this thesis presented the theoretical underpinning of this study by tracing the theories and general literature that shaped the current academic and practical understanding of internal organisational communication. This chapter discusses the manner in which this understanding will be built on by delineating the methodologies that dictated the research.

More specifically, this chapter focuses on discussing the design and execution of the empirical part of this study by outlining the two major phases or resultant products thereof, namely the model for internal safety communication for the context of the South African mining and construction industries and the quantitative questionnaire as measuring instrument for its evaluation.

In order to do this, and as a result of the literature review of this study, the first part of this chapter discusses the general epistemological, ontological and methodological underpinnings of the research, referring to and encapsulating both phases and products. The second part of the research focuses on the research methodology followed in the construction of the model as well as the measuring instrument, looking at the research design, time dimension, data-gathering methods, sampling methods, research population, statistical methods and research ethics.

6.2 ONTOLOGY, EPISTEMOLOGY AND METHODOLOGY

Terre Blanche and Durrheim (2006:6) simplistically distinguish *ontology* as the "nature of reality that is to be studied, and what can be known about it". They define *epistemology* as "the nature of the relationship between the researcher (knower) and what can be known" and state that *methodology* "specifies how researchers may go

about practically studying whatever they believe can be known". These aspects are depicted graphically, for the purposes of this study, in Figure 6.1.

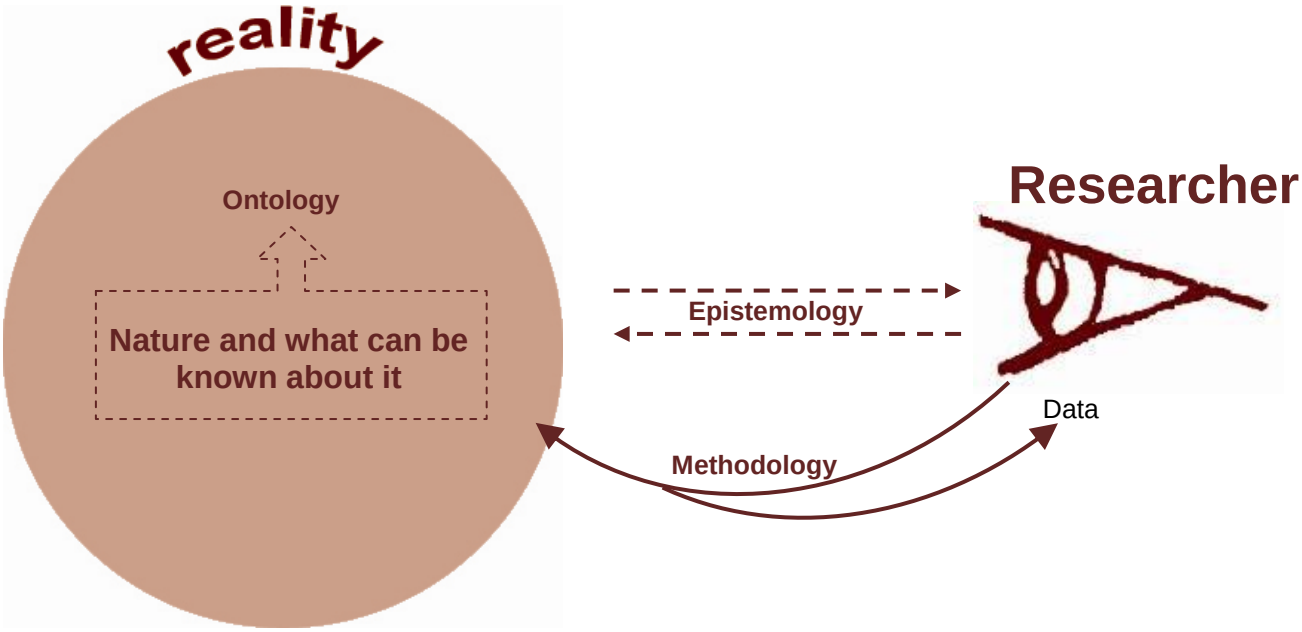


Figure 6.1: Ontology, epistemology and methodology

Although this research considers the appropriateness or relevance of all other ontological or epistemological approaches and that no approach can be pure in its effecting, it is primarily seated within an interpretivistic ontological and epistemological stance or paradigm. The central assumption of the *interpretivistic paradigm* is that there are multiple realities that exist simultaneously and around the same phenomenon in the sphere of reality. This is owed to the fact that reality is an internal and subjective experience, conjured or constructed by an individual (Terre Blanche & Durrheim 2006:6; Merringan & Huston 2004:7). This means that reality consists of an individual's subjective experience and as such, the onus of interpretivistic ontological and epistemological research is on how people construct their meanings. This realisation specifically in the context of the organisational setting considers communication as the vehicle by which employees (as internal stakeholder group) construct meaning and assign importance to organisational aspects (Walsham 2006:320; Terre Blanche & Durrheim 2006:6; Merringan & Huston 2004:7).

According to Van der Walt (2006:358), from an interpretivistic view, communication aids in the construction of meaning because “people actively interpret their experience by assigning meaning to the information they are exposed to”. From this, inferences, such as those mentioned in the literature review chapters, can be made; for example, the inference that when employees receive more production information than safety information, the perceived reality is that safety is less important than production in that particular organisation.

The importance of the context of the research phenomenon (in this case, the context of the South African mining and construction industries) is also a remnant of the interpretivistic paradigm. This is due to the fact that this paradigm is concerned with understanding the experience of individuals (in this case employees) working and functioning in a specific organisation and context (which aids in the construction of their reality) (Van der Walt 2006:343; Merringan & Huston 2004:7).

The point of departure for the 'reality’ (ontology) explored in this research as well as its understanding and reporting (epistemology) is that employees in the mining and construction industries of South Africa assign meaning to safety and internal safety communication in an organisation, based on their experience and their interpretation of that experience in the organisation, aided by the communication that they receive. This experience or perception of safety cannot be predicted, as each person assigns his/her individual meaning to it, yet communication is regarded by interpretivists as “the process through which meaning is shared and associations created in the formation of [...] action, [...] interpersonal transaction [...] and behaviour” (Van der Walt 2006:359), which inherently implies that the interpretation of an aspect within the organisational setting can be gauged by the management of the communication therein. It is hence argued that the interpretation, perception and behaviour towards safety in organisations in the mining and construction industries of South Africa can be influenced by internal safety communication.

The main influence of the interpretivistic paradigm on the epistemology of this research specifically is that the interpretative nature of the researcher is understood to be inherent, and subjectivity is therefore admitted. This subjectivity is counterbalanced in this research through a scientific epistemological method (which

is more often related to the positivist paradigm), but with the paradigmatic understanding yielded from the interpretivistic ontological vantage point.

According to Helmstadter's (1964; 1970) epistemological methods pyramid, the scientific epistemological method is the most superlative and rigorous approach to be taken in research. In order to ascertain whether or not this approach is being implemented, four characteristics of the scientific epistemological method are proposed that directly correspond to the methods followed in the researching of specific phenomena (Stewart 2002:4). These characteristics are not *sufficient* in itself to ascertain whether or not this method is being implemented, but they are *necessary*. Based on research by Stewart (2002:4) and Helmstadter (1970), these characteristics are subsequently weighed up against this research.

- Firstly, science is *problem-orientated*, which implies that all scientific enquiry has at its onset a problem of some degree of abstraction in need of resolution through scientific investigation or research. This research has at its core internal safety communication within the mining and construction industries, specifically how it should be directed, managed and evaluated. Investigations and research are therefore aimed at resolving this problem from different perspectives.

- Secondly, scientific epistemological methodologies are *reflexive and self-critiquing*, meaning that scientific methodology will to some degree be reflexive and critical of the existing work in the scientific body of literature regarding the field or theme relevant to the research. In this research, this was done through an extensive review of literature on internal organisational communication, which culminated in the construction of the theoretical model.

- Thirdly, scientific epistemological methodologies are also *empirical* in nature, pointing to the fact that the phenomena under investigation have to be observable in the natural sphere of reality, and the scientific methodology is strengthened once the phenomena are empirically *tested* in said reality as well. In this study, internal safety communication was indeed tested empirically at two organisations within the mining and construction industries.

- Lastly, scientific epistemological methodologies are *evolutionary* in nature. Scientific methodologies try to evolve the understanding of phenomena that they keep under investigation to grow the body of knowledge. In the absence of guidelines, a model or guiding principles for the communication and evaluation of safety information, this research adheres to this principle by the fact that it proposes a model as well as a measuring instrument by way of a quantitative questionnaire aimed at its evaluation.

In the above discussion, the link that exists between the epistemological approach to the study and the methodologies employed is indicated. This epistemological stance of the researcher filtered and directed the methodologies employed in the researching of the reality under investigation (Terre Blanche & Durrheim 2006:6; Merringan & Huston 2004:7).

6.3 RESEARCH METHODOLOGY

The research methodology is influenced and directed by the ontological and epistemological stance taken in the research, but also instructed by the specific research questions of a study, which specify and demarcate the exact phenomenon under investigation (Walliman 2011:106; Maxwell & Satake 2006:51).

This study's research questions, as discussed in Chapter 1, are:

Research question one (RQ 1):

What are the current proposed methods, models or theory for internal organisational communication according to the literature?

Research question two (RQ 2):

What factors impact on internal organisational communication within the South African mining and construction industries?

Research question three (RQ 3):

What are the unique characteristics of internal safety communication?

Research question four (RQ 4):

From the literature, what methods exist for the measurement of internal organisational communication?

Research question five (RQ 5):

What factors impact on the measurement of internal safety communication within the South African mining and construction industries?

Research question six (RQ 6):

How should the current internal organisational communication literature be adapted to the communication of safety information within the South African mining and construction industries?

Research question seven (RQ 7):

How should current measuring instruments be adapted or developed to measure internal safety communication within the South African mining and construction industries?

Table 6.1 below presents an overview of the discussion of the research methodology and indicates how the research questions were addressed and the direction it took in terms of the evolution of the body of knowledge.

Table 6.1: Methodologies per research question

Research question	Research method	Research design	Research product / output	Research phase	Chapters
RQ 1:	Literature review	Qualitative	Model for internal safety communication	Phase one	Chapters 3, 4, 5 and 7
RQ 2:	Literature review Interviews Focus group discussions	Qualitative	Model for internal safety communication Questionnaire for internal safety communication evaluation	Phase one and phase two	Chapters 2, 7 and 8
RQ 3:	Literature review Interviews Focus group discussions	Qualitative	Model for internal safety communication Questionnaire for internal safety communication evaluation	Phase one and phase two	Chapters 2, 7 and 8
RQ 4:	Literature review	Qualitative	Questionnaire for internal safety communication evaluation	Phase two	Chapters 2, 3, 4, 5 and 8
RQ 5:	Literature review Interviews Focus group discussions Questionnaires	Qualitative Quantitative	Model for internal safety communication Questionnaire for internal safety communication evaluation	Phase one and phase two	Chapters 2, 7 and 8
RQ 6:	Literature review Interviews Focus group discussions Questionnaires	Qualitative Quantitative	Model for internal safety communication	Phase one	Chapter 7
RQ 7:	Literature review Interviews Focus group discussions Questionnaires	Qualitative Quantitative	Questionnaire for internal safety communication evaluation	Phase two	Chapter 8

As indicated in the above table and preceding discussions, the research for this study was divided into two phases. The first phase was to develop a model for the communication of safety information, while the second phase was to propose a measuring instrument in a quantitative questionnaire for the evaluation of internal safety communication. Both these outputs were tailored and specific to the mining and construction industries of South Africa.

Although the research questions for this study were cumulatively addressed by both phases, these phases still differ in terms of their design, methodology and eventual output. Each of these phases is therefore discussed respectively.

6.3.1 Phase 1: Model for internal safety communication

The purpose of the first phase of this research was to propose a model for internal safety communication for the mining and construction industries of South Africa. This phase was a significant starting point that addresses the lack of clear and concise guidelines, procedures or recommendations for internal safety communication within the mining and construction industries of South Africa. Although some studies indicate the significance, workings or parts of communication in terms of safety in the mining and construction industries (see for example Greeff (2011), Greeff (2010), Judd, Guo, Wiedenbeck and Ray (2006), Mohamed (2002) or Hofmann and Stetzer (1998)), the literature is still void of an all-encompassing, inclusive and comprehensive model to guide internal safety communication in these industries.

The research towards the conceptualisation of this model therefore served a binary purpose in this research: to contribute and forward the theory of internal organisational communication and to present a sound theoretical basis for the forwarding and construction of a measuring instrument in the form of a quantitative questionnaire, which made up the second phase of the research.

The main methodology employed towards the conceptualisation of this model was a review of the relevant literature. In order to supplement this literature review, use was made of in-depth, semi-structured interviews and focus group discussions. These methods are discussed in the next section.

6.3.1.1 Data-gathering and interpretation methods

As stated above, the three data-gathering methods employed for phase one of the research were a *review of the literature*, *in-depth interviews* and *focus group discussions*. These methods are qualitative in nature, with qualitative research basically defined by its methods to produce descriptive data, interpreted by means of an inductive reasoning technique (Keyton 2006:7; Stewart 2002:132). In all three methods, inferences could be made from the bulk of descriptive data (the literature, interviews and focus group discussion transcriptions) applicable and connected to the research questions under investigation. In this way, an inductive reasoning pattern or method was used for each one (Johnson-Laird 2010:8; Rips 2008:187).

Firstly, the *review of the literature* was chronicled from the emergence of the systems theory, which was considered as the meta-theory for this research. This theory was chosen because it concretises the interrelated nature of systems. In terms of the organisational domain, this theory therefore outlines both the place and nature of communication in an organisation, as well as its importance. In addition to this, this theory gave rise to various theories of internal organisational communication, not in terms of the baseline general communication models (as could be found, for example, in the works of Gerbner (1956), Troldahl (1966) or Fulk et al (1987)), but rather in terms of specialised understandings of the unique nature of this specific type of communication. The discussion of the chronological development of internal organisational communication theories was based on the systems theory, through directly traceable advancements, inspired by the foregoing and/or meta-theory, which was graphically presented in Figure 3.1. The selection of theories discussed was, therefore, based on the gradual progression of the understanding of internal organisational communication and the relevant literature that coupled it. The validity of this selection or sampling of theories from the literature was established by review to the point of theoretical saturation,[‡‡] ensuring that no appropriate theories were omitted from the discussion.

[‡‡] Theoretical saturation is a sampling method commonly used in literature reviews, where the researcher reviews all relevant data from the literature until such a point where all data start to replicate and reiterate itself, as no new information presents itself. At such a point, theoretical saturation is reached, and the researcher can abide by the fact that the review was as exhaustive as possible (Sandelowski 2008:875; Smith & Kumar 2004:978).

From the literature and the selection and discussion of the theories outlined above, an understanding of internal organisational communication and its successful, appropriate and effectual implementation in organisations was proposed. However, this general understanding of internal organisational communication was applied and contextualised in terms of internal safety communication specifically, within the mining and construction industries of South Africa. In order to further this, the second and third data-gathering methods for phase one of the research that were employed were *in-depth interviews* and *focus group discussions*.

In-depth interviews were used in this study in order to formulate an understanding of the nature of internal safety communication in the mining and construction industries of South Africa. The literature review alone was not sufficient for the compilation and conceptualisation of a model for internal safety communication due to the uniqueness thereof, and then specifically within the internal organisational context of the mining and construction industries (as argued in Chapter 2). In order to contextualise a model for internal safety communication, its nature in reality and the context in which it operates needed to be understood.

Towards this end, in-depth interviews (as well as focus group discussions, which will subsequently be discussed) were employed. The interviews were conducted with managers in charge of safety at two organisations[§§] in the mining and construction industries. Safety managers rather than communication managers were selected due to the fact that, in general, safety managers are those responsible (albeit in an overseeing capacity) for specific internal safety communication at these organisations. If the communication department is responsible for some form of internal safety communication, it is usually in terms of general safety messages – for example urging employees to work safely, rather than communicating *how* to do so, as the latter is the responsibility of safety personnel. In fact, the Mine Health and Safety Act (No. 29 of 1996) recognises safety personnel as *competent persons* in terms of safety, and states that it is the responsibility of these competent persons to establish and maintain safety in their organisations (therefore, mostly excluding communication personnel from taking lead of this task as a whole, or facets thereof).

[§§] See Section 6.3.2.2 for a discussion of the selection of organisations for the empirical testing in this research.

Interviews with these managers therefore provided insight into the manner in which internal safety communication is managed in organisations in the mining and construction industries, including its challenges, opportunities and overall unique nature.

Because the managerial perspective could offer only a partial view, *focus group discussions* with general employees were also employed in order to ascertain an understanding of the nature of internal safety communication. Three focus group discussions were held with employee participants – those tasked with actually performing inherently hazardous activities in a safe manner. A full discussion of the methodological aspects of the in-depth interviews as well as the focus group discussions is presented in sections 6.3.2.3 and 6.3.2.4. It is only contextualised here to indicate how these methods were used to circumstance the model for internal safety communication, as the main form of data-gathering was the literature review.

In order to interpret or analyse and eventually process the theoretical aspects of the literature review and to propose a model for internal safety communication, *theoretical statements* were used. Theoretical statements are defined as the central assumptions, suppositions, conjectures, assertions or declarations made by a specific theory, model or otherwise a section of literature, which – cumulatively taken – summarises the standing or contribution of that piece of literature (Taylor, Trenkel, Kupca & Stefansson 2011:3; McGrew, Alspector-Kelly & Allhoff 2009:429). Theoretical statements therefore concisely express the core assumptions of a theory (or section of literature) and can thus be used deductively to précis the contribution of that theory.

The theoretical statements were ordered together under each of the theories or sections of literature that they described (see Addendum B), and were, together with the interview and focus group discussion findings, contextualised in terms of internal safety communication in the mining and construction industries. These contextualised statements were evaluated in terms of their appropriateness in describing and understanding internal safety communication in the mining and construction industries. Following this, a descriptive and normative model for internal

safety communication in the mining and construction industries (albeit an initial one) based on internal organisational communication theories and an understanding of the mining and construction industries' internal safety communication is proposed.

This model is both normative and descriptive, as mentioned above, as it simultaneously *describes* the phenomenon of internal safety communication in the mining and construction industries and also expresses how internal safety communication *should be* practised, in order to be aligned with the normative classifications of successful internal organisational communication in the literature (Ismail 2009:201; Christians, Glasser, McQuail, Nordenstreng & White 2009:6; Habermas 2006:412; Garriga & Mele 2004:52). However, this model cannot be described as instrumental as, although it does formulate internal safety communication in terms of the reaching of safety goals and objectives in the mining and construction industries of South Africa, it does not explicitly examine the connections between its practice and the performance or reaching of these goals (Ismail 2009:201; Garriga & Mele 2004:52).

In line with its normative and descriptive nature, this model furthermore acts as a spur for the formulation and conceptualisation of a quantitative questionnaire as measuring instrument for internal safety communication in the mining and construction industries. This questionnaire, as the output of the second phase of this research, is subsequently discussed.

6.3.2 Phase 2: Questionnaire for the evaluation of internal safety communication

The output of the second phase of the research was a quantitative questionnaire as measuring instrument for internal safety communication for organisations in the mining and construction industries of South Africa. Before the methodology for the formulation of this questionnaire is discussed, the reasons behind the formulation of this specific measuring instrument (as opposed to another that might serve the same objective) are conferred.

The measuring instrument devised takes the form of a questionnaire, as mentioned above – not an interview schedule or relevant aspect. According to Brewer and

Hunter (2006:60) and Rubin, Rubin and Piele (2000:201), researchers make use of questionnaires in order to describe and explain respondents' attitudes, opinions, thoughts and even behaviour with regard to a specific issue or event. A questionnaire was therefore firstly deemed appropriate to the objective of the measuring instrument, as it aimed at describing and explaining employees' attitudes, opinions, thoughts and behaviour in terms of the internal safety communication that they receive from their organisation.

Secondly, interviews and focus group discussions (for example) are measuring instruments that require large amounts of data to be filtered by the researcher, using the constructs and concepts of the research phenomenon to do this (Keyton 2006:276; David & Sutton 2004:92; Du Plooy 2002:180). Questionnaires, on the other hand (specifically quantitative questionnaires), allow for the isolation of abstract aspects of communication into separate variables. These variables will therefore be noticed no matter how small a component to the communication it might be (Keyton 2006:53; David & Sutton 2004:57). The interpretation of the findings resulting from the quantitative questionnaire was therefore simplified due to the fact that the communication concepts and constructs, as they relate to the research phenomenon, were already formulated in a prescriptive way. This allowed for all aspects relating to this phenomenon to be included and not overlooked due to ineptitude with respect to the research subject. This is especially important in the context that the questionnaire was administered in, as it has been established that safety personnel are not necessarily apt communicators.

Thirdly, questionnaires allow for complete anonymity of research respondents, where other methods would see the inclusion of a moderator or facilitator (Keyton 2006:276; Gravetter & Forzano 2006:74; David & Sutton 2004:171). As the aim of this research was to allow organisations to gauge and evaluate their *own* internal safety communication, this would not have sufficed in this research, as participants to the research might not have felt comfortable enough for full disclosure if they knew their answers could be associated with them as well as their safety competence.
Fourthly, due to the fact that conversations can take on unexpected avenues when making use of methods such as interviews and focus group discussions (Keyton 2006:276; David & Sutton 2004:171), it can become difficult for the moderator to

control such conversations. The questions posed to participants needed to be structured in such a way as to keep the focus on the topic that was researched – namely internal safety *communication*, while the challenge for a safety practitioner might have been to not revert to rather discussing safety and safety practices.

Fifthly, although many other forms of data-gathering exist to research internal organisational communication, these were not deemed appropriate in the specific context of this research. The focus of the measuring instrument was to research the *communication* of safety information and, therefore, not the contents of the message, but rather the *way* that it is conveyed (which, to a large degree discounts all communication content instruments). It is hence important in the mining and construction industries of South Africa, due to its unique nature and challenges as relating to communication (see Chapter 2 for a full discussion), not to research or audit strategies put in place in terms of communication, but rather to investigate whether or not these communication strategies take hold and filter down to every employee in the organisation. This is largely due to aspects such as illiteracy and language diversity, which obstruct the flow of communication down to the end recipients at the proverbial factory floor. The quantitative questionnaire allowed for this, as the perceptions of the employees were tested, and not merely the intended strategy that was addressed to them. The questionnaire could therefore test the contact of a communication strategy with its intended audience, rather than merely researching the intentions of the strategy itself.

Sixthly, De Vaus (2001:10) and David and Sutton (2004:56) simply define quantitative research as the accounting and measuring of phenomena in a scientific and rigid manner. The objectives of quantitative research designs are to describe and predict quantities, degrees and relationships between the phenomena that are being researched. Numerical data are collected and generalisations are made from a sample of the population (Keyton 2006:53; Du Plooy 2002:82). One of the great advantages of quantitative research, especially in terms of this research, is thus that it can be administered to a large group of employees, which, due to its quantification nature, makes generalisations possible (given correct sampling methods). Based on the argument that the mining and construction industries have largely a heterogeneous employee corps, the inclusion of a large sample was indeed needed

for meaningful and interpretable results (Keyton 2006:53; Brewer & Hunter 2006:175; Gravetter & Forzano 2006:117; David & Sutton 2004:57; Du Plooy 2002:106).

Lastly, the quantitative questionnaire yields statistical numerical data, which is an aspect engrossed in the culture of safety in the mining and construction industries. The safety departments in these organisations have to relay accident and incident statistics to the Department of Mineral Resources and the Department of Labour in order to receive and hold working permits. This is also the manner in which these departments manage and regulate the safety of employees in these industries, as statistical reporting builds the safety record of these organisations (DoL 2010; DMR 2009). It is hence argued that statistical reporting and the quantification of safety phenomena are culturally engrained in the safety of organisations in the mining and construction industries, and therefore suitable in this instance as well.

Below, in Figure 6.2, the progression of the questionnaire in terms of its methodology is graphically represented. The discussion following this figure elucidates the process further as well as the longitudinal nature of the study.

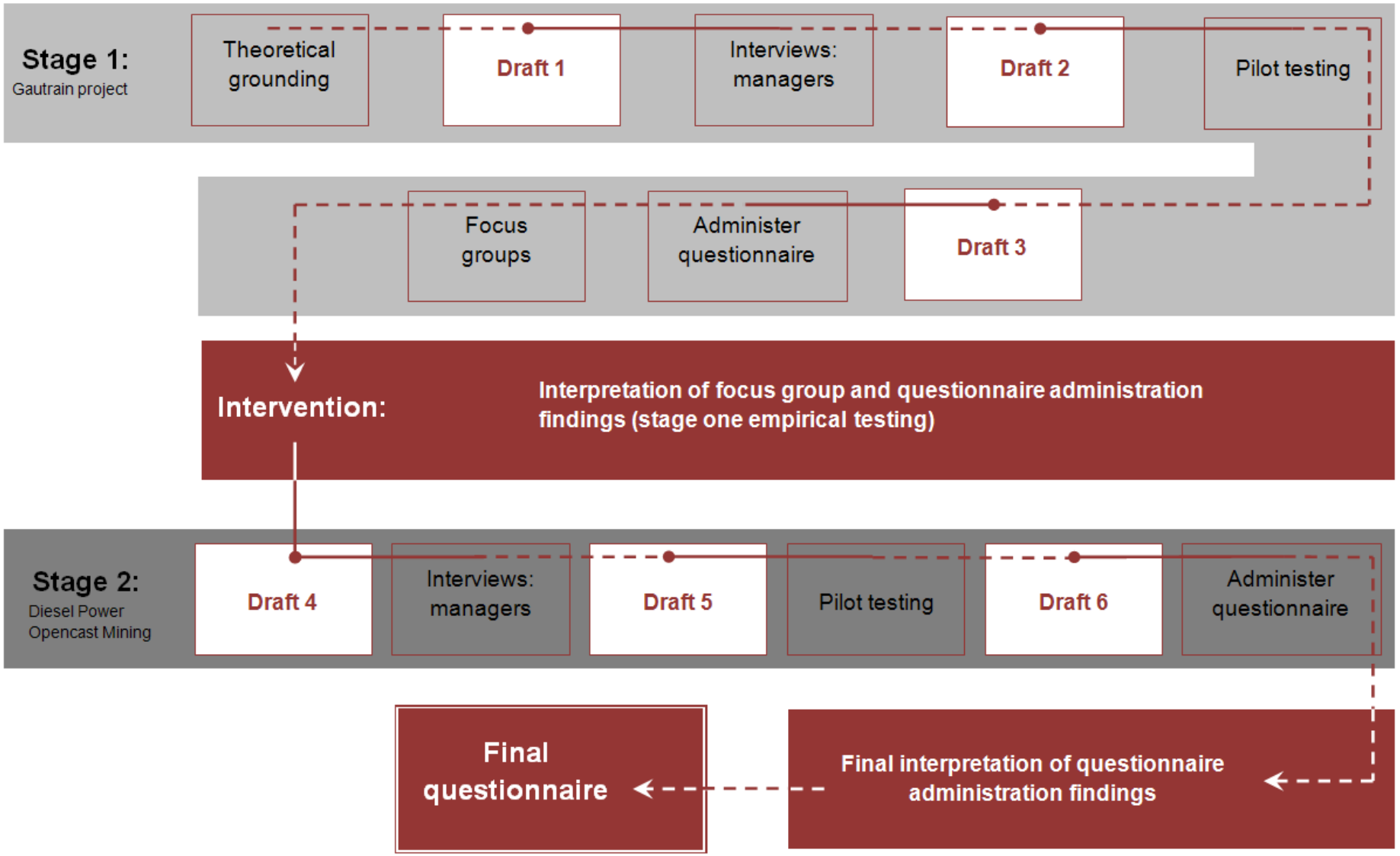


Figure 6.2: Methodological process of quantitative questionnaire

The methodology of construction of this questionnaire, as illustrated in Figure 6.2, began with a theoretical grounding, in which relevant theories that built the current understanding of internal organisational communication were researched and interpreted. From this literature review, the first compilation of the quantitative questionnaire for the measurement of internal safety communication in the mining and construction industries was achieved.

The questionnaire obtained from the literature was thus the first draft. In order to refine this questionnaire for its specific safety focus, the second step in its formulation was to test it empirically. The first point of empirical testing was to discuss this questionnaire as well as the overall nature of internal safety communication in the mining and construction industries with safety managers experienced in the practical task of internal safety communication. Incorporating the comments from these in-depth interviews allowed for the second draft of said questionnaire to be compiled.

The second draft was tested with employees at an organisation that is classified in both the mining and construction industries of South Africa – the Gautrain project. Firstly, it went through a pilot testing phase, followed by a full administration (with the third draft), which included a generalisable sample of employees at this organisation. After administering and receiving back the questionnaire, focus group discussions were conducted, wherein the general nature of internal safety communication in the mining and construction industries of South Africa was discussed, along with the questionnaire, its items and the responses it yielded from this population.

After this first stage of empirical testing, the findings from the focus group discussions as well as the questionnaires (including statistical validity and reliability testing) were interpreted and used for the reformulation and refinement of the questionnaire.

The second stage of empirical testing commenced with the reformulated questionnaire at yet another organisation, also seated within both the mining and construction industries of South Africa – Diesel Power Opencast Mining. The questionnaire was administered after an in-depth interview with the safety manager

of that organisation on the nature of internal safety communication and the appropriateness of the questionnaire for testing, which led to draft four of the questionnaire. The adopted questionnaire was administered, after a pilot study (draft five), to the employees of that organisation, to refine it for the final draft.

6.3.2.1 Longitudinal nature of the study

The two stages of research together with the research intervention account for the *longitudinal nature* of this study. According to Du Plooy (2009:257) and Menard (2002:v), longitudinal research is distinguished from cross-sectional research by the fact that a longitudinal study involves the examination of data across time and not at a single point in time, as in a cross-sectional study. A typical longitudinal study, therefore, entails the repeated measuring of the phenomenon being researched over different periods of time (usually two or more years), divided by an intercession that impacts on the phenomenon (Du Plooy 2009:51;257; Menard 2002:v; De Vaus 2002:170). Based on this definition, the current research is seen to be longitudinal due to the fact that the questionnaire was tested in two different organisations, two years apart, with the findings from the first testing acting as the main intervention or intercession that altered the questionnaire, leading to second testing. Due to the multiple and removed testing and the different stages that were suspended during an intervention, which impacted on the research phenomenon (the questionnaire), the research is regarded as longitudinal.

In the following sections, the discussion above is specified in terms of the relevant methodology and research aspects of this phase of the study. Firstly, the selection of the organisations that took part in the research is clarified, followed by respective discussions of each data-gathering method employed.

6.3.2.2 Selection of organisations

The choice of organisations for the study was based on a theoretical sampling method in which, based on David and Sutton (2004:152), the units to be researched were selected according to the researcher's own knowledge of and opinion about their appropriateness. The two organisations chosen to take part in this research

were the Gautrain project (for Stage 1 of the empirical research) and Diesel Power Opencast Mining (DPOM) for Stage 2 of the empirical testing. The appropriateness of these organisations is seen specifically in terms of three aspects: Firstly, both organisations are South African-established organisations; unlike many other organisations in these industries that have merely branched out to South Africa. This means that the strategies formulated in these organisations are not 'inherited' from a larger parent company – operating in other circumstances with different stakeholder groups – but rather in the unique context of this country's mining and construction industries.

Secondly, the appropriateness of the combination of these two organisations lies in the fact that these organisations manage operations in both the mining and construction industries. The Gautrain project, notwithstanding its mining operations (for example underground tunnelling), is classified mainly under the *construction* industry, as DPOM, notwithstanding its construction operations (for example piling), is classified mainly under the *mining* industry. The safety systems employed in both these organisations, therefore, have to adhere to the Mine Health and Safety Act 1996 (No. 29 of 1996) and the Occupational Health and Safety Act (No. 85 of 1993), and are accountable to both the Department of Mineral Resources and the Department of Labour.

Lastly, these organisations were chosen for their excelled safety performance, as both these organisations have nearly faultless safety records, with DPOM even being described as an organisation led by its safety department (SAMining 2011:1).

Due to the costs to the company and the impact on production, sampling was used from the entire organisational population (all employees of the organisation, in this instance) (Keyton 2006:119). With respect to the Gautrain project (which is a large project in monetary terms and human capital), it was impossible to research all operations based on the specifications of the management. Therefore, for this study, the Precast Yard was specifically selected as an operation. This selection was based on the principles of the convenience sampling method. According to David and Sutton (2004:151) and Keyton (2006:126), convenience sampling takes place due to the ease of access to units of analysis.

In the Gautrain project, there are many different operations, or sites, that run on a temporary basis. These sites have only a few employees at a time, and mostly no full hierarchical structures. The Precast Yard, however, is a more permanent establishment with a hierarchical structure ranging from managers down to general labourers. On this site (in Midrand, Gauteng), precast concrete segments are manufactured that are used in the construction of the bridges on the Gautrain track. This operation functions largely as an independent operation with its own structures (including a safety department, industrial relations department, etc.) and has many employees working on a single site, which makes the Precast Yard a convenient research sample. The selection of this operation within the Gautrain project could hamper representativeness of the project as a whole, which means that the findings would, therefore, not be generalisable to the total, but only to the Precast Yard as an operation within the Gautrain project (Keyton 2006:126; Gravetter & Forzano 2006:117; David & Sutton 2004:151). When reference is made to the Gautrain project in the findings, it should thus be understood that it is merely a way of distinguishing between the two organisations used in this research.

Diesel Power Opencast Mining is an earthmoving organisation that functions in both the mining and construction industries, with the majority of its core business being conducted at opencast coal mines. In terms of DPOM, a much smaller operation than the Gautrain project, access was granted by the organisational management to *all* opencast mining sites, with the express exclusion of strictly engineering workshops and construction sites. As a result, seven opencast mining sites (stretching from Gauteng to Mpumalanga) were included in the research. With reference to the selection of the employees to take part in the research, each one of the data-gathering methods had its own population and sampling. Therefore, the selection of the units of analysis for each of these is discussed below.

6.3.2.3 Data-gathering method 1: Interviews

The first method for the empirical data-gathering of this research was interviews. In order to understand the nature of internal safety communication in the mining and construction industries of South Africa and the appropriateness of the quantitative questionnaire for its testing, interviews were conducted with safety managers in

these industries. As stipulated above, the first organisation selected to take part in the study was the Gautrain project, specifically its Precast Yard. At this operation, three safety managers were employed at the time the research was being conducted – a small enough group to include all for interviewing.

The first stage of the empirical testing (at the first organisation) commenced with in-depth semi-structured interviews with all three safety managers. In this case, the accessible and target population for this data-gathering method was one and the same, meaning a census took place (due to the relatively small and finite nature of the population) (Rubin et al 2005:209; Stewart 2002:54). All inferences or findings resulting from these interviews are therefore generalisable to the entire population, in this case the safety managers at the Gautrain project's Precast Yard. However, it should be understood that, although this organisation was selected, partially on account of its excellent safety reputation and record, the findings of these interviews are by no means considered generalisable or reflective of the opinions of all safety managers in the mining and construction industries. Nevertheless, these three managers offered valuable insights into the nature of safety in the mining and construction industries (as they are bound by the legal requirements for both sectors)[***]. They commented on internal safety communication and the appropriateness of the quantitative questionnaire for its testing, as prompted by the questions posed in the interviews.

Due to the semi-structured nature of the interviews, standardised as well as follow-up questions were included. The standardised questions were structured, based on the main themes identified in the literature review, in order to guide all questions dealing with internal safety communication in these industries, while broader and more open questions were asked relating to understanding safety and its place in the mining and construction industries (for example asking participants to explain the nature thereof and the challenges it faces). By their nature, the semi-structured interviews also gave the opportunity for follow-up questions to be asked, based on participants' answers, which allowed the researcher to explore new avenues in the

[***] See Section 6.3.2.2 for a full explanation.

research not necessarily anticipated at the outset (Keyton 2006:276; Du Plooy 2002:180).

The interviews were semi-*standardised* in nature to allow for these follow-up questions (Maxwell & Satake 2006:232). In order for standardisation to improve the validity of the measuring instrument (regarding consistency), the questions asked had to be kept identical in all measurements (David & Sutton 2004:87). Because the questionnaires were semi-structured, *semi*-standardisation was also employed to ensure that all standardised questions were identical, although this was not possible with the follow-up questions (David & Sutton 2004:87; Du Plooy 2002:176).

The standardisation of the interview schedule was important in the empirical testing, as it involved interviewing at two different organisations, the second of which being DPOM. At this operation, only one safety manager was employed at the time of the research. For this interview, the same semi-standardised interview schedule was employed, but changed, based on the findings of the first stage of empirical testing.

In view of the above, the aspect of reliability was heeded in each case (especially in terms of consistency). With reference to validity,[†††] the most notable types of validity, namely *face*, *concurrent, predictive* as well as *internal* and *external* validity were regarded. Firstly, *face validity* refers to the superficial appearance of the measuring instrument, whether or not it appears to measure what it sets out to do (Gravetter & Forzano 2006:74; Keyton 2006:54; David & Sutton 2004:171). Although determining this validity is very subjective, it is argued that the interviews did have face validity, as the questions asked pertained to the nature of safety in the mining and construction industries and internal safety communication.

Secondly, *concurrent validity* seeks to establish consistency between different measurements (Gravetter & Forzano 2006:74; Keyton 2006:54; David & Sutton 2004:171). Du Plooy (2002:176) identifies three measures, namely time, pace and bias: The amount of time put aside for each interview (with each manager) was

[†††] The validity of a measuring instrument (related but not at all synonymous to the reliability) points to the degree to which it measures the variable or phenomenon it claims or seeks to measure. Put differently, a valid measuring instrument will accurately measure and describe the variable that it is designed to measure (Gravetter & Forzano 2006:74; David & Sutton 2004:171).

mostly the same (between 57 and 64 minutes); the pace of the interviews were kept identical, as far as possible; and the bias of participant answers was kept to a minimum by not bringing aspects under the attention of the participants that they were unaware of before. For example, questions pertaining to the objectives of internal safety communication were asked before the questions about the relationships in the organisation, in order not to alert participants, thereby enabling them to truthfully include or exclude relationships as an objective of communication.

Thirdly, *predictive validity* considers how accurately predictions (based on theory), are realised in the research by means of the measuring instrument (Gravetter & Forzano 2006:74; Keyton 2006:54; David & Sutton 2004:171). In the interviews, this can be seen in the description of the nature of safety in the mining and construction industries by management, as compared to theoretical predictions. One example is the fact that all managers indicated that safety in the mining and construction industries competes (mostly to the detriment of safety) with production in organisations, notwithstanding its importance and necessity (see more findings in the following chapters).

Fourthly, for *internal validity* it was established that no other factors were responsible for the variation in the dependent variable (Keyton 2006:54; David & Sutton 2004:171). Due to the complexity of communication, various factors in an organisation have the potential to influence the outcomes of communication, and can never be ruled out completely. However, it can be ensured that the research design, measuring instruments and sampling of the research are done accurately and correctly (Gravetter & Forzano 2006:74; Keyton 2006:54). In the above paragraphs, mention is made of each of these aspects, namely the appropriateness of the qualitative design (for the explorative understanding of safety and the measurement of internal safety communication in the mining and construction industries), the measuring instrument (being in-depth semi-structured and semi-standardised interviews) and the sampling (which included all managers at the sampled organisations).

Lastly, sampling was also done to ensure *external validity*, with external validity pointing to the extent to which the research findings can be generalised to a larger

population (Gravetter & Forzano 2006:74; Keyton 2006:54). The aspect of generalisability functions on two different levels. All inferences or findings made in terms of these interviews are indeed generalisable to the two research populations studied, namely the safety managers at the Gautrain project's Precast Yard and DPOM. However, it should be understood that the outcomes of the interviews of these managers by no means profess to be generalisable or reflective to the opinions of all safety managers in the mining and construction industries. However, it is sufficient with a view to exploring and gathering some insight into the nature of safety and internal safety communication in these industries as well as the appropriateness of the quantitative questionnaire for its testing.

In order to interpret the findings of the managerial perspectives as disclosed in the interviews, notes and transcribed voice recordings were used. The suggested changes to and comments on the questionnaires were included in the adaptation of the questionnaire, as none were in conflict with any theoretical aspects encountered in the communication literature. The findings relating to the nature of safety and internal safety communication in the mining and construction industries were grouped and transcribed per theoretical theme, as identified in the construction of the model for internal safety communication.

Although these interview findings may be valid and reliable, they still represent only a managerial perspective. In order to supplement this understanding and to simultaneously strengthen the validity of the interviews, focus group discussions with the general employees in the mining and construction industries were included. This facilitated an understanding of the nature of safety, internal safety communication and the design of the quantitative questionnaire by including the perspective of the employees.

6.3.2.4 Data-gathering method 2: Focus group discussions

A focus group is defined as a group of individuals that share a common interest, goal or characteristic, and that are brought together by a moderator to discuss a particular topic in a limited amount of time (Du Plooy 2009:199; Keyton 2006:276). The moderator uses this group to gain insight into the specific topic being discussed, with

the intent of research (Keyton 2006:276). The focus group discussions for this research centred on discussing the nature of safety and internal safety communication in the mining and construction industries of South Africa, from the viewpoints of the general employees who work at the proverbial (and sometimes literal) coal face.

These focus group discussions yielded an understanding of the general nature of safety and internal safety communication, and were also conducted after the administration of the quantitative questionnaire, which made it possible for the researcher (moderator) to ask about and research the appropriateness of the quantitative questionnaire for its testing. The qualitative findings of the focus group discussions were thus triangulated with the findings from the administration of the quantitative questionnaire to ensure valid and reliable inferences about the nature and testing of internal safety communication in the mining and construction industries of South Africa (Brewer & Hunter 2006:xi; Keyton 2006:65; Olsen 2004). For example, quantitative findings such as a low Cronbach's alpha for a specific item could be strengthened by qualitative findings explaining the cause for this low reliability score. Based on this, the questionnaire was changed by means of informed reasoning to strengthen the reliability and validity of the items and the overall questionnaire.

Because the focus group discussions were conducted for the purpose of exploring the reliability and validity of the quantitative questionnaire items, it was held at the intercession phase of this research – between the two testings or stages. In this manner, the focus group discussions formed part of the research intervention that made the formulation of the quantitative questionnaire longitudinal in design.

In light of the above, the focus group discussions were held at the Gautrain Precast Yard, and were extended over three days. For communication research in the organisational setting, Keyton (2006:277) suggests that the ideal number of focus groups is three to five. These focus groups need to be made up of individuals "who possess similar characteristics", as this allows for and encourages free-flowing conversation. This was done in the research, where three focus group discussions were held with participants. The first focus group consisted of male employees, of all

post levels up to supervisors. The second focus group consisted of male employees on supervisory and higher levels, and the third focus group consisted of female employees of all post levels. Due to the fact that there were so few female employees, they were all accommodated in one focus group, and not split according to post level. The differentiations in the focus groups (male and female, different post levels) were to ensure that all participants felt free to voice their opinions honestly, and that they did not feel intimidated due to the inclusion of certain individuals in their focus group, for example their supervisor. This encouraged free-flowing conversations, as suggested by Keyton (2006:277).

The focus group participants were selected by means of *volunteer sampling*: Participants who completed the questionnaire were asked whether they were interested in being part of a focus group. The participants thus showed a keen interest in the topic under investigation, and were willing to take part in the study (Keyton 2006:127; Du Plooy 2002:115). This sampling method is a non-random sampling method, and coupled with the fact that the focus groups represented a small fraction of the population, the findings could not be generalised to the employee population of the Precast Yard (Keyton 2006:127). Generalisation was, however, not the main goal of the focus group discussions, as this method was employed to provide greater insight into the answers given in the questionnaire.

The focus groups lasted from 57 to over 80 minutes. These focus groups were held in one of the boardrooms made available in the office buildings on the Precast Yard site. This location was used because of its convenience and to ensure that the research took place within the natural environment of the respondents in order to improve reliability (Keyton 2006:54; David & Sutton 2004:171) in the same way as with the questionnaires.

Contrary to the questionnaires, participants in the focus group discussions were not limited in their choice of answers, and were free to express their feelings about the topic at hand in their own words. This allowed the researcher (moderator) to make observations while the participants expressed their opinions, which provided greater insight into their perceptions (David & Sutton 2004:92; Du Plooy 2002:180). The focus group discussions hence made up for the shortcomings of the questionnaires,

which are by their nature not equipped to explain all the complexities of respondents' attitudes (David & Sutton 2004:92). Focus group discussions capitalise on the natural interaction of people and stimulate direct interaction among participants concerning the topic at hand. The idea is not to reach consensus in the group, but rather to get as many opinions on the topic as possible, however diverse they may be (Keyton 2006:276; David & Sutton 2004:92; Du Plooy 2002:180). This, coupled with the fact that focus group discussions allow for interaction with participants of low literacy levels, made this data-gathering method specifically suited for this exploratory endeavour into the nature and testing of internal safety communication in the mining and construction industries (Keyton 2006:276; David & Sutton 2004:92).

Three common errors concerning reliable testing had to be eliminated as far as possible. According to Gravetter and Forzano (2006:74) and David and Sutton (2004:171), these are *question consistency and ambiguity*, *observer error* and *environmental changes*, which are discussed below.

- **Question consistency and ambiguity**

This error occurs when the questions asked by the moderator are ambiguous. The primary way to overcome this error is to make use of a panel of experts to evaluate the questions to be asked in the focus group discussions (Gravetter & Forzano 2006:74; David & Sutton 2004:171). This was done in this study by making use of the same panel that evaluated the questionnaire, which comprised communication as well as safety experts. The safety experts were from the Gautrain project itself, and as such could offer insight into the questions to be asked in that particular context, while the experts from the communication field comprised two experts from North-West University and two from the University of South Africa. The second way in which this error was overcome was to make use of established and tested questions, as identified in the literature review, as far as possible.

- **Observer error**

This error was limited by making use of inter-rater reliability. According to Gravetter and Forzano (2006:75), this refers to the exclusion of observer error by triangulating

observations of more than one observer to simultaneously record measurements of the same phenomena. For the focus group discussions, two additional observers who are experts in the field of communication studies, trained in the techniques of conducting focus group discussions and employed by the University of South Africa as junior lecturers, were used.

- **Environmental changes**

When different focus group discussions are conducted at different times (successive measurements), the possibility exists that changes in the environment might influence the reliability of the measuring instrument (Gravetter & Forzano 2006:74; David & Sutton 2004:171). The focus group discussions with the employees of the Precast Yard were conducted in the space of three days, in order to keep the environmental changes to a minimum (for example changes including an accident on site or new communication media such as posters).

Once these focus group discussions were conducted over the specified time period, the interpretation of the findings could begin. Similar to the findings from the interviews, the data from the focus group discussions were transcribed with the help of the voice recordings and notes by the three moderators. Similar to the interviews, the findings in terms of suggested changes to and comments on the quantitative questionnaire were considered in the adaptation of the questionnaire, as none were directly in conflict with any theoretical aspects encountered in the communication literature. Specific attention was given to those items or aspects of the questionnaire that were flagged by the quantitative findings, as well as general comments, suggestions and general adaptations.

Furthermore, the findings relating to the nature of safety and internal safety communication in the mining and construction industries were grouped and transcribed per theoretical theme, based on the literature.

6.3.2.5 Data-gathering method 3: Questionnaires

The empirical testing of the questionnaire (notwithstanding the qualitative methods that worked alongside the actual administration of the questionnaire – as discussed above) was quantitative in nature, as the aim was to test the questionnaire within a population it was designed for, in the manner that it was intended to be administered in future. For this reason, the questionnaire was tested among employees in the mining and construction industries, at the two different organisations that took part in the two stages of the questionnaire administration.

In each instance, the administration of the questionnaire was preceded by a *pilot study*. The pilot study was done on two levels, namely by means of a *conventional pretesting pilot study* and through the use of an *expert panel*. According to Walliman (2011:191), Keyton (2006:175) and Stewart (2002:113), the latter involves including experts in research methodology or in the survey's content to read through the questionnaire. "Because they are experts, this type of pretesting can point out semantic problems in how the questions are worded and interviewer administration techniques, as well as potential problems with analysing the data after the survey is complete" (Keyton 2006:175).

For this pilot study, experts in both research methodology and the survey contents were used. For the first stage of the research (with the first quantitative testing at the Gautrain project), the experts included an academic from North-West University, two from the University of South Africa (knowledgeable about the fields of research methodology) and an expert from the Gautrain project (knowledgeable about the contents of the survey). For the second stage of the research (with the second quantitative testing at DPOM), the experts included one academic from North-West University, two from the University of South Africa and two experts from DPOM.

After this stage of pilot testing, the questionnaire was administered to 10 employees of the respective organisations in order to complete the conventional pretesting, as mentioned above. This kind of pilot test includes the selection of individuals who are part of the research population but not eventually selected for full administration, who

complete the survey as if during the data-gathering (Walliman 2011:191; Keyton 2006:175; Stewart 2002:113).

After the pilot study, the quantitative testing in terms of the full administration of the questionnaire commenced. For the two research stages (the first at the Gautrain project and the second at DPOM), the respective *research populations*[‡‡‡] were the entire employee corps of the Gautrain project's Precast Yard as well as the entire employee corps of DPOM's opencast mining sites. The *accessible populations*,[§§§] in each case, were those employees who were present (at work) in the administration period of the questionnaire, specifically the second week of March 2009 (for the first stage at the Gautrain project) and the first weeks of November 2010 (for the second stage at DPOM).

The *units of analysis*, in need of sampling for this empirical testing, were the employees of the Gautrain project and DPOM. Due to the exceedingly heterogeneous nature of the populations, a stratified sampling method is usually the best choice for research of this nature (Keyton 2006:54). In this study, however, this was not possible, as the sampling frameworks supplied by the organisations (in the form of employee lists) did not include the particulars of the employees needed in order to allow for stratification (such as race, age, gender, etc.).

Consequently, the sampling method used for both stages of administration was *systematic sampling*. Systematic sampling is part of the probability sampling category, where every person in the population has an equal and known chance of being included in the research. This makes systematic sampling a random sampling method, which excludes any bias from the researcher's side and makes the findings of the measuring instrument generalisable to the broader population (Gravetter & Forzano 2006:74; Keyton 2006:54). Systematic sampling is only possible when a sample framework of the population is available, as in this case, where the employee

‡‡‡ Research population refers to the entire class or group of units or individuals who have general characteristics deemed as important parameters for the research, and from which a sample is generally drawn (Du Plooy 2009:51; Rubin et al 2005:298; Stewart 2002:54).

§§§ Accessible populations refers to those units of analysis within the research population to which the researcher has access to, in terms of completing the empirical testing (Du Plooy 2009:51; Rubin et al 2005:298; Stewart 2002:54).

list from Human Resources was taken. The researcher selects every *n*th person from this list, allowing all an equal chance to be included in the research. The interval between the names on the list (*n*) is determined by dividing the number of persons desired in the sample into the full population (Gravetter & Forzano 2006:74).

In terms of the first administration at the Gautrain project's Precast Yard, the research population was 807 employees. With the desired sample of 350 (allowing for a good response rate), *n* was determined to be 2.48, rounded up to 3. The response rate of the questionnaires was 281, which gave the sample a confidence level of over 95%, with a satisfactory sampling error of under 5% (Keyton 2006:122; Du Plooy 2002:104).

At the different sites of DPOM, a desired sample of 10 employees per site was determined by the management of this organisation, as this is the number of employees that access was granted to. The employees could be selected without bias, as long as the number did not exceed 10 per site. Table 6.2 gives a summary of the *n* levels for each site.

Table 6.2: Summary of *n* value calculation for DPOM

Site	Calculation of *n*
Butterfly	193 employees – *n* = 19
Haasfontein	91 employees – *n* = 9
Leeuwpan	195 employees – *n* = 20
Mooifontein	150 employees – *n* = 15
Palesa	115 employees – *n* = 12
Waterpan	146 employees – *n* = 15
Zaaiwater	311 employees – *n* = 31

With the help of facilitators, the response rate from these sites was 100% on the sample, including 10 employees per mining site, as well as three employees responsible for implementation management of the system.

The employees selected by means of the above-mentioned methods were identified by the foremen or safety officers of the sites, and then handed a questionnaire and

the essential items such as a pencil and eraser. If it was determined that an individual respondent would not be able to answer the questionnaire without the help of a facilitator, one was assigned to this individual (in some circumstances these individuals had to wait until one became available). The facilitators were individuals from the respective organisations fluent in the languages spoken by the employees of that organisation. These facilitators were trained by the researcher in terms of the nature of questionnaire administration beforehand and all facilitators met and reached consensus about translations and interpretations beforehand as well, to ensure consistency. The researcher was, however, available and present at all sites during the entire questionnaire administration, for both day and night shifts, in case help was needed. If the respondents were competent to answer the questionnaire, they did so in their own time, as all respondents were excused from their commitments for this exercise. The administration of the questionnaires was done on the respective sites, ensuring that the research was done within the natural environment that it pertained to. This strengthened the comfort level of the respondents and the reliability of the research (Keyton 2006:54; David & Sutton 2004:171).

The next step in the methodology of the administration of the quantitative questionnaire was the interpretation of the data. Due to the quantitative nature of the questionnaire, this was done by means of statistical interpretation, with the use of the statistical software program SPSS. The main factor in its selection was that this software package was developed specifically for the social sciences (hence the name Statistical Package for the Social Sciences). The statistical interpretation of the questionnaire data by means of this program was done by the researcher (trained by Camira Consulting, trading as Statistical Consultation Services), with the presentation of the statistical interpretations verified by North-West University's Department of Statistical Consultation Services (Potchefstroom Campus, as headed by Dr S. Alice) to ensure its accuracy.

These interpretations, due to the nature of the statistical methods employed, made use of both descriptive and inferential statistics, with the latter building on the former. Descriptive statistics summarise the information obtained from the data and inferential statistics build forth on the descriptive data by making valid inferences

based thereon (Spriestersbach, Röhrig, Du Prel, Gerhold & Blettner 2009:578; Jargowsky & Yang 2005:1). For example, the current research made use of frequency tables that outlined the basic descriptive statistics extracted from the questionnaire data, while, by means of findings of the factor analysis, inferences about the validity of items as they pertain to constructs could be made. These and the other statistical methods used in this research are described below.

- **Mean, mode and median**

Measures of centrality, such as the arithmetic mean, or simply the mean, the mode and median summarise the centre of the distribution of quantitative data. The *mean* is a measure used to summarise data by giving a hypothetical value (one that does not actually have to be observed in the data) showing the average score. In simple terms, this is done by totalling all scores of continuous data and dividing them by the total number of responses for this item (Laslier 2011:8; Field 2009:35; Keyton 2006:118). However, only making use of the mean to show the centre of distribution for data sees extreme scores affecting the mean rating or value, and as a result a skewed summary of this data is given (Laslier 2011:8; Field 2009:35; Keyton 2006:118). It is for this reason that quantitative researchers make use of the *median* alongside these other measures for distribution review. The median is not affected by extreme scores, as the median focuses on the middle score of an item where it is ranked in order of magnitude (Laslier 2011:8; Field 2009:21; Keyton 2006:118). Lastly, in terms of showing central tendencies in the data for the quantitative questionnaire, the *mode* is calculated as well. Arguably the most simplistic of all, the mode points to the score in the data set that occurs most frequently. The mode can be bimodal or also multimodal, where more than one mode is seen in the data (Field 2009:21; Keyton 2006:118). Figure 6.3 below shows the differences in the three centres of distribution measures used in this research. This graphical representation is only for illustration, and for this reason makes use of fictional values and points to illustrate a rudimentary understanding of the three terms. In this research (specifically when it comes to the mean value), continuous items (or, as in the terminology of SPSS, scale items) were used for these three aspects.

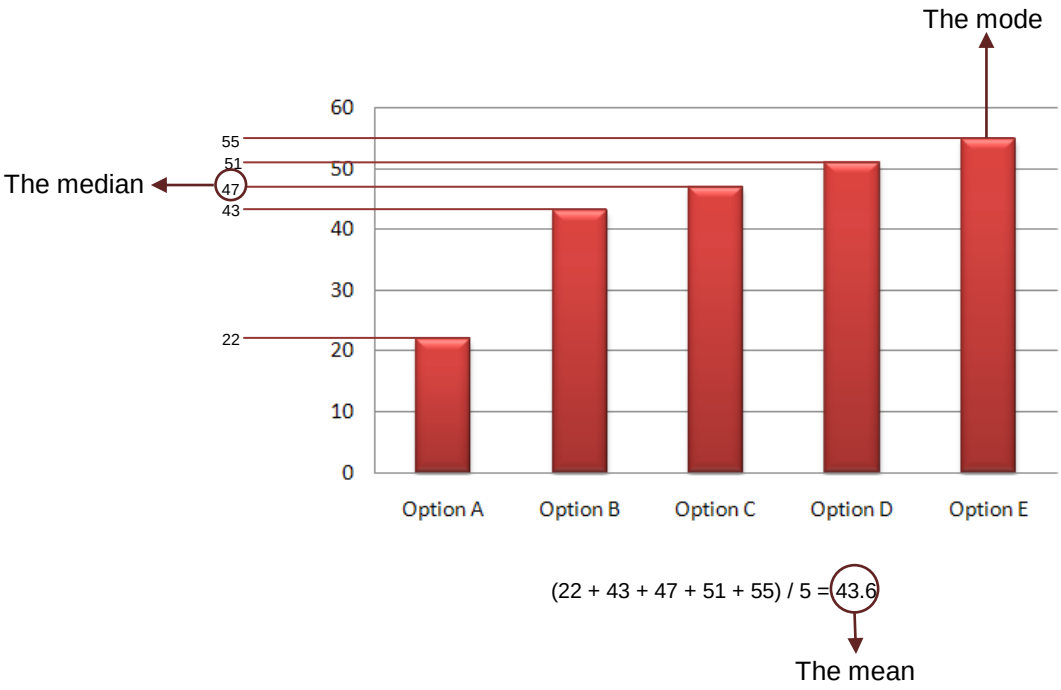


Figure 6.3: Fictional example of mean, mode and median

- **Cronbach's alpha**

As discussed previously, reliability of a research instrument points to the degree that a measurement consistently reflects the construct that it is measuring (Gravetter & Forzano 2006:74; David & Sutton 2004:171). In terms of testing the reliability of a questionnaire, one of the methods used most often is the split-half method. This method entails, as the name suggests, the splitting of the data into two sets and comparing the responses of these two sets with each other, thus deciphering the reliability by which respondents answered one set as opposed or analogous to the other (Basham, Jordan & Hoefer 2009:53; Cohen & Swerdlik 2005:74).

Critique against this method is that the results are dependent on the manner in which the data is split, with results reflective of the method of the split, rather than the reliability of the instrument in many cases (Field 2009:674; Cohen & Swerdlik 2005:74). In terms of the quantitative questionnaire designed for this research, the statistical odds are that a randomised split would offer just such a predicament as described above. With the questionnaire measuring different aspects or concepts relating to different internal safety communication constructs, the splitting of the data

would not offer an accurate description of the reliability, as the manner in which the split is achieved will impact quite significantly on the results. For example, one set might deal with one construct, while the other deals with another, thus having vastly differing values, not necessarily pointing to the reliability of the instrument, but rather the particular way the data were split in half.

To overcome this problem posed by the split-half approach, the statistician Cronbach, in 1951, came up with "a measure that is loosely equivalent to splitting data in two, in every possible way and computing the correlation coefficient for each split" (Field 2009:674). The result of this was a correlation coefficient known as *Cronbach's alpha* (α) – the most commonly used and universally accepted scale of reliability in quantitative measurement (Field 2009:674; Basham et al 2009:53; Cohen & Swerdlik 2005:74). This value (the α) ranges between 0 and 1. If the scale tested has a score of 0.7 and higher, the scale is reliable (UCLA 2006; Roberts, Priest & Traynor 2006:44).

The α includes the number of questionnaire items squared; therefore, the α value is directly proportional to the number of items included in the scale (Field 2009:674; Cohen & Swerdlik 2005:74). Hence, the number of items tested by means of the α may influence this score, with less questions obtaining a lower score, and vice versa. For this reason, the calculation of the Cronbach's alpha for the quantitative questionnaire was done concept by concept or construct by construct, ensuring that not too many items were included, which might otherwise have skewed the results with respect to reporting on reliability.

- **Factor analysis**

In terms of research in the social sciences, calculating the validity of a variable can prove to be unwieldy, because these variables are mostly latent variables[****] (Montgomery 2009:185; Field 2009:628). It is for this reason that these latent variables are conceptualised as constructs, with differing and measurable concepts. The cumulative reporting on the concepts offers an inference about the overarching

[****] Latent variables are defined by Montgomery (2009:185) and Field (2009:628) as those variables that cannot be directly measured by one item or question.

constructs (Montgomery 2009:185; Field 2009:628). The challenge in terms of this methodology (which was employed in the current research as well) is to ascertain whether or not these concepts do indeed all reflect the same construct or latent variable – thus whether or not the measuring of these concepts is valid. In order to test this validity statistically, *factor analyses* are used.

Factor analysis is a method or technique employed to identify groups or clusters of variables, with three main aims in sight: firstly, to understand the structure of a set of variables; secondly, to aid in the construction of a questionnaire to measure an underlying variable by recognising and categorising variables statistically related; and/or, thirdly, by reducing a data set to a more practicable or feasible size, while retaining as much of the original information as possible (by combining collinear variables) (Montgomery 2009:185; Field 2009:628). This last aspect was employed in the current research, as the exploratory nature of the questionnaire certainly necessitated the inclusion of many items for concept measurement. Simplistically, factor analysis in terms of this study measures the correlations between variables or concepts, measuring whether or not they speak to the same underlying latent variable or construct. In questionnaire construction, various items are included to measure the same latent variable, for example the inclusion of various items to measure trust in a communication relationship. A factor analysis can thus be used to extentify the correlations between these items, as they are designed to measure the same latent variable.

Factor analysis hails from two different methods: exploratory and confirmatory factor analysis. In simple terms, *exploratory factor analysis* explores a set of variables showing, without preconcept, what variables naturally cluster with one another (Field 2009:636; Maurischat 2006:243; Thompson 2004:7). The researcher is thus enabled to condense large amounts of data into manageable, grouped clusters. If these clusters are meaningful to the researcher with respect to the focus of the study, inferences can be made about these clusters (Field 2009:636; Maurischat 2006:243). However, if the researcher already has a model of which variables should be clustered together, then a *confirmatory factor analysis* can be made use of. This kind of factor analysis measures the fit between the proposed model and the actual correlations perceived in the data (Field 2009:636; Maurischat 2006:243). Factor

analysis (irrespective of its method) is extremely sample-sensitive, however, and is therefore, at best, population-specific (Field 2009:636; Terwee, Bot, De Boer, Van der Windt, Knol, Dekker, Bouter & De Vet 2007:38).

- **Comparing means**

The employee corps of the mining and construction industries of South Africa is recognisably heterogeneous with regard to various aspects, including literacy, culture, language and the like (refer to Chapter 2). Due to this nature, it is important in the context of this research to test whether or not these stratifications and inherent heterogeneity impact on the responses to the quantitative questionnaire tested. Statistically, this can be done by means of *Chi^2 tests, t-tests* as well as *ANOVAs* (Camira 2011:95; Field 2009:324; Steinberg 2011:194). Both *Chi^2 tests* and *t-tests* are used when one outcome is measured, with *two* different manipulations.[††††] It tests whether or not the averages of the two population groups differ by making use of the null hypothesis,[‡‡‡‡] which is accepted or rejected based on the statistical output gained (Field 2009:324; Berkman & Reise 2012:91). For example, in the current research, Chi^2 tests and t-tests were used in terms of the two different gender groupings in the employee corps. Studies such as those done by Le Roux and Naudé (2009) and Le Roux and Greeff (2010) suggest that various differences can be observed in communication, specifically relational communication outcomes, in terms of female and male employees in the mining and construction industries of South Africa. T-tests were used to explore whether or not this impact was evident in this study by analysing the degree to which the means of the variables corresponded in two 'samples' (i.e. the male 'sample' and female 'sample').

However, t-tests cannot be employed for situations where three or more groups are to be tested, for example for different literacy levels, job levels and the like. In these instances, *ANOVAs* are used (Camira 2011:103; Allen, Titsworth & Hunt 2009:52; Keller 2006:124). With a t-test, the hypothesis is tested "that the two population

[††††] On a very technical level, *Chi^2 tests* are used when the relationship between a nominal/ordinal variable and a nominal/ordinal variable is measured, and *t-tests* are used when the relationship between a nominal/ordinal variable is measured against a continuous variable (Camira 2011:89; Field 2009:324; Steinberg 2011:194).

[‡‡‡‡] The null hypothesis, as in the instance that it is used for here, proposes that the two population means are equal.

means are equal". Similarly, ANOVA points to the degree to which three or more means are the same, so it tests the null hypothesis that all population group means are equal (Field 2009:349). Herein, ANOVA represents

$$\overline{X}_1 = \overline{X}_2 = \overline{X}_3 \quad \text{or} \quad \overline{X}_1 \neq \overline{X}_2 \neq \overline{X}_3 \quad \text{or} \quad \overline{X}_1 = \overline{X}_2 \neq \overline{X}_3 \quad \text{or} \quad \overline{X}_1 \neq \overline{X}_2 = \overline{X}_3 \quad \text{or}$$

$$\overline{X}_1 = \overline{X}_3 \neq \overline{X}_2 .$$

These analyses do, however, not calculate whether or not these differences are statistically significant, in other words, large enough to show any real difference. In order to calculate this, *Tukey* and *Bonferroni post-hoc tests* were used. According to Camira (2011:104), Allen et al (2009:52), Keller (2006:124) and Berkman and Reise (2012:91), in both the Tukey and Bonferroni tests, the differences are calculated on a scale between less than 0.2 to greater than 0.8. It is only when the difference between groups is greater than or equal to 0.8 that the difference is significant enough to be interpreted. This is represented graphically as shown in Figure 6.4 below.

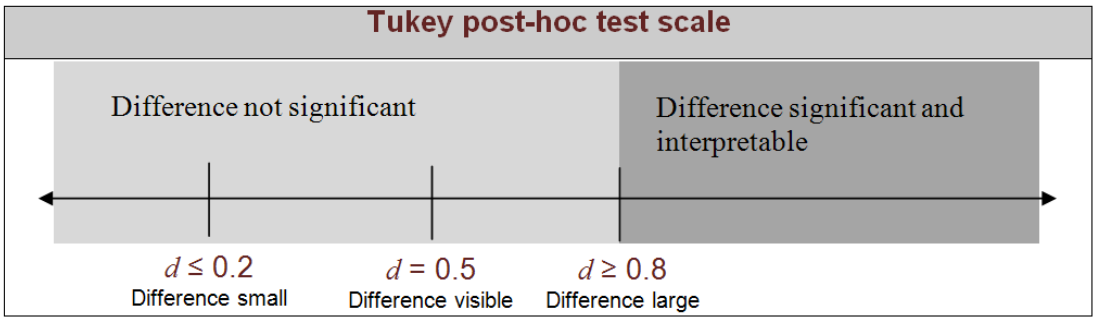


Figure 6.4: Tukey post-hoc test scale (Greeff 2010:123)

6.3.3 Research ethics

Both phases of the research outlined above, the first with the aim of conceptualising a model for safety communication in the mining and construction industries of South Africa and the second a quantitative questionnaire aimed at its evaluation, involve empirical research with human participants taking part therein. According to the policy on research ethics of the University of South Africa (see Unisa (2007)), this

necessitates that the “rights and interests of these human participants be protected” at all times during the research (Unisa 2007:1).

In this research, no participants under the age of 18 were involved. Every participant or respondent gave his/her full written consent for his/her participation in the research. Each participant or respondent was capable of doing so, as no individuals could be classified as ‘vulnerable participants’ – for example those of unsound mind or body (Unisa 2007:15). Furthermore, no risks or harm to the participants’ or respondents’ person resulting directly from the research were envisaged or anticipated.

Concerning the objectivity of the researcher, notwithstanding the elements of scientific enquiry, including validity and reliability, as outlined above, no compensation or sponsorship in terms of monetary or any other value was received for this research, and the researcher remains completely removed from the organisations researched, specifically with respect to allegiance to the Gautrain project and DPOM. The participants or respondents that took part in the research were also not compensated by the researcher for taking part in the research, as this was done on a completely voluntary and honorary manner. Participants who took part in the focus group discussions, however, were offered refreshments in the form of juice and snacks, as some focus group discussions were held over workers’ lunch hour.

Lastly, participation in the research was anonymous. Due to this anonymity, the transcriptions of the interviews with safety managers and the focus group discussions with employees are not attached or included in this research on request of the participants – especially the safety managers, who thought it might be evident which transcriptions referred to their opinions. Both organisations gave written consent for their company name to be used in the research.

6.4 CONCLUSION

This research methodology chapter described the ontological, epistemological and methodological paradigm from which this research is framed as interpretivistic in

nature. The findings yielded by the interpretivistic empirical research methods were employed in the two phases: the first a model for internal safety communication in the mining and construction industries of South Africa, and the second a questionnaire for its testing.

For the first phase, it was explained that a literature review was the main form of data-gathering, although in-depth interviews and focus group discussions were used to situate the theoretical underpinnings. The second phase of the research with the testing of the quantitative questionnaire for the evaluation of internal safety communication took place at two organisations, both with operations involved in the mining and the construction industries of South Africa. This phase took the form of longitudinal research, as the questionnaire was administered at a first organisation with interpretations from this testing ensuring advancements to the questionnaire, which was tested two years later at the second organisation. In the last section of this chapter, the ethical aspects that guided the empirical testing were outlined, pointing to the rigour with which the methodology of the research was executed.

The next sections form the crux of this thesis and discuss the findings resulting from the research methodologies described in this chapter. The next chapter discusses the findings in terms of the first phase of this research (the model for internal safety communication), while the chapter thereafter discusses the findings of the quantitative questionnaire.

CHAPTER 7
MODEL FOR INTERNAL SAFETY COMMUNICATION

7.1 INTRODUCTION

This chapter focuses on a discussion of the findings from the first phase of this study, namely the model for internal safety communication for the mining and construction industries of South Africa. Research Question 6, namely *How should the current internal organisational communication literature be adapted to the communication of safety information within the South African mining and construction industries?*, is thus addressed.

The first part of the chapter is dedicated to understanding the construction of the model as well as the adaptations of the theoretical statements from which it was derived. Thereafter, the model itself is discussed in terms of the five factors that constitute it as well as their respective elements.

7.2 THEORETICAL STATEMENTS FOR INTERNAL SAFETY COMMUNICATION

As discussed in Section 6.3.1.1 of the previous chapter, the construction of the model for internal safety communication was largely based on the theoretical statements derived from internal organisational communication literature. This literature, and therefore these theoretical statements, offered a general understanding of internal organisational communication, and not internal safety communication within the mining and construction industries specifically. For this reason, interviews and focus group discussions were used for the contextualisation and situation of these theoretical statements as per the focus of this study.

Addendum A lists all theoretical statements of the literature review per respective theory discussed. In this section, these theoretical statements are subsequently discussed from the vantage point of internal safety communication within the mining

and construction industries of South Africa, as based on the foregoing literature review chapters.

The theoretical statements derived from the *systems theory* include the concept of wholeness, or holism, pointing to the fact that internal safety communication (as a subsystem) in any organisation in the mining and construction industries should never be viewed or considered in isolation. This kind of communication functions within a greater communication and organisational system alongside other systems with competing as well as complementary objectives. The other systems have an influence on the internal safety communication in the organisation and vice versa, due to the fact that all systems are interrelated and interdependent. In order to see all systems synchronise to the benefit of the organisation, these systems should work together towards mutually defined and observed goals. This process is reached through the integrative tendencies of systems, while their self-assertive tendencies sometimes complicate it. These kinds of complications that spur on turbulent environments should, however, not necessarily be seen as negative, as these could drive the overarching system beyond the previously experienced equilibrium; given that these systems are open and responsive to one another.

The theoretical statements of the *stakeholder theory*, which further the notion of interrelativeness as from the systems theory, revolve around the fact that organisations need to be considerate or heedful of the needs of all stakeholder groups. The theory also distinguishes between primary and secondary stakeholders. Primary stakeholders are most important to the organisation, because the value they add or withhold from the organisation is directly proportional to the success that the organisation experiences. Employees are regarded as one of these primary stakeholder groups, and one of their principal needs in organisations within the mining and construction industries is that of their safety. The theoretical statements of the stakeholder theory, therefore, cumulatively express that considering the safety needs of employees within these industries reflects positively on the reaching of organisational goals, and eventually the bottom line of the organisation.

The theoretical statements of *the relationship management theory* propose that the cornerstone of any stakeholder relationship is communication. The good relationship

instigated by this communication will see employees being more likely to align themselves to the organisational safety objectives, and less likely to interfere with their realisation, for example through aspects such as safety strikes, which continually occur in these industries. For the organisation to enjoy this kind of relationship, it is important that employees have relatively full disclosure of safety information from the organisation and access to the organisation, through management, as the other party to the relationship. The power balance in the organisation–employee relationship should hence be relatively fair or reasonable and trust, commitment and satisfaction should be present therein. Furthermore, the organisation–employee relationship should be reinforced by the organisation's genuine participation in the relationship due to their concern for employees' safety.

The communication that underlines the organisation–employee relationship should be practised in a strategic manner, as proposed by the first theoretical statement of the *excellence theory*. Inherently, the internal safety communication of any organisation in the mining and construction industries of South Africa should not only be driven by technical communicational aspects, but should also make use of symmetrical, two-way flow of communication. Moreover, a representative for internal safety communication should be part of the dominant coalition of the organisation. The symmetrical two-way nature of internal safety communication should similarly entice a participative culture, equal opportunity for diversity and an organic organisational structure as far as possible.

The first theoretical statement derived from *communication satisfaction* proposes that the communication climate in an organisation reflect the goals and objectives of the organisation, with the practice of safety at the proverbial 'factory floor' not contradicting the strategic intent of the organisation. The integration of all departments in the organisation is hence needed, with those divisions traditionally opposing safety goals and objectives (for example production) integrated, to see the reaching of these objectives. Furthermore, personal integration of employees as individuals into this greater objective of the organisation is also needed, where employees are continually kept up to date with all safety aspects in the organisation, in the general sense, as well as in terms of their personal impact on these aspects. External events that impact on the safety in the organisation should also be

communicated, where it is understood that employees will be more integrated if they are simultaneously aware of both their individual places in the practice of safety in the organisation and the overall functioning thereof. In communicating this to employees, the quality of communication media should be considered, with the understanding that these media have both a data- and symbol-carrying capacity.

These theoretical statements from the literature, now reformulated as theoretical statements of internal safety communication, were grouped into five general themes, namely holistic, turbulent, strategic, relational and symmetrical communication. In Addendum A, a table is given wherein the grouping of these theoretical statements is given, along with their origin (i.e. the theory that the original theoretical statements were derived from). These five general themes acted as the foundation for the formulation of the model for internal safety communication.

7.3 MODEL FOR INTERNAL SAFETY COMMUNICATION

Once the broader themes of internal safety communication were ascertained, the theoretical statements could be clustered further into smaller groupings. The broader themes of the model were labelled as internal safety communication factors, while each consequential lesser theme or grouping was labelled an element of the factor. In essence, therefore, the model for internal safety communication depicts the five main factors with between two and five elements, respectively. The factors should be considered holistically, where each one influences and works in concert with the others. It is for this reason that the model is represented circularly, as no one of these factors can be separated from the other, just as no one is more important than the other, or should be done in any order or hierarchy. In applying this model in practice, it should thus be understood that no one element or factor is weighted more than any other, but that its functioning should be seen in line with the wholeness principle of the systems theory that dictates that the whole is greater than the sum of its parts. The model represents all aspects that are necessary for successful internal safety communication in the mining and construction industries of South Africa and the absence of one element influences all others and the whole they create.

As can be seen in Figure 7.1 below, the theoretical statements for internal safety communication in the mining and construction industries of South Africa were ultimately grouped in terms of 16 elements that constitute five factors of internal safety communication.

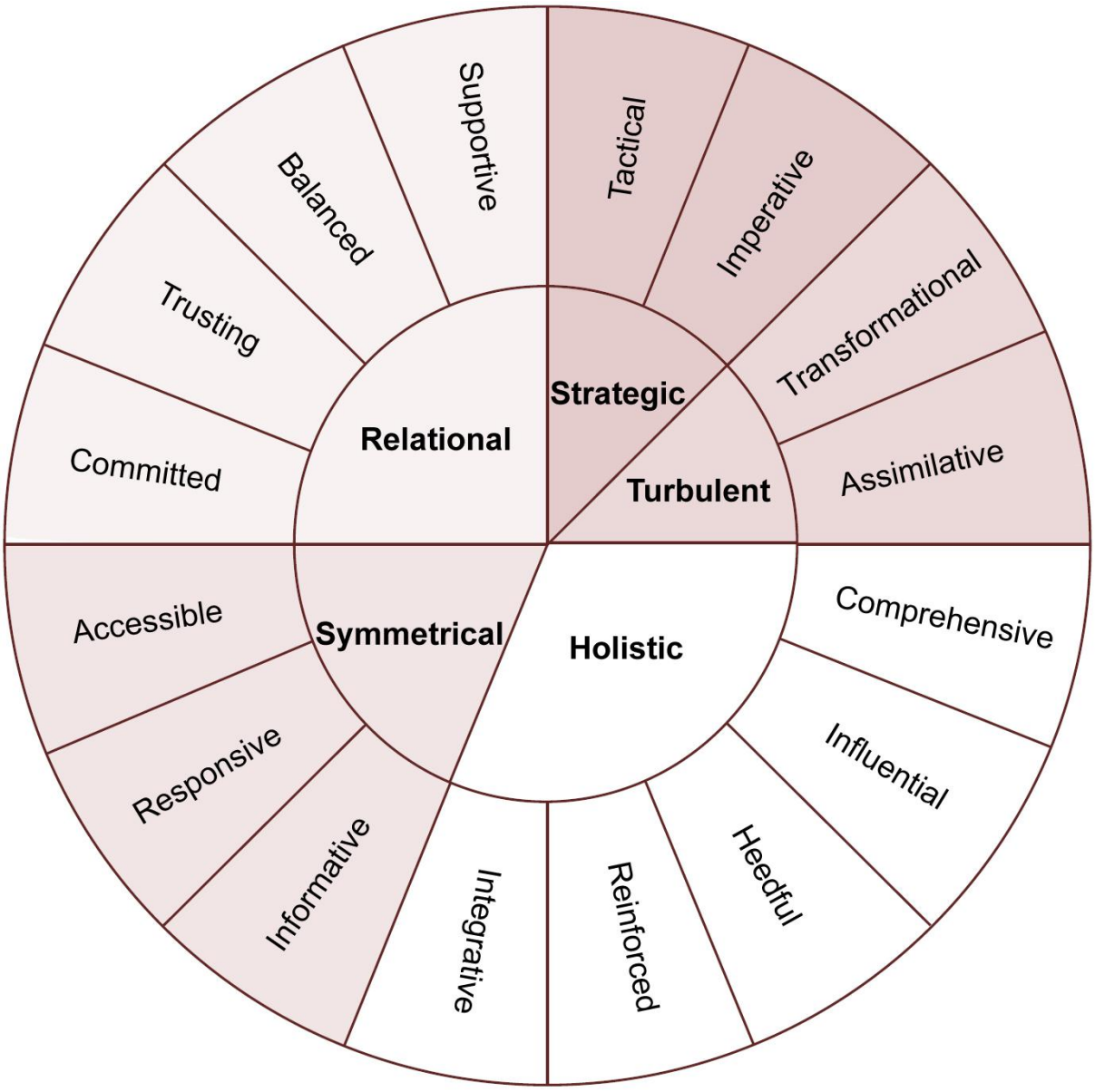


Figure 7.1: Model for internal safety communication

In the sections to follow, a full discussion of each of these factors and elements is given, starting with the holistic factor, followed by the turbulent, strategic, relational and symmetrical factors.

7.3.1 Holistic

Holism, depicted in the lower right-hand side of the model, highlights the fact that internal safety communication within the mining and construction industries of South Africa should be *holistic* in nature. The holistic factor addresses the functioning of internal safety communication in terms of its own consideration along with its relation to other organisational functions. This function, due to its encompassing nature, harbours five elements – pointing to the fact that internal safety communication, in terms of its holistic nature, should be *comprehensive, influential, heedful, reinforced* as well as *integrative*.

7.3.1.1 Comprehensive

The element of comprehensive internal safety communication posits that this communication does not exist in isolation, but alongside many other organisational aspects. If internal safety communication is viewed in isolation from other aspects or facets of the organisation, only a partial picture of it is seen. It is only when internal safety communication is viewed and comprehended in relation to all other functions and facets of the organisation that its true nature is revealed.

It should be understood that internal safety communication is received by employees alongside various other communication messages (in particular) relating to different functions in the organisation. In the same way that the safety department in the organisation should be understood in terms of its placing in the organisation as well as its dynamics with other departments, so too should internal safety communication be seen in terms of its placing and resultant manifestations within the organisation. When all manifestations of internal safety communication, resulting from its interactions with other organisational facets, are taken into consideration, a comprehensive view of it is obtained.

The task of safety personnel is thus to view internal safety communication in context, as it relates, competes and complements other forms of communication in the organisation. Understanding internal safety communication in this comprehensive

manner allows an understanding of how internal safety communication is perceived holistically alongside, for example, production communication.

7.3.1.2 Influential

Viewing internal safety communication holistically offers an understanding of the fact that it is influential with respect to other organisational aspects. Internal safety communication influences other functions in the organisation and is influenced by these other functions or facets in turn. If internal safety communication is not open to these influences, it will not be in a position to alter or prepare its functioning accordingly.

The influential nature of internal safety communication is a matter of *integrative* and *self-assertive* tendencies. Regarding its integrative tendencies, internal safety communication will be prone to adapt to other factors. In its self-assertive tendencies it will, in its turn, influence or impact on these other facets. Which one of these tendencies takes credence in any given situation is a matter of hierarchy and previously defined goals. If the internal safety communication is higher in the organisational hierarchy than an opposing aspect, it will influence that aspect, or if lower, be influenced by that aspect. If, however, previously mutually defined goals exist in the organisation, both systems yield to those, rather than to each other.

For example, if production takes credence within an organisation, either by *decree* or *de facto*, over safety, production communication will be seen as higher on the hierarchy than internal safety communication. In this instance, internal safety communication will be influenced by production communication rather than vice versa. If conflicting messages are sent out regarding production and safety, the production message will be paid more attention than the safety message, due to the fact that the production communication is on a higher hierarchical level, or is so perceived. This hierarchical influenced can, however, be countered by previously mutually defined goals – for example, if an organisation has set goals for a quantity of injury-free shifts, this goal could hold up to the production message that would counter it.

Safety personnel need to be aware of this influential nature if they are to be successful in internal safety communication. Making sure that the goals and objectives of safety are reached is thus dependent on the influences that internal safety communication encounters. Once the influential nature is understood, safety personnel can exercise either the self-assertive or integrative tendencies of internal safety communication for the realisation of the goals and objectives set.

7.3.1.3 Heedful

Heedfulness, as for the purpose of this model, is defined as awareness of and attentiveness to stakeholders with regard to their safety and safety needs. Heedful internal safety communication notices and regards all stakeholders in the organisation as well as their specific safety needs. If internal safety communication is not in touch with employees, as internal stakeholders' safety needs, the internal safety communication could be misinformed, not responding to the specific needs of those it is supposed to serve – in other words, not being heedful.

Furthermore, heedful internal safety communication evaluates decisions in terms of the value that is created or destroyed by it. Heedful of employees' safety needs and aligned to the internal safety communication objectives, decisions that counteract the objective of heeding stakeholders' safety needs should be rejected or altered.

The task of safety personnel in this instance is therefore to discover and understand the safety needs of employees in the organisation in order to allow them to adapt internal safety communication to these needs. This will also allow the reporting of these needs to the dominant coalition of the organisation, an aspect that is discussed as part of the element of imperative internal safety communication.

7.3.1.4 Reinforced

Reinforced internal safety communication is substantiated by actuality, where the climate of the organisation experienced by employees should reflect the strategic goals and objectives of the organisation, with the perceived importance of safety not contradicting the strategic intent. This emphasises the importance of the cliché that

the organisation should not only ‘talk the talk’ of internal safety communication, but should ‘walk the walk’ as well.

In order to do this, aspects such as acting on parameters set by means of internal safety communication should be realised – for example by enforcing regulations, rules, policies and the like that are communicated via internal safety communication. The climate of the organisation should therefore be that internal safety communication is not only an aspect that the organisation ideally strives towards, but also something that should take hold in the everyday activities of the organisation.

Often temptations exist for internal safety communication to be ignored in organisations within the mining and construction industries, in order for production, for example, to be excelled. Internal safety communication is never discontinued or altered because it is enshrined in legal requirements, but in reality, at the proverbial ‘coal face’ or on the ‘factory floor’, the principals or messages of this communication give in to the demands of production. This is detrimental to internal safety communication, as employees do not give it the attention and respect it deserves, as they are conditioned or habituated to believe that this is how safety is responded to in the organisation. Hence, reinforced internal safety communication is geared towards behavioural change, not to pay ‘lip service’ for the benefit of regulatory bodies.

7.3.1.5 Integrative

In terms of the larger functioning of the organisation, internal safety communication should be integrative on two levels: a functional and an individual level.

Functional level integration involves cross-functional and cross-sectional integration between facets, sections and functions of the organisation. Due to the fact that safety in the mining and construction industries is a matter of regulation through the country’s laws, cross-functional and cross-sectional integration of safety and internal safety communication objectives are needed. Certainly, it should not only be the responsibility of safety personnel to enforce and further the realisation of safety objectives, but of all functions and sections within the organisation. Once this

integration is realised, internal safety communication will be more influential in the organisation. Still, this cross-functional and cross-sectional integration require a single coordinating mechanism to oversee it in order for true integration and synchronisation to take place.

Secondly, integration should function on an *individual level*, where individuals should, by means of internal safety communication, be made aware of their place and contribution towards the organisation's overarching safety objectives and successes. If individuals are integrated in this way, for example by means of personalised feedback, they will arguably accept more responsibility and accountability for their own safety involvement or input in the organisation.

7.3.2 Turbulent

The second main factor in the model for internal safety communication, moving counter-clockwise on the schematic representation in Figure 7.1, is the turbulence factor. The factor of *turbulent* internal safety communication builds on the arguments of the holistic factor, wherein the reactions of internal safety communication to the ever-changing organisational communication environment in which it functions are regarded. It was seen in the first factor above that internal safety communication should adapt to its environment. This next factor describes this adaption in terms of its *transformational* and *assimilative* prospects.

7.3.2.1 Transformational

For transformational internal safety communication, turbulent environments with activist groups are encouraged, as this kind of turbulence excels communication to better itself to respond to this turbulence. Transformational turbulence in an organisational environment can excel internal safety communication *beyond* the equilibrium it experienced before the turbulence originated. Turbulence and its accompanying aspects should therefore not be feared or avoided, counter-intuitive as it may sound, as communication is bettered by responding to it in a strategic manner (which is discussed as the next factor of this model). Transformational

turbulence specifically allows the organisation to experience a new and better equilibrium where the status quo has been transformed for the better.

For example, to concretise the above, activist groups such as unions in organisations in the mining and construction industries of South Africa should be encouraged to play a part in the internal safety communication of the organisation. Working from the premise that both parties are working towards furthering the safety of employees (not taking into account political exploits and the like), the inclusion of these kinds of activist groups can further internal safety communication. This is as a result of both parties supporting and forwarding the same objectives, yet from different vantage points that make them both equally, though differently, equipped. In other words, from a turbulent environment, internal safety communication can be transformed in order to improve it. Still, turbulent environments do not always give rise to situations that require transformation, and for this the second element of the turbulence factor is employed.

7.3.2.2 Assimilative

Turbulence can also give way to assimilation of previous diverse perceptions or beliefs between the organisation and its employees. *Assimilative* internal safety communication works towards jointly sharing and solving problems brought on by turbulent environments, working cohesively, rather than disjointedly.

For this to come about, the organisation has an opportunity to establish a relationship of such a nature that employees feel that the organisation and they are aligned in terms of their safety and that working with the organisation in solving these problems will progress towards the best solutions. Although this aspect is elaborated on further in the relational factor below, turbulent environments could give rise to opportunities where employees and the organisation build a symbiotic relationship that allows both to support the mission and objectives of the organisation, mindful of their own needs.

7.3.3 Strategic

The third factor, *strategic* internal safety communication, points to the purposefulness of this kind of communication in the sense that is it practiced in an intentional and considered fashion. In many organisations within the mining and construction industries, as discussed in Chapter 2, internal safety communication is headed and implemented by safety personnel who are not necessarily competent or even equipped communicators. Consequently, internal safety communication holds the risk of being run only on a technical or baseline practical level. The risk of this is that internal safety communication can become disconnected, operating singularly in compartmentalised actions that do not link up with one another or with the strategies and objectives of the organisation. Internal safety communication should rather be strategic and purposeful in nature, encompassing to two elements *tactical and imperative* communication.

7.3.3.1 Tactical

The *tactical* nature of internal safety communication positions it polarly to operate only on a technical level. Although the technical aspects of internal safety communication are just as important, it is stressed that this communication should be driven by the mission, goals and objectives of the organisation generally and the safety department specifically. Each aspect or activity should, therefore, be directly traceable to a specific objective(s) or goal(s).

When internal safety communication is tactical and is unswervingly linked to organisational safety objectives or goals, the communication has resolve and is purposeful, employing not merely loose-standing or fragmented messages. This will allow employees to relate to the underlying and encompassing intent of internal safety communication, even if singular messages are left out of the equation.

This aspect holds credence considering the fact that all organisations in the mining and construction industries of South Africa have to abide by goals set by government if they are to be allowed to operate. Government therefore sets safety goals and objectives for the organisation that are to be realised if the organisation wants to see

itself surviving. Internal safety communication has to be in the service of these goals and objectives, aiding in its attainment, which can only be done if it is tactical in its strategic nature.

7.3.3.2 Imperative

With respect to the *imperative* nature of internal safety communication, such communication should form part of the considerations of the dominant coalition in the organisation to allow the formulation and advancement of safety objectives and goals within the organisation. If internal safety communication does not form part of the dominant coalition of the organisation, this organisation will not be in a position to formulate objectives that are mindful of the aims of internal safety communication.

In turn, if the organisation and its dominant coalition do not consider safety and internal safety communication important enough for these aspects to hold an equal right in this coalition, the chances will be that the organisation's employees will take the same stance of nonchalance or inconsequentiality. Conversely, if internal safety communication is part of the dominant coalition of the organisation, it is in a position to contribute to the realisation of its justified importance.

7.3.4 Relational

In the above factors, the relational factor was touched upon, inasmuch as the fact that it is reiterated that the organisation should strive towards building a relationship with its employees through internal safety communication. Although the general organisation–employee relationship is established by means of all internal communication in any given organisation, a specific relationship in terms of employee safety should also be present. This relationship will impact on and be impacted by the general organisation–employee relationship, but it is important for safety personnel to establish a facet within this general relationship that is safety-driven. Even if the general organisation–employee relationship is not as successful, employees should still feel that the organisation is concerned, can be trusted and is committed to their safety; in other words, that the organisation has a good *safety* relationship with them. To this end, four elements of the safety relationship can be

distinguished: *supportive, balanced, trusting* and *committed* internal safety communication.

7.3.4.1 Supportive

The safety relationship should firstly be *supportive*, as both parties to the relationship need assurances that their concerns and needs are regarded as legitimate. If one or both parties feel that the other regards their concerns as spurious, the relationship will suffer. Specifically, employees need to feel that the organisation regards their safety needs and concerns, which they might have or raise, as legitimate. If the perception is that the organisation does not regard these needs or concerns in earnest, the employees will not trust the organisation with their safety, resulting in losing respect for the internal safety communication of the organisation and feeling that they are not 'in it together' with the organisation.

Both the organisation and employees need to cultivate a relationship wherein all concerns raised are regarded and weighed up in sincerity. In this way, the organisation–employee safety relationship will be seen as supportive to concerns and needs of either party. The relationship itself should also be founded in a concern on the part of each of the parties for the other's welfare. The relationship should display the characteristics of a communal relationship, wherein the one party offers benefit to the other due to the fact that it not only expects something in return (as would be the case in an exchange relationship), but also because it is genuinely concerned about the other's welfare regarding safety. Once the relationship is established within this genuine concern for the safety and welfare of the other as well as serious assurances of legitimacy, the relationship can be regarded as being supportive.

A practical example of these aspects would be that organisations within the mining and construction industries need to focus on building a relationship through internal safety communication, which ultimately communicates that the organisation is not only implementing safety procedures due to the fact that it is required of them to do so by law, but because the organisation is genuinely concerned for the safety of its employees. If this kind of relationship is established in the organisation, employees

will be more likely to heed and be receptive to the internal safety communication directed at them, and will, therefore, be empowered to ultimately work more safely for the benefit of themselves as well as the organisation.

7.3.4.2 Balanced

In an organisation–employee relationship, *balance* in terms of power is needed, where neither of the parties to this relationship should feel the other holds more control than is required. Rather, each of the parties should feel that it has a rightful, if not equal, amount of power in the relationship and that it is balanced overall.

Having said this, in any organisation–employee relationship, the scale of power will always tip towards the side of the organisation – this is natural and healthy. Still, there should be an agreement regarding this power allocation, with one of the parties not feeling exploited by the other in terms of the distribution of power. The organisation should therefore strive towards giving employees a voice in the relationship and should not design internal safety communication geared to only sending messages, but should also make provision to receive messages from the employees.

7.3.4.3 Trusting

One of the most important aspects of the organisation–employee relationships is trust. If it is considered that employees are placing their lives in the hands of the organisation and specifically the safety personnel, then it is understood why *trusting* is so important. One of the greatest aspects to be present in internal safety communication, in order for trust to be established in the ensuing relationship, is confidence.

Each of the parties to the relationship, but especially employees, should have confidence in terms of its own as well as the other party's competence in guarding safety. If employees feel that the organisation is not competent in keeping them safe, they will not pay attention to the internal safety communication directed at them, doubtless to the detriment of themselves as well as the organisation. The

organisation should manifest confidence in itself, and make sure that employees trust them regarding their safety. In order to establish this confidence and eventual trust, organisations need to ensure that they engage their employees in an honest and open manner, and that they do not exclude employees or act deceitfully in terms of safety aspects.

7.3.4.4 Committed

For *commitment*, each of the parties to the relationship should feel that the relationship is worth spending energy to maintain and promote it. Only once commitment is present in the organisation–employee safety relationship will the relationship yield all of the benefits expected of it, for example a positive stance on organisational aspects such as goals and objectives and the like.

In order for employees to feel that the relationship is worth their energy to promote and maintain, the organisation should ensure that the internal safety communication is of such a nature as to help, assist and generally be worthwhile to the employees. If the internal safety communication does not offer accurate and new or relevant information, they will not feel that the safety relationship with the organisation is worthy to maintain. This shows that the organisation needs to be strategic and purposeful in its communication to employees, as inferior internal safety communication will not entice commitment from the employees, which is needed to fulfil safety goals and objectives. Likewise, the organisation should show its own commitment to the relationship if it expects the employees to be committed in return. Linking back to the first two elements of the relational factor discussed, the organisation should show its commitment by being supportive and forwarding a balanced relationship.

7.3.5 Symmetrical

Symmetrical communication refers to the fact that internal safety communication should be holistic and balanced in its own right. Linking closely to the factor of strategic communication, this factor has three elements, namely *accessible, responsive* and *informative* safety communication.

7.3.5.1 Accessible

Accessible internal safety communication is open communication that promotes participation and full disclosure. Accessible internal safety communication encourages and endorses participative cultures wherein all employees are open to make suggestions, take part in joint decision-making and are empowered through communication and the sharing of information to truly contribute towards the reaching of organisational goals in an equitable environment that promotes teamwork.

Internal safety communication should, therefore, set porous parameters that allow for the organisation to be accessible and open to the employees, and for employees to be accessible to the organisation and each other.

7.3.5.2 Responsive

Keeping within participative organisational cultures, the input and feedback generated from employees due to the accessible nature of internal safety communication should be responded to or taken into account by the organisation in order to be *responsive*. The content generated by the feedback of internal safety communication in its accessible element should be interpreted, taken into account and, where applicable, acted upon in the organisation. If the communication is symmetrical in being responsive in this way, both parties to the relationship can feel that their needs have been honoured, if not met. This done, the parties will be more responsive to each other's communication due to the fact that they know their own communication is heeded. For example, if employees feel that their inputs into safety are taken into consideration they will be more likely to be responsive in turn to the internal safety communication offered by the organisation. Once again, the responsive nature of internal safety communication therefore aims at behavioural interjection in terms of its safety message.

7.3.5.3 Informative

At the rudimentary level, internal safety communication should offer guidance to employees as to how to do their job safely, and as was seen in the integrative element, this should be directed and relevant to each employee and his/her specific job situation. When the internal safety communication relates relevant guidance as to safe work procedure, it will be *informative*.

Employees should not only be informed about doing their jobs safely, but should also be informed about external events, such as government policies that govern what constitutes safe work procedure. In this way, employees are empowered to not only see their personal or individual place within the safety operations of the organisation, but also where they fit into the 'bigger picture' of its operations.

When communicating in this way, the communication media through which it is communicated should also be taken into consideration. In view of the data- and symbol-carrying capacities of all media used internally in the organisation, and then specifically cognisant of their lean and rich natures, an appropriate channel for the message to be conveyed should be chosen. For example, for a safety message with complicated nuances, a lean medium should not be used, but rather a rich medium that will accommodate the complicated nature of the message. Alongside this, all safety personnel should keep their recipients of the communication in mind when choosing a media channel, for example their literacy, languages and the like, making sure it is appropriate and that the message will be as informative to them as it is intended to be.

7.4 CONCLUSION

In this chapter, the findings of the model for internal safety communication were presented. Internal organisational communication theories were condensed into their summarising theoretical statements, which were then contextualised to internal safety communication within the mining and construction industries of South Africa.

These contextualised theoretical statements were ordered according to theme, which made up the five factors of internal safety communication. These internal safety communication theoretical statements that fall under each factor were then further classified into elements, ultimately revealing each factor as having between two and five elements.

In the first of the five factors, it was seen that internal safety communication should be holistic in its effect, and that this could be accomplished if internal safety communication is comprehensive, influential, integrative, heedful and reinforced in the organisation. Viewing this communication holistically leads to the inclusion of the environment in which it functions, which is addressed by the second factor of internal safety communication, arguing that this kind of communication is turbulent. The turbulence factor is supplemented by transformational as well as assimilative elements, explaining the two eventualities of reacting to a turbulent safety environment.

In order to react, or even more so, be proactive in these turbulent environments, the third factor of internal safety communication postulates that it should be strategic in nature, allowing for tactical communication that is viewed as imperative in the general organisational sense. Being strategic in this way will pave the way to relational safety communication (the fourth factor), which views internal safety communication as supportive, balanced, trusting and committed, if the organisation wants to maintain a relationship with employees that will aid and further safety goal attainment. Linking back to the third factor, however, the communication in the safety relationship should be symmetrical in order to forward this goal attainment. The elements of this fifth factor argue that internal safety communication should be informative as it is responsive and accessible, pointing to the fact that internal safety communication is only successful once the organisation is open and holistic – bringing the model (literally and figuratively) full circle.

In the next chapter, the evaluation of these factors and elements in the organisational setting is discussed and the questionnaire as measuring instrument of internal safety communication is unpacked in detail.

CHAPTER 8
QUANTITATIVE QUESTIONNAIRE FOR THE EVALUATION OF INTERNAL SAFETY COMMUNICATION

8.1 INTRODUCTION

Chapter 6 gave a detailed discussion of the methodology followed in the empirical part of this study in terms of two main outputs. The first output was a model for internal safety communication and the second a measuring instrument in the form of a quantitative questionnaire for its testing. The previous chapter discussed the findings from the model for internal safety communication as basis for this chapter, which discusses the second output: the quantitative questionnaire as measuring instrument of internal safety communication. This chapter therefore focuses on the final research question for this study, which asks *How should current measuring instruments be adapted or developed to measure internal safety communication within the South African mining and construction industries?*

In Chapter 6, a graphical representation was also given, depicting the methodological process followed in the empirical researching of this questionnaire. In Figure 6.2 it could be seen that this research was subdivided into two stages with a separating intervention, owing to its longitudinal design. This chapter discusses the findings acquired from the administration and testing of the questionnaire from each one of these two stages. This discussion thus firstly considers the interviews, pilot study, administration of the questionnaire and focus group discussions held at the Gautrain project's Precast Yard, setting out the findings that led to the changes to the questionnaire, which was tested at DPOM (the second stage).

In Figure 8.1 below, a synopsis of Figure 6.2 is given, showing only the progression of the empirical testing of the questionnaire. This figure is also used throughout this chapter to show the progression of the discussion in the subsequent sections of this chapter, highlighting the stage under discussion. The first stage of the testing is discussed directly below, followed by the second stage. The discussion of the first

stage of the research begins with the theoretical grounding of the questionnaire, followed by the empirical pre-testing, namely the findings of the interviews with safety managers of the Gautrain project's Precast Yard and the pilot study among general employees of that organisation. Subsequently, the discussion focuses on the findings of the administration of the questionnaire to employees at the Gautrain project's Precast Yard and then on the focus group discussions held. These findings cumulatively constituted the research intervention, which involved changing the questionnaire, based on these findings, and preparing the questionnaire for the second empirical testing stage. The second stage firstly addressed the empirical pre-testing of the questionnaire (the interviews with management and the pilot study) at DPOM and secondly, the administration of the questionnaire at this organisation, which led to the compilation of the final questionnaire, discussed at the end of this chapter.

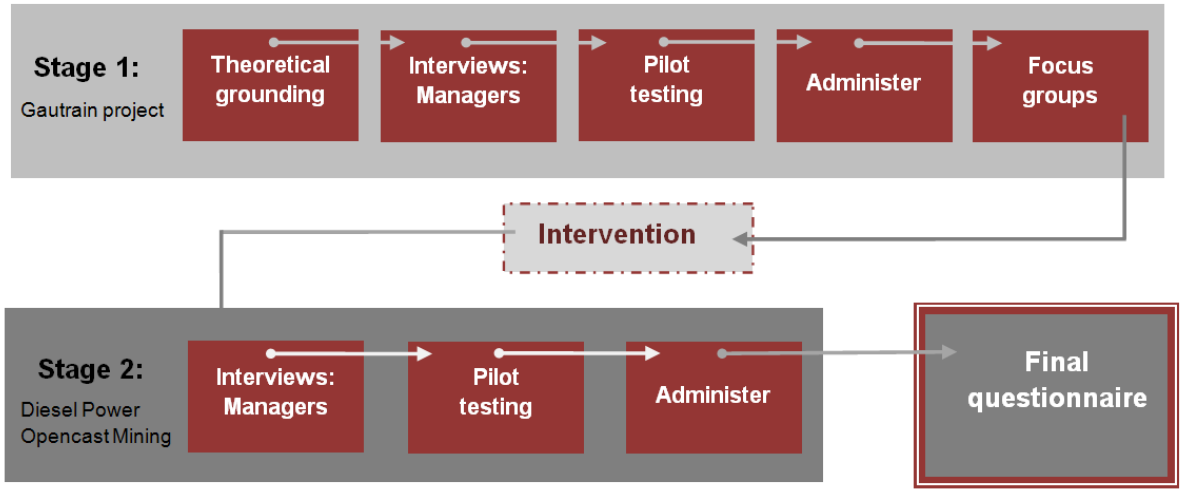


Figure 8.1: Questionnaire progression stages

8.2 STAGE 1 FINDINGS

As seen in Figure 8.1 above, the first step in the questionnaire compilation process was to formulate a first draft from the literature. This first draft was specific to internal organisational communication, which was translated to be specific to internal safety communication. Interviews with safety managers were conducted, followed by a pilot study with a sample of employees, for whom the questionnaire was designed, in order to specify this questionnaire accurately for internal safety communication. The

questionnaire was altered following the two pre-testing methods and administered to a sample of the entire employee corps of the Gautrain project's Precast Yard (hereafter simply referred to as the Gautrain project). Lastly, the findings from the quantitative questionnaire were investigated and clarified by qualitative focus group discussions with employees who took part in the quantitative testing. Each of these methodological progressions in the compilation of the questionnaire is subsequently discussed.

8.2.1 Stage 1: Theoretical grounding

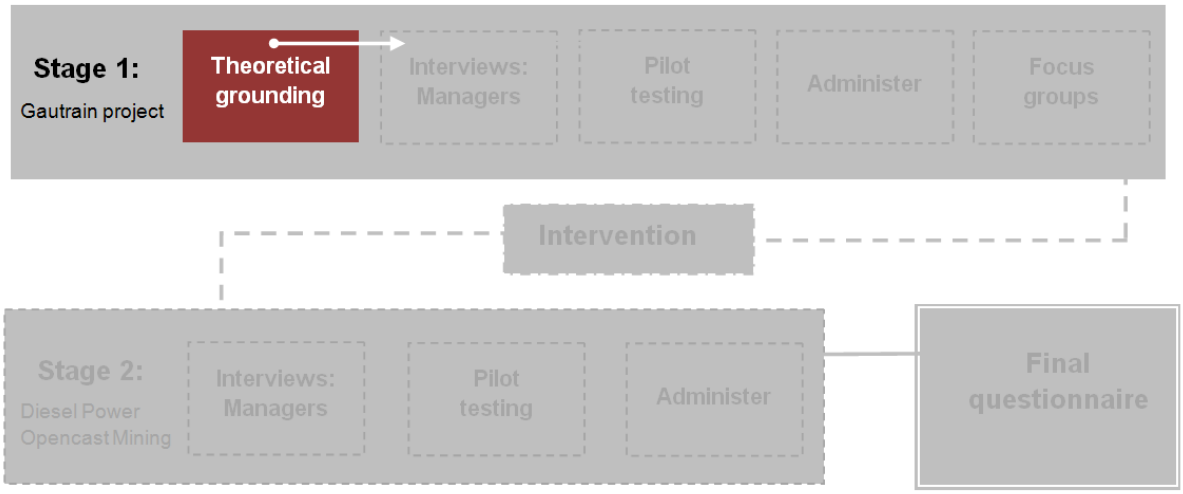


Figure 8.2: Stage 1: Theoretical grounding

The theories discussed in this study are the systems theory, the stakeholder theory, the relationship management theory, the excellence theory and communication satisfaction. The last three theories enclose their own quantitative questionnaires for the evaluation of the elements discussed in each respective theory. With the aim to be exhaustive and rigorous, and specifically to represent the systems theory and stakeholder theory in the compilation of the questionnaire, all relevant quantitative internal organisational communication evaluative questionnaires in the literature were researched for possible use or inclusion in this study.

Most internal organisational communication questionnaires disqualified themselves in terms of face validity, due to their specific focus – for example communication process instruments focusing specifically on conflict (cf. Hall 1986; Rahim 1983;

Thomas & Kilman 1974), mentoring and productivity (cf. Eubank 1988; Mali 1978) or leadership (cf. Daniels, Dyer & Moffitt 1975; Hersey & Blanchard 1973; McClelland 1961). As the questionnaire in this research is specifically aimed at internal safety communication in all its facets, questionnaires such as the communication satisfaction questionnaire of the International Communication Association (ICA) (as in Downs et al 2004:114); Grunig and Hon's (1999) relationship questionnaire; the organisational communication scale questionnaire (as in Roberts and O'Reilly (1974) and Roberts and O'Reilly (1978)); Francis and Woodcock's (1994) audit of communication effectiveness questionnaire; the excellence theory employee questionnaire (as in Grunig et al (2002)); Muchinsky's (1977) climate and satisfaction questionnaire; the measurement of organisational commitment questionnaire (as from Mowday and Steers (1979)); and the audit of organisational communication questionnaire by Greenbaum (1974) were considered, inter alia.

As the theoretical grounding of this study speaks directly to communication satisfaction (yielding the communication satisfaction questionnaire from Downs et al (2004:114)), the excellence theory (with the excellence theory employee questionnaire (as in Grunig et al (2002)) and the relationship management theory (with Grunig and Hon's (1999) relationship questionnaire), these three questionnaires were all included. Taking the potential length of the questionnaire into consideration, not all of the items from each of these questionnaires could be included, but only a selected few, in order of pertinence to the focus of the questionnaire.

Francis and Woodcock's (1994) audit of communication effectiveness questionnaire, which focuses on effective integration, lack of prejudice for cohesion and intelligent communication skills, was used specifically for its focus on those aspects brought forward by the systems theory. The items of this questionnaire were considered alongside Roberts and O'Reilly's (1974; 1978) organisational communication scale questionnaire and Greenbaum's (1974) audit of organisational communication questionnaire, which both have a similar focus.

Muchinsky's (1977) climate and satisfaction questionnaire was considered alongside the ICA's communication satisfaction questionnaire from Downs et al (2004:114), but

most elements and all those crucial to the focus of this study were found to be overlapping, so inclusion of items only found in Muchinsky's (1977) questionnaire was unnecessary. Similarly, Mowday and Steers' (1979) measurement of organisational commitment questionnaire overlaps with Grunig and Hon's (1999) relationship questionnaire, the latter holding commitment as one of the primary relationship indicators. This questionnaire also included evaluation of the stakeholder theory, as this theory was the founding basis for the relationship management theory. In the singular instances where a tested questionnaire from the literature could not provide sufficiently for a theoretical statement, these statements from the literature were formulated as items to be tested by means of a Likert scale, analogous to the items from the tested questionnaires from the literature.

All theoretical statements found in the literature review that are pertinent to the focus of this study and therefore included in the model for internal safety communication were accounted for in terms of the evaluation of the model. These questionnaire items were, as were the theoretical statements that preceded them, made applicable to the evaluation of internal safety communication specifically, and not internal organisational communication generally. These alterations mostly hinged only on semantic aspects, for example where the original questionnaire item might be *Extent to which my subordinates are responsive to my downward directive communication* (as in the ICA's satisfaction questionnaire), the adapted item would read *Extent to which my subordinates are responsive to my safety communication*. Le Roux, Naudé, Fourie and Van Heerden (2004), who studied the organisational communication of Lonmin mine in South Africa, also made suggestions in terms of item alteration in questionnaires for the mining industry (although in terms of general communication and not specifically internal safety communication), described in detail by Le Roux (2008). The questionnaire from this research was also based (inter alia) on the ICA's communication satisfaction questionnaire, Francis and Woodcock's (1994) audit of communication effectiveness questionnaire and Grunig and Hon's (1999) relationship questionnaire, which allowed for the same alterations in this study's questionnaire. One element of internal organisational communication that could not be translated in terms of the focus of this study, only by means of semantic alterations, was the climate derived from internal organisational communication.

An undisputed fact of climate is that it is influenced by various amalgamated elements, many undistinguishable from one another (Hemmert 2009:14; Bartels, Pruyn, De Jong & Joustra 2007:117; Eisenberg & Riley 2001:307). For this reason, those items from the tested communication questionnaires in the literature measuring this especially latent variable could not be included in this questionnaire, as it is aimed at evaluating the whole communication climate of the organisation. As discussed in the literature review chapters of this thesis (specifically Chapter 5), safety climate is a very particular phenomenon. Questionnaires from the literature dealing specifically with safety climate were therefore researched to be included as surrogate for this element's more general counterpart. Although various safety climate questionnaires exist (cf. Ali, Abdullah & Subramaniam 2009; Guldenmund 2007; Zohar 2002), arguably the most often used quantitative questionnaire, considered a seminal work in this field, is Díaz-Cabera, Hernández-Fernaud and Isla-Díaz's (2007) safety climate questionnaire. For this reason, items from this questionnaire, in line with the focus of this study, were included for this research. This first draft of the questionnaire was advanced by means of interviews with safety managers and a pilot study with mining and construction employees.

8.2.2 Stage 1: Interviews and pilot study

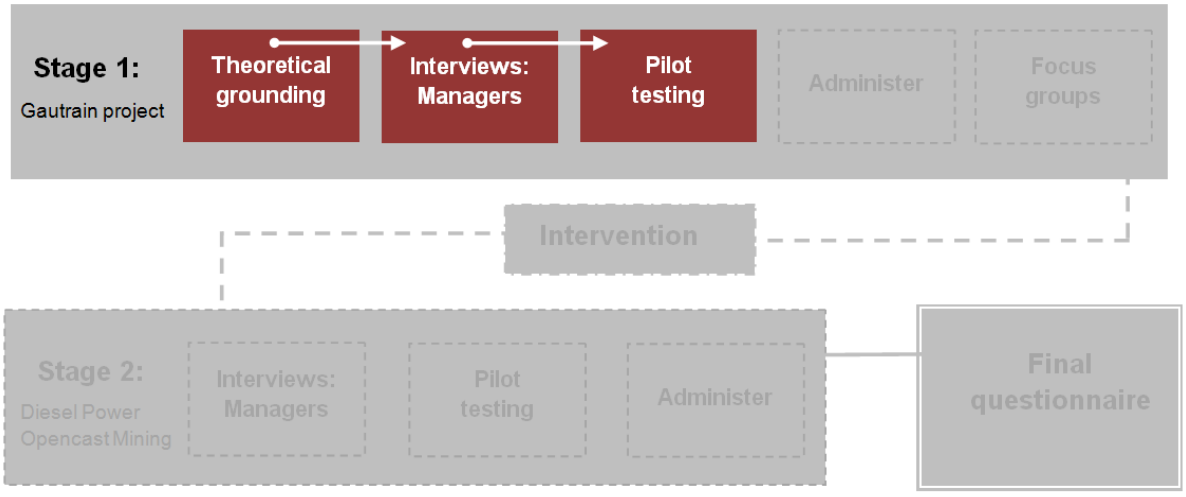


Figure 8.3: Stage 1: Interviews and pilot study

The pre-testing of the questionnaire was done by holding interviews with safety managers at the Gautrain project, as well as a pilot study among general employees

of the organisation. The interviews with safety managers had various purposes, including an understanding of the nature of safety in the mining and construction industries and forming part of the expert panel evaluating the questionnaire as part of the pre-testing thereof.

The first aspect commented on, concerning the questionnaire specifically, was that it should not be so lengthy that employees would be kept away from their production duties for too long, because the managers felt that no site manager or mine overseer would grant permission for the questionnaire to be administered on their site or at their workplace. It was also said that safety in the organisation was set up directly against production communication, with both influencing the other inasmuch as it was believed that when safety is heeded, production was hampered, and when production is heeded, safety is hampered. The suggestion was thus made that production communication be included in certain questions as an item to be measured, so that the researcher would be able to gauge the response to safety and internal safety communication against that of production. An example of such a question is the last quantitative question of this questionnaire, which asks *How would you rate the organisation's behaviour with regard to:*, involving both safety- and production-related items. This allowed the researcher to comment on the relationship between safety and production in a direct way from the viewpoint of the employees.

Furthermore, the managers commented on organisation-specific aspects, for example helping to clarify the different job levels at the Gautrain project and their specific naming in that organisation. With the changes from the findings of these interviews made, the questionnaire could be piloted with employees of the organisation, which yielded findings not necessarily with respect to the items asked specifically, but rather more in terms of the administration of a questionnaire in the context of the mining and construction industries.

At the onset, the physical conditions under which the respondents filled out the questionnaires had to be noted. Due to the fact that respondents in these industries, in many instances, had to fill out the questionnaires *on site*, meaning not in an office or in a space where they had the use of a desk or the like, two points that usually do not matter under 'normal' circumstances had to be considered. Firstly, the

administration of these questionnaires required that the respondents had to be issued with all necessary stationary (pencils, erasers, etc.), as it could not be taken for granted that the respondents would have these resources at hand. Secondly, the questionnaires needed to be physically easy to handle in these rough conditions. It was for this reason that the questionnaires administered at the Gautrain project and at DPOM were laid out in A5 format, which was easier to handle and answer on one's lap, for example.

The first finding regarding the content of the questionnaire specifically was that respondents with lower literacy levels had to be accommodated in terms of the complexity and the length of the questionnaire. In the first place, the *complexity* of the questionnaire content proved to be a problem, as respondents in the mining and construction industries often "lack basic numeric, business, technological and business-language skills" (Le Roux 2008:266). This resulted in having to simplify the wording of the items, while ensuring that the meaning remained unchanged.

The *length* of the questionnaire also proved problematic, as the questionnaire of this research aimed to be a comprehensive instrument inasmuch as it investigated internal safety communication in *all* its facets. The length of the questionnaire, compared to existing questionnaires of the same length, should also not have taken respondents longer than 20 minutes to complete. Some respondents at the Gautrain project, however, took considerably longer (some did not even fully complete the questionnaire after spending close to an hour on it), while others needed translation assistance, which prolonged this process even more. This led to the requirement that the questionnaire to respondents in these industries had to be as succinct as possible.

It was also found that a translated questionnaire would be unsuccessful due to the fact that there was a vast diversity of languages spoken in organisations within the mining and construction industries, an aspect also found by Le Roux (2008) concerning questionnaire administration at Lonmin platinum mine. Furthermore, the different languages are read on different levels, and many different dialects of the same language exist. In order to bridge this obstacle, Le Roux (2008) suggests the use of translators that are able to, in a one-on-one situation, aid those respondents

who are not comfortable with answering the English questionnaire on their own. This was found to be the case in the current research as well, where the translation of aspects had to be done in such a fashion as to allow elaboration. For example, in Chapter 2 of this thesis, it was mentioned that Fanakalo is still made use of as the *de facto* language of the mining and construction industries. In Fanakalo, however, there is no word for *relationship*. The closest word to this is *thandi*, which, directly translated, means *love.* This can prove to be an insurmountable problem when a *relationship* questionnaire is being administered. It was found that translators able to elaborate on aspects in different languages (as suggested by Le Roux 2008) should rather be employed. These facilitators/translators need to be thoroughly trained and consensus regarding translations need to be reached before the commencement of the administration of the questionnaire. At the Gautrain project, it was thus found helpful if the facilitators/translators formed part of the pilot study phase, so that all problems regarding the translations could be addressed while changes could be made and there was not so much time pressure, as was the case during administration.

All the questionnaires used for the compilation of the internal safety communication questionnaire made use of Likert or semantic differential scales. The internal safety communication questionnaire followed suit. However, in the piloting of the questionnaire, the respondents showed difficulty in interpreting these scales, for example the five- or nine-point Likert scales suggested by Grunig and Hon (1999) and Francis and Woodcock (1994). For this reason, the scales were firstly reduced to a five-point scale, which proved easier for the respondents to interpret. Some facilitators/translators who assisted respondents unable to fill out the questionnaires by themselves helped the respondents grasp this rating by making use of the respondents' five fingers on one hand and relating each to a point in the scale.

However, even the five-point scale proved to be a problem, due to the 'neutral' or indecisive rating (usually in the middle) of the scales, which had to be removed. The main reason for this was the aspect of translation. In some languages used during the administration of the questionnaire, there is no such word or concept as *neutral*. In terms of the questionnaire, this aspect would have to be translated along the lines of "this is not something I have a meaningful opinion about" or in some cases as

"sometimes yes, but sometimes no". Through this kind of explanation and translation it was seen that most of the employees opted for this option every time – which is not as indicative of their perceptions as the other options on the scale would be. The final Likert and semantic differential scales used in the actual and full questionnaire administration at the Gautrain project was thus a four-point equivalent of its extended version.

8.2.3 Stage 1: Administration of the questionnaire and focus group discussions

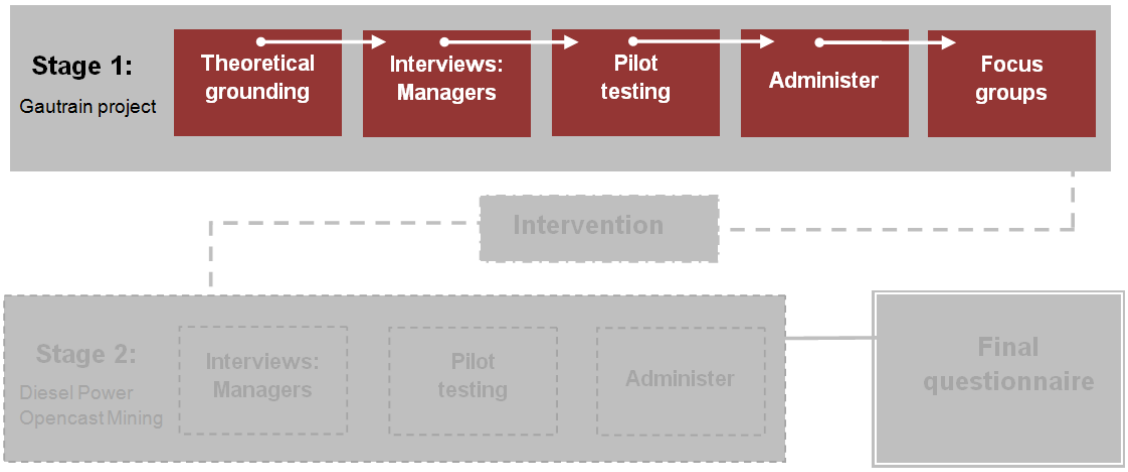


Figure 8.4: Stage 1: Administration of the questionnaire and focus group discussions

The questionnaire was administered to a representative sample at the Gautrain project's Precast Yard, with a realised sample of 281 units of analysis (individual employees). These employees were identified by the foremen of the site, then handed a questionnaire (and the essential items such as a pencil and eraser). If it was determined that an individual respondent would not be able to answer the questionnaire without the help of a facilitator, one was assigned to this individual. If the respondent was competent to answer the questionnaire unassisted, he/she did so in his/her own time, as all respondents were excused from their commitments for this exercise. The administration of the questionnaires was done on the site of the Precast Yard, ensuring that the research was done within the natural environment it pertained to. This strengthened the comfort level of the respondents and

strengthened the reliability of the research (Keyton 2006:54; David & Sutton 2004:171).

After the administration of the questionnaire and the first general interpretation of the findings, focus group discussions were held with general employees to better understand the findings gleaned from the questionnaires. The focus group discussions held at the Precast Yard were extended over three days. The first day the first focus group discussion was held with general workers on site, the second day with female workers of all job levels and the third day with supervisors and managers. The focus group discussions lasted between 57 and more than 80 minutes, and were held in one of the boardrooms made available on the Precast Yard (in the office buildings on site), again ensuring that the research was done in the natural setting it pertained to.

The focus group discussions with men were split according to job level in order to prevent any skewing of the results due to the fact that employees might not want to comment on safety and safety performance in front of their superiors, in fear that this might be associated with them and their safety performance personally. Unfortunately, there were few female employees working in production; therefore, a split according to job level could not be applied to this focus group. The findings from the focus group discussions were used predominantly for the contextualisation of internal safety communication, in the same way as the interviews. Participants were also asked about the questionnaire as well as aspects pertaining to the questionnaire that stood out in the initial and first statistical interpretations as aspects in need of further investigation or clarification.

Below, the findings in terms of both the administration of the questionnaire (quantitative) as well as the focus group discussions (qualitative) are presented by commenting firstly on the general adaptations needed for the questionnaire and secondly on specific aspects of particular items. Subsequently, the statistical validity and reliability of the elements and factors are commented on. In the last section of this chapter, all items of the questionnaire, their interpretations as well as their bearing in terms of the model for internal safety communication are commented on, where the final draft of the questionnaire is discussed. In the sections below,

however, only the adaptations and changes made to the questionnaire, which saw it progress towards the final product, are discussed.

8.2.3.1 General adaptations to questionnaire in Stage 1

In order to simplify the understanding of the findings of the questionnaire, Addendum B contains all the question and item numbers of the questionnaire as they pertain to the draft version administered at the Gautrain project (taken up in Addendum B), the version administered at DPOM (taken up in Appendix C), the final version (in Appendix A) and its relation to the factors and elements of the model for internal safety communication.

The first general finding is concurrent with the findings of the interviews as well as the pilot study discussed above. Employees found the questionnaire to be long and taxing, and commented on this aspect in the focus group discussion, where participants in Focus Group 1 (with generally male employees) stated that they started getting “tired” towards the end of the questionnaire and sometimes “just filled it out without reading it [the questions/items] properly”. The problem presented in this case was that a balance needed to be struck between including enough items and questions in order to truly measure the latent variables of internal safety communication sufficiently and not overwhelming respondents with a long and taxing questionnaire. This aspect is in line with the findings of Greeff (2011) and Le Roux (2008), where both authors argue that the saturation point, at which employees in the mining and construction industries are overwhelmed or tired by the questionnaire, might be much sooner than for the average respondent.

The inclusion of a multitude of items or questions measuring the same variable (in order to strengthen reliability) is, therefore, not something that can be taken for granted in this instance, as the questionnaire has to be as succinct as possible in order to discount this element of fatigue. In this case, therefore, although it is sustained that latent variables need multiple items or concepts to be tested, it is important to limit the number of items without compromising the testing of that variable.

Employees also experienced trouble with items that seemed to measure two different aspects. For example, from the Lonmin employee questionnaire (from Le Roux et al 2004), an item was included in the questionnaire (item 17b in the Gautrain project questionnaire) that tested the opportunity for the employees to *send* information about varying aspects, which read *Reporting [safety] problems in my work / requesting clearer instructions*. Respondents commented on the fact that this was confusing, as they might have the opportunity to send information about the one, but not the other. Remembering that for these employees, two different contents relating to safety was practical, the one item was split into two, one reading *Reporting safety problems in my work* and the other *Requesting clearer instructions* (see items 14b and 14c, respectively, in the DPOM questionnaire). Grunig and Hon's (1999) relationship questionnaire also grouped the organisation taking employees' *needs* into account and taking their *opinions* into account, while the participants felt that this should rather be split into two items (see item 21d and 21g in the Gautrain project questionnaire versus items 18d and 18e in the DPOM questionnaire). Moreover, not only did this simplify the understanding and translation of single items, but narrowing down the measuring of an element to just one aspect per item or question was also in line with standard research practice, and the questionnaire was changed accordingly.

The last general adaptation of the questionnaire related to negative items, as it was found that negative items did not present themselves as such in the findings of the questionnaire. This pointed to the fact that respondents might not understand the items as they should, impacting on the reliability of these items. For example, Table 8.1 below shows a positively phrased item alongside its negatively phrased counterpart from the Grunig and Hon (1999) questionnaire. As these items measure the same aspect, it can be expected that they will yield a similar response from respondents, in an inverse pattern, as the one is positive and the other is negative. Because of the fact that this was not the case in the statistical data, it was argued that negatively phrased questions could not always be considered as valid in this environment and should be reversed or turned into positively phrased questions.

Table 8.1: Responses to positively and negatively phrased questions

	Positively phrased item	Negatively phrased item
Item:	This organisation can be relied upon to keep its promises.	This organisation cannot be relied upon to keep its promises.
Response from respondents: cumulatively disagree	70.1% (*N* = 281)	66.5% (*N* = 281)
Response from respondents: cumulatively agree	29.9% (*N* = 281)	33.5% (*N* = 281)

8.2.3.2 Item-specific adaptations to questionnaire in Stage 1

Four items were identified as in need of change in the quantitative findings from the questionnaire and commented on in the focus group discussions, relating to levels of language proficiency, ratings for methods through which internal safety communication is dispersed, perceptions of actual contact between work completion and safety and balance measurement in terms of the organisation–employee relationship.

The fist aspect mentioned above is the *ratings of the levels of language proficiency*. Question 6 in the Gautrain project questionnaire measured the language proficiency of employees in terms of the languages they were able to speak and read. This question was part of the biographical section of the questionnaire and was included in order to allow the researcher to make inferences about the relationship between employees' abilities to understand and read different languages (of which English is arguably the most telling) and internal safety communication. However, in this draft of the questionnaire, the employees were asked to select the languages that they could understand, and in the adjacent column to select those that they could read. Figure 8.5 below shows how this was done.

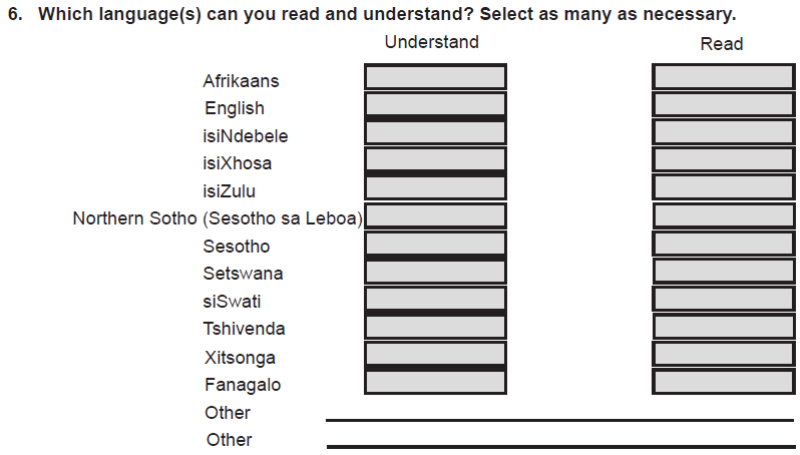


Figure 8.5: Question 6 of the Gautrain project questionnaire

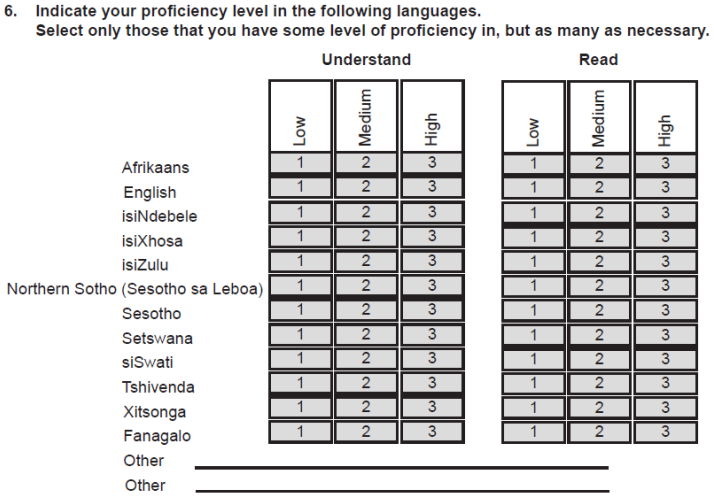
The quantitative findings gleaned from this question, as can be seen below in Table 8.2, showed that an overwhelming number of employees (93.2%; *N* = 281) could understand English, while 79.4% (*N* = 281) could read English. This was not in line with what was known to be the case, judging by the number of employees who needed translator/facilitator assistance in answering the questionnaire.

Table 8.2: Employees' English proficiency

	Understand English	Read English
Able to	93.2% (*N* = 281)	79.4% (*N* = 281)
Unable to	6.8% (*N* = 281)	20.6% (*N* = 281)

In the focus group discussions, the participants from all three groups agreed and commented on the fact that they selected English (for example) as a language they understood and read, even if it was at the lowest of levels. A change in the manner in which this question was asked was thus needed in order to deliver a more valid response. The alteration made in the intervention phase of this research was that a scale was introduced in the testing of this question, which accommodated low, medium or high proficiency in each of these languages. The altered question (the

one that was included in the DPOM questionnaire for the second phase of the empirical testing) is illustrated below in Figure 8.6.



6. **Indicate your proficiency level in the following languages.**
Select only those that you have some level of proficiency in, but as many as necessary.

	Understand			Read		
	Low	Medium	High	Low	Medium	High
Afrikaans	1	2	3	1	2	3
English	1	2	3	1	2	3
isiNdebele	1	2	3	1	2	3
isiXhosa	1	2	3	1	2	3
isiZulu	1	2	3	1	2	3
Northern Sotho (Sesotho sa Leboa)	1	2	3	1	2	3
Sesotho	1	2	3	1	2	3
Setswana	1	2	3	1	2	3
siSwati	1	2	3	1	2	3
Tshivenda	1	2	3	1	2	3
Xitsonga	1	2	3	1	2	3
Fanagalo	1	2	3	1	2	3
Other						
Other						

Figure 8.6: Question 6 of the DPOM questionnaire

The next item-specific alteration that had to be made was also in terms of the scaling of a question and its items, which pointed to the *ratings for methods through which internal safety communication is dispersed*. Question 13 of the Gautrain project questionnaire asked respondents to rate the amount of safety information that they received via a list of methods (each represented in an item from a to o). This question was taken from the Lonmin employee questionnaire (from Le Roux et al 2004) and as such had the three-point scale which was worded as “Too much”, “Enough” and “Too little”. In the interviews with the managers of the Gautrain mention was made by one of the managers that this scale was not exhaustive in the fact that it did not make provision for every answer that an employee might give. This was due to the fact that not all employees had access to all of the methods/channels mentioned in this question, for example e-mail. For this reason, an item was included on the scale which read “Not applicable”, meaning that this method was not one that the respondent had access to – as seen in Figure 8.7 below.

13. How would you rate the AMOUNT of safety information you usually receive through the following METHODS?

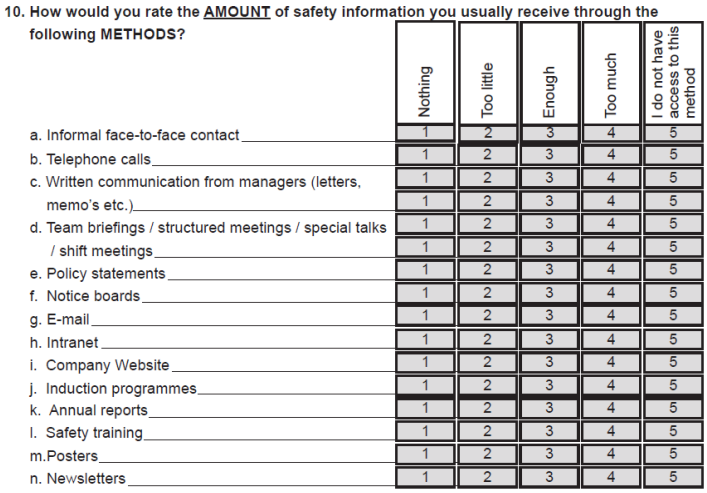
	Too much	Enough	Too little	Not applicable
a. Informal face-to-face contact	1	2	3	4
b. Telephone calls	1	2	3	4
c. Written communication from managers (letters, memos)	1	2	3	4
d. Team briefings / Structured meetings / Special talks / Shift meetings	1	2	3	4
e. Policy statements	1	2	3	4
f. Notice boards	1	2	3	4
g. E-mail	1	2	3	4
h. Intranet	1	2	3	4
i. Company Website	1	2	3	4
j. Induction programmes	1	2	3	4
k Billboards in the community	1	2	3	4
l. Annual reports	1	2	3	4
m. Safety training	1	2	3	4
n. Posters	1	2	3	4
o. Newsletters	1	2	3	4

Figure 8.7: Question 13 of the Gautrain questionnaire

This scale was explained as such to employees who made use of a facilitator, but those who self-administered the questionnaire did not have this explanation to guide their answering. The quantitative findings of the questionnaire showed that there was indeed some kind of confusion in terms of the answering in this regard. This can be seen, for example, in the 5.7% (*N* = 280) of employees who chose this option for face-to-face communication and the 45.6% (*N* = 279) of employees who chose it for the induction programmes. Because all employees, arguably, have access to face-to-face communication (even if it is among their peers), and because all employees have to be inducted before they are allowed on site, due to legal requirements, there should be a 0% score for both of these items under the “Not applicable” rating. In the focus group discussions, employees confirmed the suspicion in the quantitative findings by stating that this rating was confusing, where some participants mentioned that they thought this option could be used if no information was received through this channel, even if they had access to it.

Apart from the “Not applicable” rating, the three-point ordinal scale that this item used discounted some statistical testing; for example, for factor analysis, a four-point scale (or greater) needs to be present (Koekemoer 2009). To accommodate the element of four-point scaling, the scale for the item was changed to include the options “Nothing”, “Too little”, “Enough” and “Too much”. The “Not applicable” option

was changed to “I do not have access to this method”, stating it as unambiguous as possible. The adapted counterpart of Question 13, which was Question 10 of the DPOM questionnaire, appeared as shown below in Figure 8.8.



10. How would you rate the AMOUNT of safety information you usually receive through the following METHODS?

	Nothing	Too little	Enough	Too much	I do not have access to this method
a. Informal face-to-face contact	1	2	3	4	5
b. Telephone calls	1	2	3	4	5
c. Written communication from managers (letters, memo’s etc.)	1	2	3	4	5
d. Team briefings / structured meetings / special talks / shift meetings	1	2	3	4	5
e. Policy statements	1	2	3	4	5
f. Notice boards	1	2	3	4	5
g. E-mail	1	2	3	4	5
h. Intranet	1	2	3	4	5
i. Company Website	1	2	3	4	5
j. Induction programmes	1	2	3	4	5
k. Annual reports	1	2	3	4	5
l. Safety training	1	2	3	4	5
m.Posters	1	2	3	4	5
n. Newsletters	1	2	3	4	5

Figure 8.8: Question 10 of the DPOM questionnaire

The last two item-specific alterations of the questionnaire were not items that stood out in the quantitative findings, but aspects that were indeed raised by the participants of the focus group discussions. The first of these aspects is *balance measurement in terms of the organisation–employee relationship*. Item 21o in the Gautrain project questionnaire asked employees to rate the degree to which they agree or disagree with the statement *Both the organisation and I benefit from this relationship*. This item comes directly from the Grunig and Hon (1999) relationship questionnaire and it is designed to measure control mutuality in the organisation–employee relationship. The respondents felt that this question needed to be changed because it was redundant, as it was obvious that the organisation benefited from them being there and doing their jobs, and obviously they benefited in terms of their salaries. The intention of this item was discussed among the focus groups, insofar as the item evaluated the control mutuality and the fact that employees should not feel that they were gaining less from the relationship than the organisation, in other words that they are being exploited in the relationship.

Based on this definition and explanation, the participants stated that, although they indicated that they agreed with the statement in the questionnaire, they did not

actually feel that there was control mutuality in their relationship with the organisation. One participant in the second focus group (for female employees) stated that “Yes, I am happy to be here, because I have a job and I have pay, but I give very much for them [the organisation] and they give me just, just this small salary and then I must be happy. They get more, but they are too afraid to give”. This points to the fact that this item in the questionnaire could possibly yield a response that was not as valid as it could be, as it was not specific enough. The item was consequently changed to read *Both the organisation and I benefit from this relationship almost equally*, being more specific and true to the intention, as expressed by the theory underlying the construction of this item.

The last item-specific alteration, which also resulted from the focus group discussions, although it was not necessarily directly evident in the quantitative findings, is the *perceptions of actual contact between work completion and safety*. The respondents from the third focus group (those with supervisors and managers) commented on the fact that the questionnaire asked about all facets of internal safety communication except one: The questionnaire did not ask whether or not internal safety communication led to altered behaviour, as it did not ask whether or not the employees *internalised* internal safety communication to such a degree that it changed the way they operated and worked.

Although this is not wholly the focus of the questionnaire, an item in this vein was included in the questionnaire, as it was a suggestion gleaned from the empirical findings and, therefore, something that these supervisors and managers deemed important. The question from Francis and Woodcock’s (1994) audit of communication effectiveness questionnaire (Question 20 in the Gautrain project questionnaire and Question 16 in the DPOM questionnaire) asked employees about the degree to which they agree or disagree with statements. In terms of the suggestion made by these focus group participants, a last item was included, which reads *Internal safety communication changes the way I do my job* (see Question 16p in the DPOM questionnaire).

8.2.3.3 Validity and reliability of questionnaire items in Stage 1

The validity and reliability of quantitative questionnaire items can be tested statistically by making use of two statistical models. To test statistical *reliability*, an item analysis is performed of a particular construct in the questionnaire by determining its Cronbach's alpha value (Camira 2011:40; Field 2009:675). The statistical *validity* of the questionnaire is determined by means of a factor analysis, performed to determine whether the individual items contribute to the dimensions as in the questionnaire (Camira 2011:42; Field 2009:638). As both of these methods are extensively discussed in Section 6.3.2.5, the discussion below focuses only on the findings gleaned from each.

Firstly, the *reliability* of the questionnaire items was tested as they relate to the elements of the model for internal safety communication by means of the determining of their Cronbach's alpha value. The constructs in which the items were divided for the determination of the Cronbach coefficient were those identified in the model for internal safety communication – the values of Cronbach's alpha range between negative infinity and 1, with values below 0.6 being unacceptable (indicative of unreliable questions/items) and items above that being acceptable. Acceptable values are, therefore, indicative of reliable questions/items, especially in constructs with diverse characteristics such as those in social sciences, with values of 0.8 and above being excellent (Camira 2011:40; Field 2009:675).

For this research, an exploratory factor analysis, which statistically tested the *validity* of the questionnaire items, was done. For the purposes of this study, two important aspects point to the validity of the questionnaire items: the communalities as well as the factor loadings. Firstly, in terms of the *communalities*, the factor analysis indicates the extent to which an individual item correlates with the construct and collegial items. If the communality of an item is below 0.2, the item needs to be reconsidered, as it does not fit into the overall factor or construct (Camira 2011:40; Field 2009:675). Secondly, the *factor loadings* show the extraction of factors per identified construct and point to the smaller nuances that a factor or construct can be subdivided into. For the purposes of this research, the important aspect in terms of the factor loadings is the loading value, where loadings above 0.4 show significance

in terms of the item being part of the factor or construct (Camira 2011:42; Field 2009:638). As was the case in the determining of the Cronbach's alpha coefficient, the constructs into which the items were divided were those identified in the model for internal safety communication. In this way, although this method is designed to test the statistical validity of the questionnaire and its items, certain implications for the model hold true as well. For example, if the items all correlate with a factor or construct, the cohesiveness of an element of the factor of internal safety communication can be seen as identified in the model for internal safety communication.

Each of the elements of the model for internal safety communication, as tested in the questionnaire, is subsequently discussed in terms of its validity and reliability. The influential element under the holistic factor does not form part of this discussion, as this element did not have enough items in the questionnaire in order to test its Cronbach's alpha or factor analysis, as two or more items are needed to do this. This was changed in the intervention phase dividing stages 1 and 2 of this research, where more items were included. The holistic factor, with its accompanying five elements, as seen below in Figure 8.9 will be discussed first.

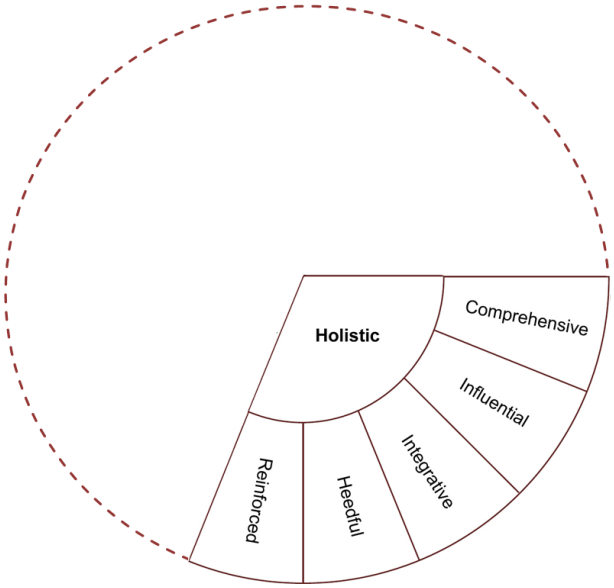


Figure 8.9: Holistic factor and its elements

The *comprehensive* element was tested in the questionnaire by means of 17 items. As this questionnaire, especially in this stage of the research, was aimed at *exploring* different items and their appropriateness in terms of this research context and focus, more items per variable or element had to be included in order to allow for the rejection, modification and the like of these items. However, the number of items could influence the Cronbach's alpha coefficient towards the positive, in other words, the Cronbach's alpha could be slightly higher in these instances than in others with less items (Field 2009:675). As there are no definite rules on how many items should or should not be included in this test, this was not seen as problematic, but it was something that had to be kept in mind throughout the testing of the questionnaire (Field 2009:675).

The reliability of the comprehensive element returned a Cronbach's alpha value of **0.886**, which points to excellent statistical reliability. As can be seen in Table 8.3 below, one low and negative item was registered for this element: item 23q. In the column next to the item-total correlation, it can be seen that the Cronbach's alpha for this element increases to 0.894 if this element is deleted. This points to the fact that this item does not completely fit into this element and does not reliably test it.

Table 8.3: Cronbach's alpha of comprehensive element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
23a	0.518	0.880	23j	0.547	0.879
23b	0.674	0.875	23k	0.708	0.874
23c	0.534	0.880	23l	0.491	0.882
23d	0.444	0.883	23m	0.565	0.879
23e	0.543	0.880	23n	0.709	0.874
23f	0.531	0.880	23o	0.560	0.879
23g	0.527	0.880	23p	0.531	0.880
23h	0.492	0.881	23q	-0.003	0.894
23i	0.518	0.881			

When the factor analysis for this element is done, it can be seen that the lowest communality to this element is once again item 23q with 0.245 – as shown below in Table 8.4.

Table 8.4: Communalities of comprehensive element

	Extraction		Extraction
23a	0.603	23j	0.782
23b	0.560	23k	0.683
23c	0.539	23l	0.666
23d	0.759	23m	0.698
23e	0.671	23n	0.606
23f	0.758	23o	0.676
23g	0.655	23p	0.604
23h	0.477	23q	0.245
23i	0.738		

Below in Table 8.5, the different factor loadings can be seen, with this element returning three factors in which this element was divided by the respondents in terms of their responses. The three factors all returned meaningful correlations, except once again item 23q, as none of the loadings for this item is above 0.4.

Table 8.5: Factor loadings of comprehensive element

	1	2	3		1	2	3
23j	0.857	0.138	-0.169	23m	0.100	0.825	0.088
23i	0.850	0.069	-0.102	23l	0.062	0.814	-0.014
23f	0.809	-0.091	0.309	23a	0.071	0.757	0.156
23g	0.804	0.022	0.093	23p	0.061	0.725	0.274
23e	0.743	-0.017	0.345	23o	0.049	0.690	0.444
23b	0.561	0.374	0.325	23k	0.557	0.610	-0.013
23n	0.551	0.530	0.144	23c	0.090	0.600	0.414
23h	0.488	0.103	0.478	23q	-0.264	0.382	-0.170
				23d	0.058	0.314	0.811

Under normal circumstances of questionnaire construction, this item should have been deleted from the questionnaire, as it does not seem to correlate with the items alongside it and the variable it is meant to measure. In the case of this research, however, the fact that this item is non-correlateable with all other items grouped alongside it for this element rather points to its validity and that of the other items. The reason for this is that item 23q is the 'benchmark' item suggested by the managers of the Gautrain project to be included in the questionnaire. Whereas the other items of the questionnaire test safety and related aspects, question 23q asks about the behaviour of the organisation with regard to *production*. The fact that this item does not correlate with all the other safety items with which it is grouped under

this element substantiates and supports the qualitative findings where it was reiterated that safety and production were, in most instances, polarly regarded in the mining and construction industries.

The *heedful* element, which is the next to be discussed under the holistic factor, was tested in the questionnaire by means of seven items. The statistical reliability testing of the questionnaire returned a Cronbach's alpha value of **0.724**, which is acceptable, as indicated in Table 8.6.

Table 8.6: Cronbach's alpha of holistic element

	Corrected item-total correlation	Cronbach's alpha if item deleted
16a	0.279	0.725
20n	0.445	0.691
20p	0.633	0.637
20q	0.402	0.700
20v	0.182	0.746
21g	0.600	0.649
21i	0.523	0.674

As can be seen in the item-total correlation above, item 16a has a slightly lower value and, therefore, increases the Cronbach's alpha of the element if deleted. However, the difference here is of the order of 0.001, and as it is not that significant, all items employed in terms of testing this element can be said to be reliable. In the same way, as shown in Table 8.7, all communalities for the factor is above 0.2, as all meaningful factor loadings are above 0.4, seen in Table 8.8, where the element returned two meaningful factors.

Table 8.7: Communalities of holistic element

	Extraction
16a	0.442
20n	0.599
20p	0.731
20q	0.678
20v	0.471
21g	0.786
21i	0.519

Table 8.8: Factor loadings of holistic element

	1	2
21g	0.824	-0.326
20p	0.823	-0.230
21i	0.719	0.052
20n	0.665	-0.396
20v	0.232	0.646
20q	0.527	0.632
16a	0.358	0.560

The *reinforced* element of the holistic factor was tested by means of nine items in the Gautrain project questionnaire. These items returned a **0.811** Cronbach's alpha coefficient, an excellent value pointing to the reliability of these items. As can be seen in Table 8.9 below, and as expected, no negative or low values were yielded by this element, and although the deletion of items 18e and 20v does improve the Cronbach's alpha coefficient, this is not a significant enough difference to warrant this deletion.

Table 8.9: Cronbach's alpha of reinforced element

	Corrected item-total correlation	Cronbach's alpha if item deleted
18a	0.617	0.779
18b	0.665	0.774
18c	0.669	0.772
18d	0.521	0.790
18e	0.336	0.815
18f	0.525	0.789
18g	0.344	0.820
18h	0.702	0.768
20v	0.309	0.814

During the factor analysis, no value extractions below 0.2 was seen (although item 20v is on the border of this cut-off value), and none below 0.4 in the factor loadings – which returned two factors, as seen in tables 8.10 and 8.11 below.

Table 8.10: Communalities of reinforced element

	Extraction
18a	0.624
18b	0.690
18c	0.683
18d	0.648
18e	0.766
18f	0.631
18g	0.501
18h	0.666
20v	0.262

Table 8.11: Factor loadings of reinforced element

	1	2
18b	0.781	0.283
18c	0.759	0.327
18a	0.755	0.231
18h	0.709	0.403
18g	0.693	-0.144
20v	0.511	-0.028
18e	-0.074	0.872
18d	0.231	0.771
18f	0.200	0.769

The last element of the holistic factor, the *integrative* element, was tested by means of 12 items and yielded a Cronbach's alpha value of **0.768** – pointing to the reliability of its items. As can be seen in Table 8.12 below, no negative values or values below

0.2 were found, although item 17a comes close to this. If this item is deleted, the Cronbach's alpha does increase, but yet again this increase is not significant enough to warrant.

Table 8.12: Cronbach's alpha of integrative element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
14c	0.487	0.744	17a	0.218	0.783
14d	0.410	0.751	19a	0.390	0.754
14g	0.505	0.742	19g	0.509	0.741
15c	0.502	0.743	19o	0.457	0.746
15d	0.510	0.743	20e	0.275	0.766
15g	0.469	0.746	20f	0.298	0.763

This is reinforced by the factor analysis, where there were no communalities that scored below 0.2 and no meaningful factor loadings (where two factors were extracted) below 0.4, as seen in tables 8.13 and 8.14, pointing to the fact that the item measurements of this element were valid.

Table 8.13: Communalities of integrative element

	Extraction
14c	0.658
14d	0.503
14g	0.456
15c	0.617
15d	0.575
15g	0.491
17a	0.364
19a	0.626
19g	0.470
19o	0.496
20e	0.747
20f	0.740

Table 8.14: Factor loadings of integrative element

	1	2
14c	0.811	-0.013
15c	0.785	0.031
15d	0.754	0.080
14d	0.709	0.009
15g	0.694	0.096
17a	0.577	-0.176
14g	0.552	0.388
20f	-0.186	0.840
20e	-0.214	0.837
19a	0.021	0.791
19o	0.188	0.679
19g	0.293	0.620

The second factor to be discussed, moving counter-clockwise through the model of internal safety communication, is the turbulent factor. As can be seen below in Figure 8.10, this factor has two elements that will be discussed respectively in terms of their statistical validity and reliability.

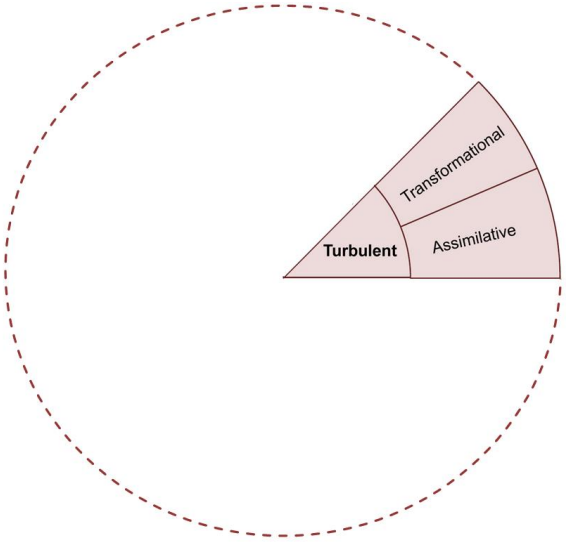


Figure 8.10: Turbulent factor and its elements

The *assimilative* element was tested in the quantitative questionnaire by means of only three items, yet it returned an acceptable Cronbach's alpha coefficient value of **0.720**. As can be seen in Table 8.15, all items contribute meaningfully to the reliability of this element, and all can be included in further tests of the questionnaire.

Table 8.15: Cronbach's alpha of assimilative element

	Corrected item-total correlation	Cronbach's alpha if item deleted
20d	0.580	0.591
20i	0.629	0.532
21j	0.457	0.727

Seen below in Table 8.16, the communalities between the elements were strong as well and in Table 8.17, the element yielded only one factor during the factor analysis, with all meaningfully contributing to the element. This element was thus statistically reliable in its testing by means of the questionnaire.

Table 8.16: Communalities of assimilative element

	Extraction
20d	0.740
20i	0.673
20j	0.456

Table 8.17: Factor loadings of assimilative element

	1
20d	0.860
20i	0.820
20j	0.675

The next and last element under the turbulent factor is that of *transformational* internal safety communication. This element was tested in the questionnaire with eight items. These eight items returned an excellent Cronbach's alpha of **0.814**, pointing to the reliability of the measure, as indicated in Table 8.18.

Table 8.18: Cronbach's alpha of transformational element

	Corrected item-total correlation	Cronbach's alpha if item deleted
18a	0.609	0.782
18b	0.653	0.777
18c	0.675	0.773
18d	0.536	0.792
18e	0.353	0.820
18f	0.543	0.791
18g	0.310	0.834
18h	0.713	0.767

As can be expected from the higher Cronbach's coefficient, the correlations of all items contribute towards the statistical reliability of the element. As seen in Table 8.19, and of these items could thus be taken forward in the compilation of the next questionnaire. Furthermore, as seen in Table 8.20, all communalities between the items are meaningfully grouped, and the factor analysis yielded two smaller factors within this element, all meaningfully clustered and thus statistically valid

Table 8.19: Communalities of transformational element

	Extraction
18a	0.638
18b	0.700
18c	0.713
18d	0.649
18e	0.788
18f	0.639
18g	0.486
18h	0.688

Table 8.20: Factor loadings of transformational element

	1	2
18b	0.803	0.233
18c	0.801	0.267
18a	0.778	0.182
18h	0.753	0.349
18g	0.675	-0.173
18e	-0.042	0.887
18f	0.234	0.764
18d	0.270	0.759

The third factor of internal safety communication, depicted in Figure 8.11 below, is the strategic factor. As is the case with the factor discussed above, this factor has two elements, tactical and imperative internal safety communication.

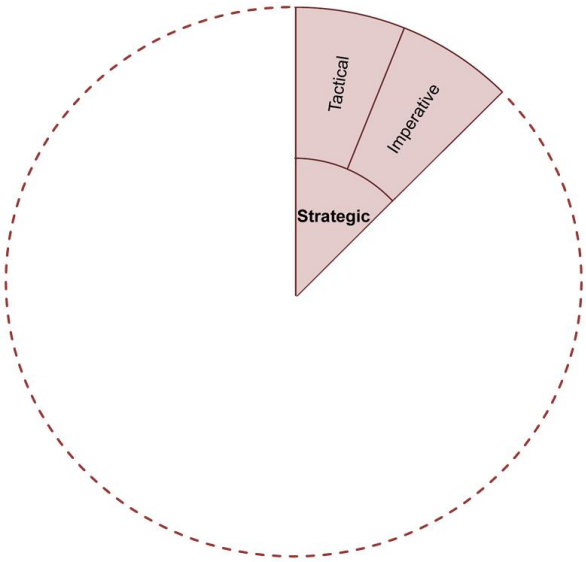


Figure 8.11: Strategic factor and its elements

Imperative internal safety communication was tested in the questionnaire by means of six items. These six items yielded a slightly less encouraging, yet still acceptable Cronbach's alpha of **0.648**. Considering the item-total correlations, as below in Table 8.21, it can be seen that the values for questions 23h and 23q are very low, even if they are not yet negative. Also, if these items are deleted from the testing of this element, the Cronbach's alpha of the measurement increases.

Table 8.21: Cronbach's alpha of imperative element

	Corrected item-total correlation	Cronbach's alpha if item deleted
19a	0.466	0.569
19o	0.404	0.600
23c	0.533	0.545
23d	0.549	0.546
23h	0.158	0.675
23q	0.180	0.660

As was the case in the element of comprehensive holistic internal safety communication discussed above, these two elements are benchmark items included in the testing of this element. Question 23q relates to the handling of production, and element 23h to environmental issues. Although it is expected that respondents would not group the production item with that of safety, it is indeed interesting to find that environmental aspects are not so strongly aligned. The reason for this is that

environmental issues are, in industry, grouped with safety. Safety officers are SHE officers, which is the acronym for safety, health and environment. The respondents of this population did not respond in the same way to the item of environmental communication as they did to safety communication, which is indicative of the manner in which internal safety communication is managed at this organisation.

Still, when the communalities of the element are regarded, as below in Table 8.22, it is seen that respondents felt that there was a correlation or communality between the item of environmental communication (23h) and the element being tested, although this was not the case with production communication (as this item has a communality that is relatively low). As in the comparable case discussed above, this item will not be deleted from the testing of this item, as it was purposefully inserted as a benchmark – almost with the expectance that it would not be seen in the same way by respondents. The fact that this item does not group with the others in the testing of this element, as seen below in Table 8.23, is therefore rather precisely an indication of its validity and reliability.

Table 8.22: Communalities of imperative element

	Extraction
19a	0.704
19o	0.608
23d	0.741
23h	0.778
23q	0.346

Table 8.23: Factor loadings of imperative element

	1	2
19a	0.812	0.211
19o	0.774	0.097
23q	0.546	-0.218
23h	-0.204	0.858
23d	0.355	0.784

The last element of strategic internal safety communication is *tactical* internal safety communication. This item yielded a Cronbach's alpha coefficient just below the level of acceptance at 0.576. However, when considering the item-total correlation in Table 8.24 below, as well as the measurement for the Cronbach's alpha when certain items are deleted, it can be seen that item 20h presents the problem, and is the element responsible for the low coefficient value.

Table 8.24: Cronbach's alpha of tactical element

	Corrected item-total correlation	Cronbach's alpha if item deleted
16b	0.416	0.463
20a	0.406	0.471
20g	0.537	0.373
20h	0.161	0.698

Statistically, this item cannot be grouped with the other items in this element, and if it is deleted, the Cronbach's alpha coefficient increases to an acceptable **0.698**. This item is directed to managers forwarding clear instructions or suggestions, which are supported by strong arguments. The item before that (item 20g) asks the same question, but now in terms of *supervisors* forwarding clear instructions or suggestions, supported by strong arguments. What is thus interesting to note here is that respondents grouped the communication from supervisors to this element, but not that of managers. This finding is closely aligned with what was found in the literature, where Greeff (2010:259), commenting on the hierarchical nature of internal safety communication in the mining and construction industries of South Africa, found that:

> the hierarchic nature of communications does not allow a lot of direct communication between management and the general workforce. Employees have a need for this kind of communication, and the fourth recommendation is, therefore, that management gets directly involved in communicating safety information to employees – and inevitably collecting information from this group as well.

This item is therefore deleted (not necessarily from the questionnaire, but indeed from the testing of this element), as the literature and empirical testing showed that management communication is treated differently from communication with peers and direct supervisors in these industries. With this deletion, the factor analysis yielded a valid measurement in terms of this item, with all correlations and loadings being meaningful and significant, as indicated in tables 8.25 and 8.26 below.

Table 8.25: Communalities of tactical element

	Extraction
16b	0.544
20a	0.667
20g	0.662

Table 8.26: Factor loadings of tactical element

	1
20a	0.817
20g	0.814
16b	0.737

The second-last factor of internal safety communication, depicted below in Figure 8.12 is the relational factor, which points to the safety relationship between the organisation and its employees. This factor is made up of four elements, namely supportive, balanced, trusting and committed internal safety communication.

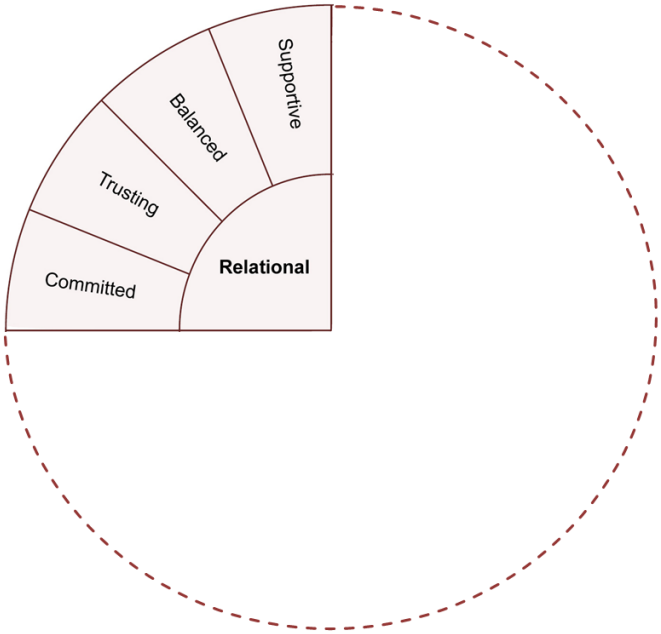


Figure 8.12: Relational factor and its elements

The element of *supportive* internal safety communication was tested in the questionnaire by means of six items. This element returned an acceptable Cronbach's alpha of 0.665, pointing to the reliability of the measurement. However, when the item-total correlations are studied, as indicated below in Table 8.27, it is seen that item 21z does not contribute to the measurement of this element and with its negative value has to be deleted from this measurement. If this item is deleted, the Cronbach's alpha is improved to **0.764**, which is much more acceptable and very close to excellent reliability.

Table 8.27: Cronbach's alpha of supportive element

	Corrected item-total correlation	Cronbach's alpha if item deleted
21g	0.649	0.524
21i	0.522	0.584
21r	0.516	0.574
21t	0.607	0.539
21v	0.244	0.671
21z	-0.091	0.764

This item (21z) asked respondents to rate their agreement or disagreement with the statement *Whenever this organisation gives or offers me something, it generally expects something in return*. The reason why this item was seen to be unreliable in the testing of this element could, arguably, be attributed to the fact that it was too vague for this context (as it was found to be reliable in the context that Grunig and Hon (1999) tested it). Employees could possibly feel that the organisation did indeed expect something from them when something was offered from their side. For example, the organisation would expect them to work, if they were to be paid a salary. Although this kind of rudimentary exchange was not what Grunig and Hon (1999) had in mind in the construction of this item, it was arguably how employees responded to it, and this item was, therefore, deleted and considered for revision in later drafts.

After this deletion, the factor analysis indicates that these items can be a statistically valid measurement of this element, as all loadings and communalities are meaningful and significant – seen below in tables 8.28 and 8.29.

Table 8.28: Communalities of supportive element

	Extraction
21g	0.729
21i	0.526
21r	0.634
21t	0.690
21v	0.095

Table 8.29: Factor loadings of supportive element

	1
21g	0.854
21t	0.831
21r	0.796
21i	0.725
21v	0.308

The next element of the relational factor is *balanced* internal safety communication. This element is not necessarily extremely latent in terms of being abstract, but it is indeed multi-faceted due to the fact that there are numerous aspects that need to be in place for communication to be considered balanced. For example, both the organisation and employees required to have a say and a stake in the relationship, there needs to be a culture of participation, et cetera. For this reason, this element was tested by means of 11 items, and it returned an excellent Cronbach's alpha value of **0.816**. As can be seen in Table 8.30 below, all the items contribute to the reliability as above, and the deletion of none is imperative or significantly meaningful in terms of improving the reliability rating.

Table 8.30: Cronbach's alpha of balanced element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
16a	0.303	0.816	20n	0.464	0.804
17a	0.674	0.779	21g	0.588	0.791
17b	0.510	0.799	21i	0.449	0.805
17c	0.595	0.790	21k	0.276	0.818
17d	0.574	0.792	21o	0.232	0.821
17e	0.567	0.793			

Table 8.31 below shows that the correlations between the items and the element being tested are all meaningful, and all items can be included in this measurement, as they are as valid as they are reliable. Furthermore, as can be expected with an element as multi-faceted as this one, more underlying factors were identified – three, to be exact. Although these factors and their bearing towards this element are discussed later in this chapter, where the final questionnaire is unpacked, what is important to note here is that all of the loadings are significant, as seen in Table 8.32, pointing to the validity of the items to measuring the element of balanced internal safety communication.

Table 8.31: Communalities of balanced element

	Extraction
19b	0.492
16a	0.507
17a	0.704
17b	0.744
17c	0.582
17d	0.466
17e	0.720
20n	0.566
21g	0.797
21i	0.681
21k	0.724
21o	0.649

Table 8.32: Factor loadings of balanced element

	1	2	3
17a	0.798	-0.258	-0.005
21g	0.724	-0.010	-0.523
17e	0.698	-0.401	0.269
17c	0.695	-0.240	0.204
17d	0.675	-0.057	0.090
19b	0.668	0.059	-0.206
20n	0.626	-0.295	-0.296
21i	0.534	0.431	-0.458
21k	0.318	0.789	-0.009
21o	0.272	0.751	0.105
17b	0.588	0.025	0.631
16a	0.350	0.410	0.465

The next element of internal safety communication is *trust*, which is a very latent variable due to its abstract nature. For this reason, this element was tested by means of 11 variables, all returning a Cronbach's alpha value of **0.860**, pointing to its statistically excellent reliability. All the items, as seen below in Table 8.33, contribute meaningfully to the element being measured, with the biggest improvement upon deletion of an item being 0.002 – not significant enough to be considered.

Table 8.33: Cronbach's alpha of trusting element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
22a	0.389	0.860	22g	0.357	0.862
22b	0.636	0.842	22h	0.689	0.837
22c	0.728	0.834	21a	0.622	0.844
22d	0.649	0.840	21b	0.505	0.851
22e	0.417	0.860	21c	0.537	0.849
22f	0.621	0.842			

The factor analysis acts predictably, considering this high reliability in terms of the Cronbach's alpha coefficient, where the correlations indicated in Table 8.34 are all meaningful and thus valid. The factor loadings as seen in Table 8.35 are all also significant and in terms of the latent nature of the variable, varied enough to yield three underlying factors in the element itself.

Table 8.34: Communalities of trusting element

	Extraction
22a	0.696
22b	0.561
22c	0.738
22d	0.808
22e	0.687
22f	0.534
22g	0.360
22h	0.617
21a	0.816
21b	0.582
21c	0.802

Table 8.35: Factor loadings of trusting element

	1	2	3
22d	0.855	0.169	0.218
22e	0.805	-0.100	0.170
22c	0.653	0.533	0.165
22h	0.542	0.487	0.294
22a	0.013	0.833	-0.037
22f	0.329	0.616	0.216
22g	0.014	0.576	0.166
22b	0.443	0.558	0.231
21c	0.253	0.079	0.855
21a	0.330	0.159	0.826
21b	0.019	0.503	0.573

The last relational element of internal safety communication, *committed* internal safety communication, is not as latent a concept as is trust and balance. For this reason, this element was tested by means of four items. As indicated in Table 8.36, despite this small number of items, this element yielded a good validity measure of **0.742** as a Cronbach's value.

Table 8.36: Cronbach's alpha of committed element

	Corrected item-total correlation	Cronbach's alpha if item deleted
21j	0.587	0.654
21l	0.356	0.773
21m	0.668	0.603
21p	0.546	0.678

Considering Table 8.37 and 8.38 below, it can subsequently be seen that all items contribute meaningfully enough to the element and all can be considered to be reliable in their measurement of this element.

Table 8.37: Communalities of committed element

	Extraction
21j	0.603
21l	0.286
21m	0.691
21p	0.650

Table 8.38: Factor loadings of committed element

	1
21m	0.831
21p	0.806
21i	0.777
21l	0.534

Also, in line with the less latent nature of this element, the factor analysis (with all of the loadings and correlations being significant and meaningful) yields only one factor – which is statistically valid.

The last factor of internal safety communication, as can be seen in Figure 8.13 below, is the factor of symmetrical communication and its three elements of accessible, responsive and informative internal safety communication.

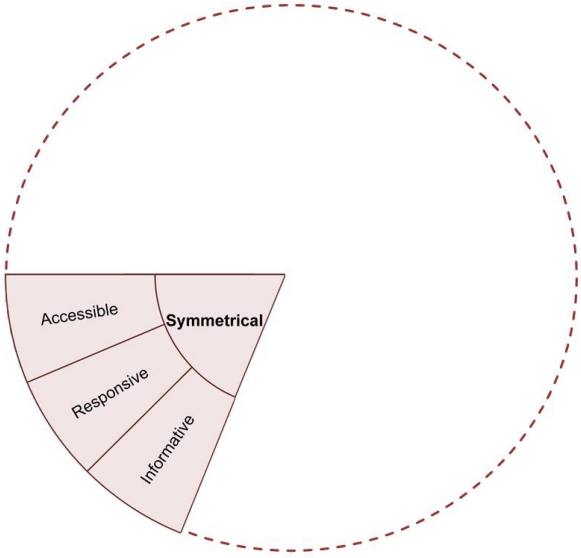


Figure 8.13: Symmetrical factor and its elements

The item of *accessible* internal safety communication is latent, not in terms of abstraction, but rather in terms of it being multi-faceted. In order for internal safety communication to be accessible (as discussed in Chapter 7), various aspects need to be set in place by the organisation. This element was, therefore, measured in terms of 10 items, which cumulatively yielded a Cronbach's alpha coefficient of **0.817**, seen below in Table 8.39.

Table 8.39: Cronbach's alpha of accessible element

	Corrected item-total correlation	Cronbach's alpha if item deleted
12a	0.322	0.816
12b	0.322	0.817
12c	0.200	0.826
12d	0.359	0.813
17b	0.728	0.771
17c	0.517	0.799
17d	0.612	0.788
20m	0.577	0.792
20o	0.614	0.788
20p	0.658	0.783

This high reliability measure was reiterated by the correlations of the Cronbach's alpha measurement, by the fact that all items contribute to the element in a meaningful way. As indicated below in tables 8.40 and 8.41, the factor analysis supports the reliability of the measure in establishing its statistical validity as well. This element returned only meaningful correlations and with two factors, only significant factor loadings.

Table 8.40: Communalities of accessible element

	Extraction
12a	0.553
12b	0.500
12c	0.662
12d	0.645
17b	0.744
17c	0.399
17d	0.682
20m	0.661
20o	0.582
20p	0.671

Table 8.41: Factor loadings of accessible element

	1	2
17b	0.844	-0.180
20p	0.798	-0.185
17d	0.771	-0.294
20o	0.756	-0.104
20m	0.751	-0.312
17c	0.631	-0.031
12c	0.190	0.791
12d	0.369	0.713
12a	0.348	0.657
12b	0.352	0.613

In order for internal safety communication to be symmetrical, it has to be *responsive* as well. As was the case with the accessibility of communication above, responsive communication anticipates various aspects and systems to be in place (as discussed in Chapter 7). Owing to this fact, the measurement of this element was done by 12 items, which yielded an excellent reliability value of **0.861** by means of the Cronbach's measurement. Table 8.42 below also shows that all the items can be

included in the questionnaire, as they all contribute to the measurement in a statistically valid way.

Table 8.42: Cronbach's alpha of responsive element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
12a	0.260	0.866	18e	0.567	0.849
12c	0.042	0.876	18f	0.667	0.841
18a	0.718	0.840	18g	0.258	0.873
18b	0.715	0.839	18h	0.804	0.831
18c	0.789	0.832	20p	0.583	0.848
18d	0.640	0.844	21g	0.406	0.859

As can be seen in Table 8.43 below, all items loaded significantly on the element, as they correlate meaningfully. In line with its latent nature, as indicated in Table 8.44, the factor analysis returned three factors, which all loaded significantly on the element.

Table 8.43: Communalities of responsive element

	Extraction
12a	0.579
12c	0.636
18a	0.661
18b	0.746
18c	0.792
18d	0.560
18e	0.523
18f	0.671
18g	0.501
18h	0.753
20p	0.791
21g	0.822

Table 8.44: Factor loadings of responsive element

	1	2	3
18c	0.796	0.194	0.348
18a	0.771	0.255	0.038
18b	0.768	0.119	0.377
18f	0.759	0.255	-0.172
18h	0.747	0.431	0.095
18e	0.723	0.006	0.016
18d	0.679	0.311	-0.042
18g	0.546	-0.144	-0.427
21g	0.101	0.888	0.154
20p	0.371	0.808	-0.027
12c	-0.012	-0.084	0.793
12a	0.155	0.176	0.724

The last element of the factor of symmetrical communication is *informative* internal safety communication. This element was tested in the questionnaire in two ways. Firstly, the methods used for internal safety communication were tested in order to ascertain which methods would be perceived to be used most or best to inform employees about internal safety communication. Next, the general informative nature

of internal safety communication was tested in terms of the general perceptions of participants.

Starting with the former, the methods of internal safety communication were tested by means of 15 items. This was due to the fact that the list had to be as exhaustive as possible in listing all the channels made use of in this manner in the respective organisations. With an excellent Cronbach's alpha value of **0.844**, it can be seen that this part of the informative element's testing is statistically reliable.

As indicated in Table 8.45 below, the deletion of items would decrease the measure, or constitute an increase that is not statistically meaningful. The inclusion of all the items for future testing is therefore proposed.

Table 8.45: Cronbach's alpha of informative method element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
13a	0.014	0.862	13i	0.597	0.828
13b	0.387	0.841	13j	0.487	0.835
13c	0.287	0.845	13k	0.537	0.832
13d	0.329	0.843	13l	0.709	0.821
13e	0.635	0.825	13m	0.535	0.832
13f	0.319	0.844	13n	0.525	0.832
13g	0.616	0.828	13o	0.591	0.827
13h	0.658	0.825			

The correlations of the factor analysis, as indicated below in Table 8.46, are meaningful and with the three factors extracted, all loadings are significant as well, pointing to the validity of all items in measuring this element, as seen in Table 8.47.

Table 8.46: Communalities of informative method element

	Extraction
13a	0.640
13b	0.520
13c	0.499
13d	0.485
13e	0.529
13f	0.414
13g	0.762
13h	0.808
13i	0.789
13j	0.576
13k	0.416
13l	0.625
13m	0.554
13n	0.606
13o	0.665

Table 8.47: Factor loadings of informative method element

	1	2	3
3h	0.859	0.257	0.061
13i	0.843	0.273	-0.056
13g	0.843	0.223	0.046
13b	0.720	0.030	-0.016
13n	0.063	0.759	0.158
13m	0.124	0.715	0.164
13o	0.382	0.715	-0.088
13j	0.371	0.639	-0.174
13l	0.413	0.597	0.314
13e	0.417	0.428	0.414
13a	-0.138	-0.212	0.759
13c	0.163	-0.023	0.687
13d	-0.057	0.278	0.636
13f	-0.048	0.370	0.524
13k	0.357	0.361	0.397

In terms of the general testing of the informative element, a further 15 items were included in the questionnaire due to the multi-faceted nature of the element. These 15 items yielded an excellent Cronbach's alpha value of **0.832**, proving the statistical validity of the item, indicated below in Table 8.48.

Table 8.48: Cronbach's alpha of informative element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
14b	0.499	0.820	16c	0.476	0.821
14e	0.513	0.819	19k	0.405	0.828
14f	0.409	0.826	19l	0.489	0.820
14h	0.380	0.827	19m	0.410	0.825
15b	0.340	0.830	20j	0.506	0.819
15e	0.404	0.826	20k	0.520	0.819
15f	0.460	0.822	20l	0.571	0.815
15h	0.506	0.820			

As was the case with the testing above, the items all contribute to the testing of the element with the deletion of any one of these items decreasing the Cronbach's alpha value, pointing to the fact that all items could be included in further testing.

As is expected in a measure of such statistical validity, the statistical reliability was also found to be high, where all communalities yielded meaningful groupings with the

element they sought to test, seen below in Table 8.49. Owing to its multi-faceted nature, the element yielded three factors, indicated in Table 8.50, all with relatively high correlations with the element tested.

Table 8.49: Communalities of informative element

	Extraction
14b	0.562
14e	0.694
14f	0.778
14h	0.612
15b	0.678
15e	0.697
15f	0.661
15h	0.415
19k	0.756
19l	0.393
19m	0.661
16c	0.545
20j	0.574
20k	0.645
20l	0.542

Table 8.50: Factor loadings of informative element

	1	2	3
20k	0.788	-0.012	0.152
20j	0.745	0.032	0.137
16c	0.719	-0.025	0.163
20l	0.668	0.126	0.281
19m	0.551	0.472	-0.367
19l	0.548	0.299	0.056
15h	0.535	0.106	0.342
15e	0.026	0.834	0.021
15b	-0.024	0.823	-0.028
19k	0.287	0.771	-0.283
14b	0.106	0.675	0.309
14f	0.200	0.008	0.859
15f	0.285	0.039	0.760
14h	0.433	-0.169	0.630
14e	0.026	0.579	0.599

In the discussions of each one of the elements of internal safety communication, it can be seen that the overwhelming majority of the items designed for its testing can be included in the questionnaire due to their proven statistical validity and reliability. The inclusion of all of these items allows the later exclusion of those items that did not rank as high as their counterparts, based on the findings of both administrations rather than just one, thereby increasing the reliability and validity of the exclusion process. The shortened version of the questionnaire has, as is the case with the draft version discussed above and below, more items for the testing of those variables that are more abstract, latent or multi-faceted, for example the variables or elements of trusting or balanced internal safety communication.

8.3 STAGE 2 FINDINGS

Following the alterations brought on by the first testing at the Gautrain project, the second stage of testing took place at DPOM, almost two years later. This testing comprised pretesting in the form of interviews with managers and a full conventional pilot test with 10 employees, followed by a full administration of the questionnaire.

This led to the final alterations of the questionnaire, occasioning the compilation of its final draft. This final questionnaire is discussed subsequent to the discussion of the alterations during the second stage of the research that led up to it.

8.3.1 Stage 2: Interviews and pilot study

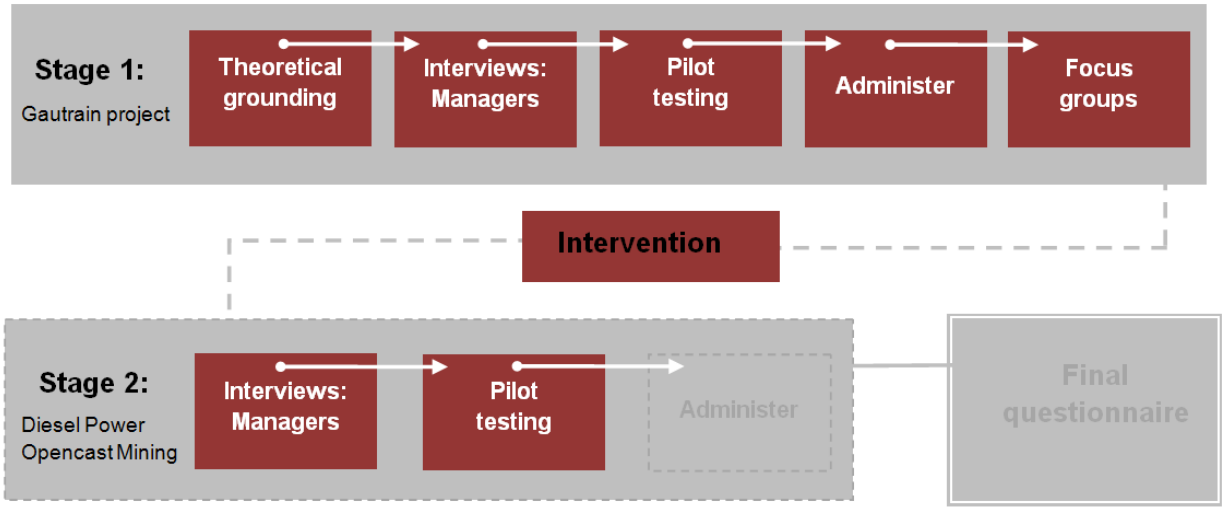


Figure 8.14: Stage 2: Interviews and pilot study

The second stage of empirical testing commenced with interviews with the safety manager of DPOM, at its head offices in Witbank, Mpumalanga. As was the case with the interviews in the first stage, the bulk of the time of the interview was spent on the manager talking about the nature of safety and internal safety communication in the mining and construction industries of South Africa. The interview was further used to discuss the questionnaire and its appropriateness in terms of testing this phenomenon in context. In terms of the former, items specific to the organisation were commented on and subsequently altered, for example the different job levels and their naming in this organisation.

The first comment of this manager on the content of the questionnaire itself was on the appropriateness thereof to test the perceptions of the general employees, rather than the safety *systems* in place. In this manager's (translated) words, this afforded a distinction between "safety officers who are really doing their job, and those who are just busy with a paper exercise", commenting on the fact that this questionnaire

addressed the grounding that internal safety communication has in terms of workers at the coal face, rather than the intent of management in the form of systems.

Other than this, the manager of DPOM, as did the managers from the Gautrain project, commented on the length of the questionnaire, pointing out that it might be a problem for employees not literate or who needed help with English. Lastly, as mentioned in Chapter 6, DPOM consists of seven mining sites, not just one, as was the case at the Gautrain project. In terms of this, the manager of DPOM commented on the fact that he was interested to see how the different sites compare to one another, as each site had a different safety officer and, therefore, a potential of communicating differently with employees. In his words, “for example, some safety officers go through a lot of trouble planning and doing their toolbox talks, while others … well I think some don’t even always do it”. The aspect highlighted by the manager is an important one, and one that is discussed at length later: the fact that the demographical aspects of the employees should be weighed against the responses they give in terms of internal safety communication in order to explore the data to their utmost. This questionnaire can therefore be used to point to aspects that the questionnaire does not directly address. Taking the manager’s example as above, the questionnaire does not directly ask whether or not the appropriate individual(s) on site give toolbox talks on a regular basis. Yet, if all questionnaires from one site come back with comparatively lower scorings compared to other sites, the individuals responsible for internal safety communication on that site can be approached for further investigation into the phenomenon. It could, for example, yield that there are no regular toolbox talks on this site, which is a lawful requirement. In this way, the questionnaire makes another level of measurement possible, yielding more information than just that asked at face value.

Apart from the aspects commented on above, the manager at DPOM did not suggest any definitive changes or alterations to the questionnaire, as the managers of the Gautrain project did, which could arguably point to the fact that the questionnaire was now more refined after the first stage of testing. In the same way, the pilot testing did not yield as much findings as was the case of the pilot test of the Gautrain project either. In fact, the only decisive and concrete findings were on technical aspects that needed changing, for example the mistaken inclusion of two scales for

one item. This could also be seen as an indication of the refinement of the questionnaire.

When the changes to the questionnaire were done as a result from the pretesting, which included the training of the translators/facilitators as discussed above, the questionnaire could be administered for the final testing of validity and reliability.

8.3.2 Stage 2: Administration

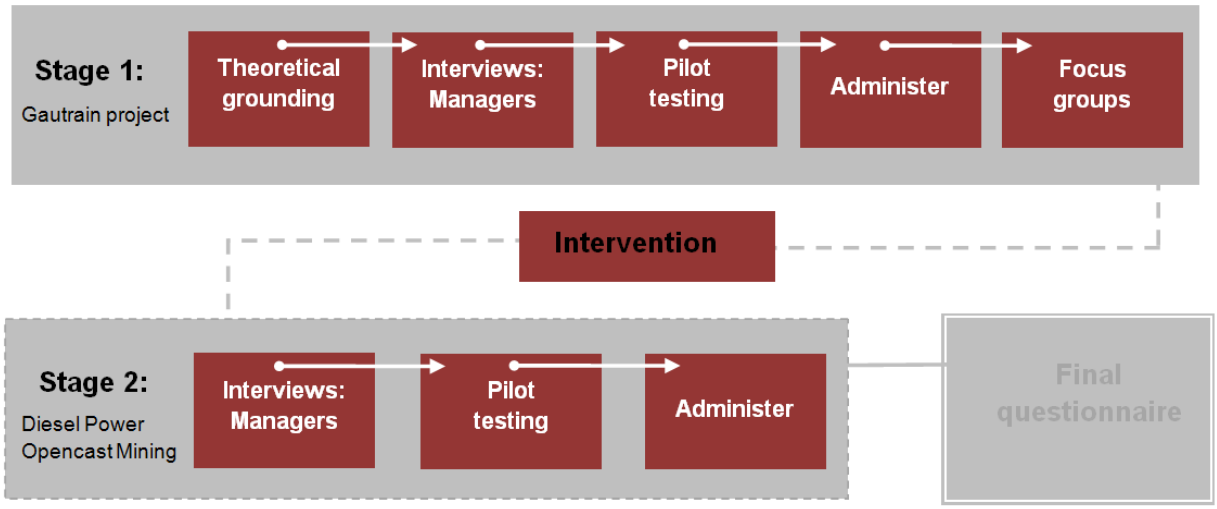


Figure 8.15: Stage 2: Questionnaire administration

The administration of the questionnaire took place at all seven of the DPOM sites, which span three provinces (see Chapter 6). Once again, as was the case previously, the administration of the questionnaire allowed for the testing of statistical validity and reliability. Below, each of the elements is discussed respectively, as before, indicating the statistical validity and reliability of each. Firstly, as seen in Figure 8.16 is the holistic factor with its accompanying five elements.

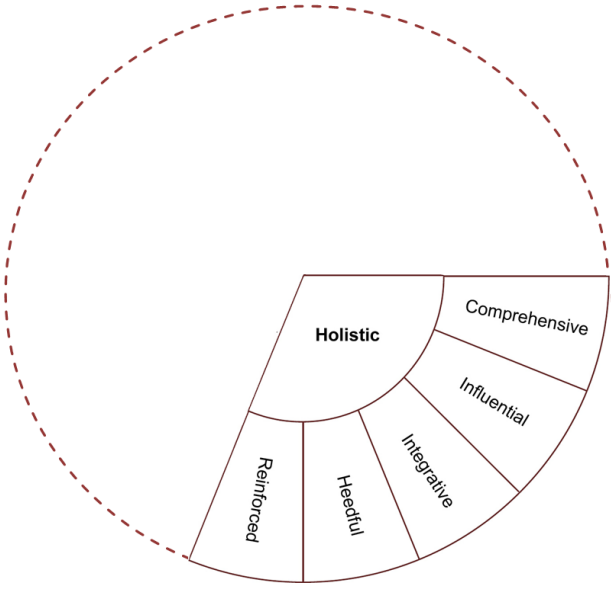


Figure 8.16: Holistic factor and its elements

The *comprehensive* element was tested in the DPOM questionnaire by means of six items. These six items returned an excellent Cronbach's alpha value of **0.888**. As can be seen below in Table 8.51, all of the items contribute significantly to this excellent reliability, indicating that all can be included.

Table 8.51: Cronbach's alpha of comprehensive element

	Corrected item-total correlation	Cronbach's alpha if item deleted
19a	0.699	0.869
19b	0.718	0.867
19c	0.804	0.851
19d	0.741	0.862
19e	0.798	0.854
19f	0.476	0.899

The factor analysis also shows meaningful communalities, as in Table 8.52, and very strong significant loadings, as in Table 8.53.

Table 8.52: Communalities of comprehensive element

	Extraction
19a	0.634
19b	0.666
19c	0.765
19d	0.702
19e	0.756
19f	0.358

Table 8.53: Factor loadings of comprehensive element

	1
19a	0.874
19b	0.870
19c	0.838
19d	0.816
19e	0.796
19f	0.598

Slightly less enthused, but still good, the element of *influential* internal safety communication returned a Cronbach's alpha value of **0.758** for the eight items used for its measurement, as indicated below in Table 8.54.

Table 8.54: Cronbach's alpha of influential element

	Corrected item-total correlation	Cronbach's alpha if item deleted
11d	0.332	0.762
12d	0.533	0.718
18y	0.197	0.774
18z	0.223	0.774
11h	0.672	0.702
11i	0.714	0.691
12h	0.534	0.723
12i	0.592	0.706

All eight items, as can be seen in tables 8.55 and 8.56, contribute towards this measure, as all show significant and meaningful communalities and factor loadings – pointing to the fact that this element's test is as valid as it is reliable.

Table 8.55: Communalities of influential element

	Extraction
11d	0.863
11h	0.775
11i	0.801
12d	0.837
12h	0.678
12i	0.713
18y	0.739
18z	0.788

Table 8.56: Factor loadings of influential element

	1	2	3
11h	0.853	0.203	0.073
11i	0.853	0.196	0.186
12i	0.829	0.158	0.010
12h	0.820	0.002	0.070
11d	0.110	0.916	-0.110
12d	0.254	0.874	0.097
18z	-0.006	0.159	0.873
18y	0.217	-0.205	0.806

The element of *heedful* internal safety communication returned an excellent reliability reading with a Cronbach's alpha value of **0.899**. The communalities, as can be seen below in Table 8.57, are just as significantly high with the inclusion of all items possible, if not recommended (as the biggest difference in the deletion of one is 0.004).

Table 8.57: Cronbach's alpha of heedful element

	Corrected item-total correlation	Cronbach's alpha if item deleted
13a	0.455	0.901
16l	0.659	0.889
16n	0.740	0.882
16o	0.640	0.890
16p	0.637	0.891
18d	0.804	0.877
18e	0.854	0.872
18f	0.794	0.877
18w	0.436	0.903

As can be expected from an element yielding such a high reliability reading, the factor analysis shows a high validity, with the communalities and factor loadings, represented respectively below in tables 8.58 and 8.59, all being significant and meaningful, as they returned one factor for the entire element.

Table 8.58: Communalities of heedful element

	Extraction
13a	0.295
16l	0.557
16n	0.662
16o	0.512
16p	0.530
18d	0.718
18e	0.794
18f	0.710
18w	0.273

Table 8.59: Factor loadings of heedful element

	1
18e	0.891
18d	0.847
18f	0.842
16n	0.814
16l	0.746
16p	0.728
16o	0.716
13a	0.543
18w	0.523

The next element under the holistic factor is the element of *reinforced* internal safety communication. Cumulatively, this element was tested by means of 18 items – too many to be included in a single testing of the Cronbach's alpha. For this reason, both the reliability and validity tests were split up, with the first 12 items and the last six

being grouped together. The reason why the split was done in this way is that the last six items pertain specifically to the behaviour of the organisation towards specific aspects in the organisation, while the first 12 concern general reinforcement in the organisation. These first 12 general aspects of reinforced internal safety communication returned an excellent Cronbach's alpha value of **0.825**, with all correlations, as seen in Table 8.60, contributing to the element in a meaningful way.

Table 8.60: Cronbach's alpha of reinforced element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
15a	0.230	0.828	15g	0.562	0.807
15b	0.631	0.801	16p	0.569	0.804
15c	0.609	0.800	18s	0.357	0.821
15d	0.552	0.806	18t	0.689	0.798
15e	0.499	0.810	18u	0.493	0.811
15f	0.405	0.823	18v	0.307	0.826

The factor loadings, linking to the excellent reliability as displayed above, show good validity as well, with communalities all well above the benchmark and factor loadings just as significant, as seen in tables 8.61 and 8.62 below. The factor analysis yielded three underlying factors to reinforced internal safety communication, as can be expected from an element as multi-faceted, measured through various elements.

Table 8.61: Communalities of reinforced element

	Extraction
15a	0.781
15b	0.620
15c	0.810
15d	0.698
15e	0.711
15f	0.520
15g	0.521
16p	0.516
18s	0.813
18t	0.784
18u	0.788
18v	0.546

Table 8.62: Factor loadings of reinforced element

	1	2	3
15c	0.897	0.043	-0.060
15e	0.812	-0.117	0.197
15d	0.801	0.206	-0.117
15b	0.755	0.191	0.116
15g	0.657	0.165	0.249
18s	-0.132	0.876	0.167
18u	0.036	0.862	0.208
18t	0.313	0.814	0.154
18v	0.081	0.691	-0.249
16p	0.391	0.593	0.108
15a	-0.019	0.166	0.868
15f	0.438	0.044	0.571

The remaining six items of reinforced internal safety communication also returned an excellent reliability measure, even slightly higher, with a Cronbach's alpha value of

0.888. As expected of such a high measure, all the correlations are meaningful, with all contributing to the element's measure – as seen in Table 8.63 below.

Table 8.63: Cronbach's alpha of reinforced behaviour element

	Corrected item-total correlation	Cronbach's alpha if item deleted
19a	0.699	0.869
19b	0.718	0.867
19c	0.804	0.851
19d	0.741	0.862
19e	0.798	0.854
19f	0.476	0.899

Complementing this high reliability measure, the factor analysis returned a good validity measure as well, with all items having a meaningful communality with each other and, by extension, the element being tested. The factor analysis showed significant loadings as well, with one tightly grouped factor identified, as seen in tables 8.64 and 8.65 below.

Table 8.64: Communalities of reinforced behaviour element

	Extraction
19a	0.634
19b	0.666
19c	0.765
19d	0.702
19e	0.756
19f	0.358

Table 8.65: Factor loadings of communalities behaviour element

	1
19a	0.874
19b	0.870
19c	0.838
19d	0.816
19e	0.796
19f	0.598

The last element of the holistic factor, the *integrative* element, was tested by means of 16 items. These items, as is the case with its predecessors, showed a Cronbach's alpha value of **0.892**, pointing to an excellent validity reading.

Furthermore, as can be seen in Table 8.66 below, all of the items contribute significantly to the element being tested. Interestingly enough, the exclusion of most of the items would keep the reliability reading stable (i.e. would not cause it to be significantly lower), which, arguably, points to the fact that this high reading is not due to the fact that more items were included, as the exclusion of items does not influence it.

Table 8.66: Cronbach's alpha of integrative element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
11b	0.562	0.886	12f	0.622	0.883
11c	0.679	0.881	12h	0.602	0.885
11f	0.381	0.892	12i	0.633	0.883
11h	0.669	0.883	12k	0.690	0.881
11i	0.581	0.885	14a	0.445	0.891
11k	0.682	0.881	16c	0.446	0.890
12b	0.563	0.886	16d	0.427	0.891
12c	0.704	0.880	18y	0.223	0.897

As can be expected from an element tested by means of more items, however, respondents, by means of their responses, indicated underlying smaller nuanced differences in the item groupings. The factor analysis yielded three underlying factors, all significantly loaded, as they had meaningful communalities (as seen in tables 8.67 and 8.68 below), pointing to good validity in the measure of this element.

Table 8.67: Communalities of integrative element

	Extraction
11b	0.868
11c	0.868
11f	0.799
11h	0.799
11i	0.865
11k	0.598
12b	0.874
12c	0.894
12f	0.641
12h	0.652
12i	0.726
12k	0.663
14a	0.283

Table 8.68: Factor loadings of integrative element

	1	2	3
11b	0.923	-0.008	0.131
12b	0.917	0.000	0.182
12c	0.885	0.332	0.014
11c	0.883	0.296	0.024
11k	0.524	0.305	0.479
11i	0.083	0.926	0.041
11h	0.230	0.858	0.100
12i	0.119	0.705	0.464
12h	0.079	0.687	0.416
14a	0.125	0.480	0.194
11f	-0.048	0.119	0.885
12f	0.231	0.469	0.607
12k	0.444	0.324	0.601

In line with the model for internal safety communication, the next factor to be discussed is the turbulent factor, with its two elements as shown below in Figure 8.17.

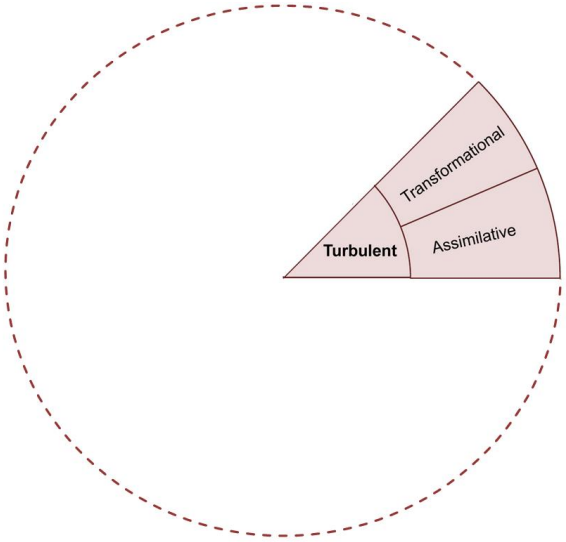


Figure 8.17: Turbulent factor and its elements

The first of these two elements is the *transformational* element, which was tested by means of seven items. These seven items, once again, yielded an excellent reliability measure, with a Cronbach's alpha value of **0.801**. As can be seen in Table 8.69 below, all of the items contribute to the correlation of the element, pointing to the reliability of all included in the measurement.

Table 8.69: Cronbach's alpha of transformational element

	Corrected item-total correlation	Cronbach's alpha if item deleted
15a	0.137	0.827
15b	0.626	0.764
15c	0.731	0.740
15d	0.588	0.767
15e	0.677	0.745
15f	0.447	0.799
15g	0.625	0.767

Similarly, the factor analysis showed definite validity where communalities were all meaningful, as can be seen in Table 8.70. Its loadings, which yielded two factors seen in Table 8.71, showed significant values for each of the items used for the measurement of transformational turbulent internal safety communication.

Table 8.70: Communalities of transformational element

	Extraction
15a	0.808
15b	0.573
15c	0.784
15d	0.724
15e	0.626
15f	0.515
15g	0.560

Table 8.71: Factor loadings of transformational element

	1	2
15c	0.886	0.005
15d	0.847	-0.083
15e	0.773	0.170
15b	0.718	0.242
15g	0.681	0.310
15a	-0.073	0.896
15f	0.416	0.585

The second element of the turbulent factor – *assimilative* internal safety communication – at first did not yield a Cronbach's alpha value indicative of a reliable measurement, with an alpha of 0.532. However, as can be seen in Table 8.72 below, the item responsible for this low measurement is item 18x. With the exclusion of this item, the Cronbach's alpha value for just three items comes to an excellent **0.802**.

Table 8.72: Cronbach's alpha of assimilative element

	Corrected item-total correlation	Cronbach's alpha if item deleted
16b	0.523	0.302
16g	0.531	0.240
18g	0.534	0.277
18x	-0.113	0.802

Item 18x is a remarkable case, once again, and the exclusion of this item could have been predicted even before this questionnaire was administered. One of the findings from the pretesting and administration of the questionnaire in Stage 1 of the research at the Gautrain project, was that negatively phrased questions were not to be included in the questionnaire, as respondents in this context do not seem to understand how to answer them. Item 18x is a negatively phrased question (the only one in the questionnaire), included in this phase stage of the testing in order to ascertain whether or not another population in this context reacted as the first did. It is evident from the above that this is indeed the case. For this reason, this negatively phrased question (*The safety goals of the organisation are different to my own goals*) was phrased in the positive in the final questionnaire (*I share the safety goals of the organisation*).

Removing this negatively phrased question from the factor analysis shows the validity of the element, with meaningful communalities in Table 8.73 and significant loadings to the one factor yielded in Table 8.74.

Table 8.73: Communalities of assimilative element

	Extraction
16b	0.696
16g	0.740
18g	0.725

Table 8.74: Factor loadings of assimilative element

	1
16g	0.860
18g	0.851
16b	0.835

The third of the five factors of internal safety communication, depicted below in Figure 8.18, the strategic factor, also has two elements, of which the first is tactical internal safety communication.

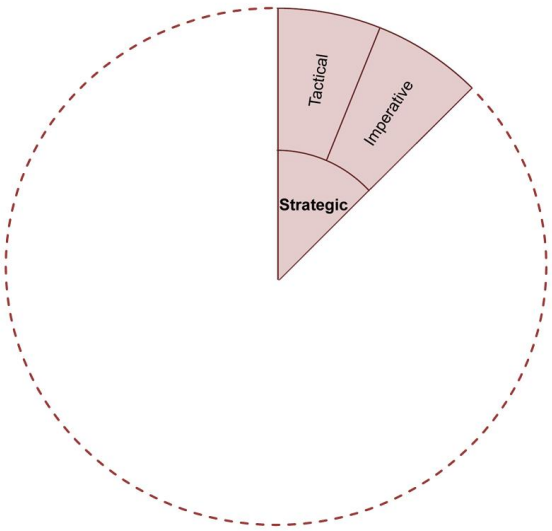


Figure 8.18: Strategic factor and its elements

Tactical internal safety communication was tested in the questionnaire by means of four items. These four items returned a Cronbach's alpha value not as positive as those discussed above, yet still acceptable at **0.699**. In Table 8.75 below it can be seen that all items correlate significantly with the element, making the exclusion of any unnecessary, although the deletion of item 16a does raise the Cronbach's alpha reading. Still, as this item has a significant correlation of 0.292 (well above the cut-off value of 0.2), the item will be included in future testing.

Table 8.75: Cronbach's alpha of tactical element

	Corrected item-total correlation	Cronbach's alpha if item deleted
13b	0.388	0.691
16a	0.292	0.733
16e	0.579	0.572
16f	0.711	0.461

The validity readings of this element was much more encouraging than the reliability measure above, where the communalities found in Table 8.76 were meaningful. Pointing to the item's further valid testing is the fact that it returned only one factor with significant loadings, as indicated in Table 8.77 below.

Table 8.76: Communalities of tactical element

	Extraction
13b	0.393
16a	0.256
16e	0.664
16f	0.800

Table 8.77: Factor loadings of tactical element

	1
16f	0.894
16e	0.815
13b	0.627
16a	0.506

The second and last element of the strategic factor is *imperative* internal safety communication, which element returned a Cronbach's alpha value of **0.834** for its eight items, more in line with the outstanding reliability measures seen in most of the previous elements. As can be seen in Table 8.78 below, this excellent reading is substantiated with significant correlations, with the exclusion of any of the elements not compromising this high reliability reading.

Table 8.78: Cronbach's alpha of imperative element

	Corrected item-total correlation	Cronbach's alpha if item deleted
11h	0.623	0.811
11i	0.615	0.810
12h	0.440	0.830
12i	0.551	0.816
19b	0.665	0.803
19c	0.554	0.817
19d	0.671	0.800
19f	0.505	0.827

The factor analysis, shown in tables 8.79 and 8.80 below, returned two factors with all elements with significant loading meaningfully correlated, pointing to the admirable validity of the measure.

Table 8.79: Communalities of imperative element

	Extraction
11h	0.755
11i	0.788
12h	0.677
12i	0.739
19b	0.673
19c	0.835
19d	0.748
19f	0.522

Table 8.80: Factor loadings of imperative element

	1	2
11i	0.878	0.129
11h	0.848	0.190
12i	0.848	0.143
12h	0.809	0.149
19b	0.331	0.852
19c	0.023	0.820
19d	0.369	0.782
19f	0.043	0.721

The relational factor of internal safety communication has the elements of supportive, balanced, trusting and committed internal safety communication. This second to last factor of internal safety communication to be discussed in this section is depicted below in Figure 8.19.

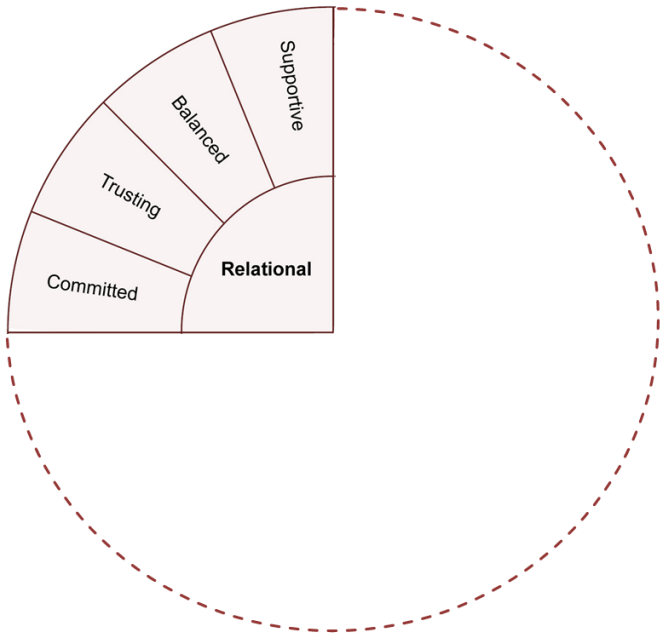


Figure 8.19: Relational factor and its elements

Supportive internal safety communication was measured in the questionnaire of the second stage by means of seven items. These seven items yielded an excellent

Cronbach's alpha value of **0.921**, pointing to an extremely valid measurement, where all of the items were significantly correlated to the element, as can be seen in Table 8.81 below.

Table 8.81: Cronbach's alpha of supportive element

	Corrected item-total correlation	Cronbach's alpha if item deleted
18d	0.767	0.877
18e	0.823	0.870
18f	0.805	0.872
18m	0.714	0.884
18n	0.782	0.876
18o	0.748	0.882

In line with the reliability of the element, the validity was found to be high as well, where meaningful correlations can be seen in Table 8.82, with one closely grouped factor returned from the factor loadings, as seen in Table 8.83.

Table 8.82: Communalities of supportive element

	Extraction
18d	0.705
18e	0.785
18f	0.756
18m	0.648
18n	0.740
18o	0.674

Table 8.83: Factor loadings of supportive element

	1
18e	0.886
18f	0.869
18n	0.860
18d	0.840
18o	0.821
18m	0.805

In much the same way, the *balanced* element under the relational factor also yielded an excellent Cronbach's alpha value of 0.902 for its 15 items. As seen in Table 8.84 below, the Cronbach's alpha stays stable when items are deleted from the test, indicating that this high scoring is not only due to the inclusion of as many items – where the exclusion of items would not see the Cronbach's alpha value drop significantly.

Table 8.84: Cronbach's alpha of balanced element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
11j	0.658	0.893	14f	0.357	0.903
12j	0.620	0.895	16l	0.541	0.898
13a	0.459	0.900	18d	0.672	0.893
14a	0.516	0.899	18e	0.755	0.889
14b	0.475	0.900	18f	0.775	0.888
14c	0.428	0.901	18h	0.618	0.895
14d	0.476	0.900	18k	0.739	0.890
14e	0.612	0.895			

What is, however, expected from an element with as many items, is that this element would yield underlying factors, which point to the smaller nuanced differences in this multi-faceted and somewhat abstract element. This was found to be the case in this element, as seen in Table 8.85, where it is shown that all factors are significantly loaded to one another, and had meaningful communalities to the element. As seen in Table 8.86, three underlying factors were identified, showing the statistical validity of the measurement.

Table 8.85: Communalities of balanced element

	Extraction
11j	0.773
12j	0.800
13a	0.333
14a	0.661
14b	0.612
14c	0.449
14d	0.692
14e	0.666
14f	0.758
16l	0.584
18d	0.790
18e	0.884
18f	0.795
18h	0.759
18k	0.853

Table 8.86: Factor loadings of balanced element

	1	2	3
18k	0.867	0.118	0.294
18h	0.856	0.148	0.064
18d	0.835	0.043	0.300
18e	0.823	0.044	0.453
18f	0.770	0.177	0.413
14f	-0.032	0.869	-0.044
14d	-0.025	0.791	0.256
14a	0.127	0.786	0.162
14b	0.090	0.765	0.137
14e	0.376	0.719	0.082
14c	0.107	0.644	0.154
12j	0.197	0.192	0.851
11j	0.291	0.200	0.805
16l	0.345	0.030	0.681
13a	0.233	0.217	0.481

Another more abstract element, and one subsequently in need of being tested through more items, is the element of *trust*. In the questionnaire administered in the second stage of testing, this element was tested by means of 11 items. From these items, an excellent reliability measure of **0.920** was found, with astoundingly all

items, as seen below in Table 8.87, returning a measure of over 0.9 even if items are deleted from the element's measurement.

Table 8.87: Cronbach's alpha of trusting element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
17a	0.675	0.914	18a	0.769	0.909
17b	0.783	0.908	18b	0.858	0.904
17c	0.754	0.910	18c	0.757	0.909
17d	0.789	0.908	18q	0.336	0.927
17e	0.632	0.916	18r	0.312	0.927
17f	0.810	0.907			

As valid as it is reliable, the element returned two underlying factors in the factor analysis, all tightly and significantly grouped, as seen in Table 8.88. Table 8.89 shows how the communalities between the items and the element they measure are meaningful, and thus valid.

Table 8.88: Communalities of trusting element

	Extraction
17a	0.496
17b	0.578
17c	0.755
17d	0.689
17e	0.751
17f	0.475
17a	0.744
18a	0.686
18b	0.801
18c	0.676
18q	0.587
18r	0.778

Table 8.89: Factor loadings of trusting element

	1	2
18b	0.880	0.162
17a	0.867	0.061
17c	0.865	0.057
17b	0.851	0.144
17f	0.824	0.105
18c	0.817	0.094
18a	0.811	0.168
17d	0.669	0.361
17e	0.666	0.176
18r	0.109	0.875
18q	0.170	0.747
17f	0.077	0.700

The last element of the relational factor is the element of *commitment*, one slightly less latent than its counterparts. This element was, therefore, tested in the questionnaire by means of four items, and notwithstanding its lesser item count, this element still returned a Cronbach's alpha value of **0.856**, showing an excellent reliability of the measure.

All of the items, as shown below in Table 8.90, correlate significantly and meaningful to the item, pointing to the fact that none need to be discounted from this element's

measurement, even though this deletion could improve the Cronbach's alpha reading slightly (as is the case with item 18i).

Table 8.90: Cronbach's alpha of committed element

	Corrected item-total correlation	Cronbach's alpha if item deleted
18g	0.766	0.787
18i	0.393	0.916
18j	0.863	0.743
18l	0.821	0.761

The element also showed an excellent validity, where all of the items were grouped with meaningful correlations, as in Table 8.91, in only one factor with all-round significant loadings – see Table 8.92 below.

Table 8.91: Communalities of committed element

	Extraction
18g	0.776
18i	0.313
18j	0.876
18l	0.836

Table 8.92: Factor loadings of committed element

	1
18j	0.936
18l	0.914
18g	0.881
18i	0.559

The last factor of internal safety communication addresses symmetricality of communication in the organisation, as seen below in Figure 8.20. This factor has three elements, namely *accessible, responsive* and *informative* internal safety communication.

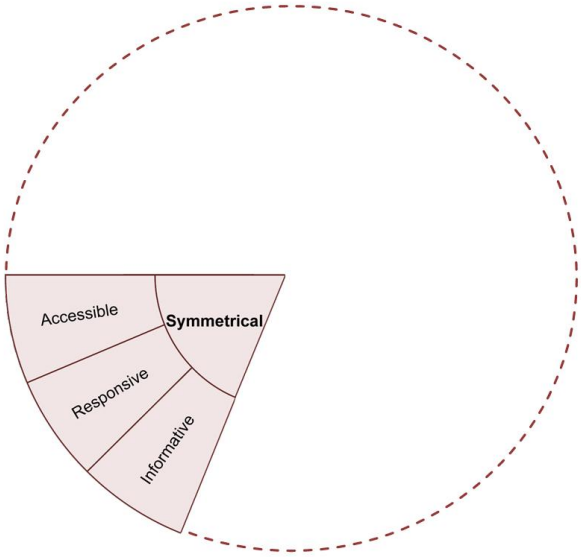


Figure 8.20: Symmetrical factor and its elements

Starting with the former, *accessible* internal safety communication was tested in the questionnaire by means of 11 items due to its multi-faceted nature. These items yielded an excellent Cronbach's alpha value of **0.861**, pointing to its statistical reliability, where all items contribute and correlate significantly, as seen in Table 8.93.

Table 8.93: Cronbach's alpha of accessible element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
9a	0.695	0.842	14d	0.668	0.841
9b	0.426	0.859	14e	0.824	0.835
9c	0.606	0.846	16k	0.600	0.846
9d	0.380	0.861	16m	0.316	0.879
14b	0.715	0.838	16n	0.553	0.849
14c	0.639	0.842			

Statistically proving the assumption of the element being multi-faceted, the factor analysis yielded four underlying factors to the element, which were all significantly loaded and meaningfully linked to the element, as seen below in tables 8.94 and 8.95.

Table 8.94: Communalities of accessible element

	Extraction
9a	0.831
9b	0.841
9c	0.922
9d	0.855
14b	0.890
14c	0.898
14d	0.943
14e	0.978
16k	0.762
16m	0.888
16n	0.828

Table 8.95: Factor loadings of accessible element

	1	2	3	4
14d	0.958	0.045	0.099	0.113
14c	0.930	0.090	0.029	0.153
14e	0.922	0.255	0.127	0.216
14b	0.909	0.201	0.139	0.069
9b	0.084	0.816	0.368	-0.183
9a	0.370	0.734	0.087	0.385
9c	0.207	0.717	0.007	0.604
16m	0.087	0.109	0.917	-0.168
16k	0.112	0.417	0.724	0.225
9d	0.175	0.129	-0.054	0.897
16n	0.226	-0.040	0.619	0.626

Subsequently, the *responsive* element returned a Cronbach's alpha value of **0.839**. As seen in Table 8.96, all items contribute to this excellent measure, where the deletion of items would not necessarily significantly alter this excellent reading, once again pointing to its heightened statistical reliability.

Table 8.96: Cronbach's alpha of responsive element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
9a	0.566	0.824	15e	0.563	0.825
9c	0.519	0.826	15f	0.499	0.828
15a	0.447	0.831	15g	0.664	0.818
15b	0.709	0.815	16n	0.514	0.826
15c	0.593	0.824	18d	0.345	0.848
15d	0.510	0.826	18e	0.478	0.832

The factor analysis, shown in tables 8.97 and 8.98 below, all point to a heightened validity alongside the reliability of the measure, with three closely grouped factors and meaningful communalities.

Table 8.97: Communalities of responsive element

	Extraction
9a	0.773
9c	0.816
15a	0.408
15b	0.670
15c	0.722
15d	0.755
15e	0.813
15f	0.772
15g	0.895
16n	0.764
18d	0.680
18e	0.820

Table 8.98: Factor loadings of responsive element

	1	2	3
15g	0.928	0.143	0.116
15e	0.897	0.051	0.074
15d	0.844	-0.080	0.190
15c	0.818	0.023	0.229
15b	0.650	0.416	0.273
9c	0.634	-0.193	0.614
18e	-0.082	0.849	0.305
15f	0.277	0.834	-0.023
18d	-0.065	0.815	0.106
16n	0.024	0.359	0.797
9a	0.459	-0.080	0.745
15a	0.171	0.287	0.544

Lastly, the *informative* element does not deviate from the mostly excellent readings seen in the elements of the second measurement of the questionnaire, where the 14 items that made up its testing returned a Cronbach's alpha value of **0.832**, as seen in Table 8.99 below. These 14 items specifically tested the channels of internal safety communication and the perception of employees regarding their usage.

Table 8.99: Cronbach's alpha of informative channels element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
10a	0.441	0.823	10h	0.514	0.820
10b	0.091	0.845	10i	0.464	0.823
10c	0.505	0.820	10j	0.480	0.821
10d	0.423	0.824	10k	0.583	0.813
10e	0.704	0.807	10l	0.316	0.831
10f	0.470	0.821	10m	0.550	0.815
10g	0.543	0.815	10n	0.631	0.811

This factor, although measured by means of more variables, does not depend on the inclusion of all these for its reliable measure. In this, as is seen in Table 8.99 above, the exclusion of items will still maintain the Cronbach's alpha above the benchmark for statistical excellence in terms of reliability.

The validity of this subset of the informative element shows much the same, as is seen in the two tables below. The communalities of the items towards the element

were all meaningful, seen in Table 8.100, where the element returned four underlying factors, all significantly grouped as in Table 8.101.

Table 8.100: Communalities of informative channels element

	Extraction
10a	0.762
10b	0.667
10c	0.629
10d	0.609
10e	0.804
10f	0.863
10g	0.842
10h	0.767
10i	0.804
10j	0.849
10k	0.866
10l	0.845
10m	0.834
10n	0.753

Table 8.101: Factor loadings of informative channels element

	1	2	3	4
10l	0.907	-0.127	0.004	0.083
10j	0.842	-0.138	0.255	0.236
10d	0.742	-0.036	0.132	0.199
10f	0.716	-0.098	0.578	-0.077
10e	0.582	0.357	0.087	0.574
10g	-0.018	0.879	0.105	0.240
10h	-0.001	0.842	0.088	0.224
10i	-0.233	0.771	0.316	0.236
10b	-0.045	0.730	-0.161	-0.326
10m	0.264	-0.005	0.845	0.222
10k	0.578	0.162	0.695	-0.152
10n	0.007	0.372	0.664	0.417
10a	0.328	0.063	-0.010	0.807
10c	0.016	0.208	0.378	0.665

Apart from the channels used to convey safety information to employees, the general informative nature of internal safety communication was also tested. This testing was done by means of 18 elements. Seen in Table 8.102 below, the exclusion of items for the testing of this element was not needed, as the exclusion of any of the items would still see the Cronbach's alpha reading being over 0.9. With the inclusion of all the items, the reliability reading was an excellent **0.926**.

Table 8.102: Cronbach's alpha of informative element

	Corrected item-total correlation	Cronbach's alpha if item deleted		Corrected item-total correlation	Cronbach's alpha if item deleted
11a	0.550	0.924	12e	0.711	0.920
11d	0.529	0.925	12g	0.563	0.923
11e	0.632	0.922	12l	0.772	0.919
11g	0.381	0.926	12m	0.796	0.918
11l	0.767	0.919	12n	0.754	0.919
11m	0.788	0.918	13c	0.327	0.928
11n	0.766	0.918	16h	0.595	0.922
12a	0.521	0.925	16i	0.698	0.921
12d	0.631	0.922	16j	0.436	0.927

The communalities of the items to the element being tested are well above the benchmark, as seen in Table 8.103, showing that this subset of the element of informative internal safety communication is once again statistically valid. The inclusion of as many items did, predictably, allow the factor analysis, as shown below in Table 8.104, to return various underlying factors to the element, but what is important to note here is how closely and significantly these factors are grouped.

Table 8.103: Communalities of informative element

	Extraction
11a	0.852
11d	0.716
11e	0.644
11g	0.796
11l	0.770
11m	0.863
11n	0.848
12a	0.875
12d	0.752
12e	0.702
12g	0.866
12l	0.744
12m	0.825
12n	0.888
13c	0.650
16h	0.719
16i	0.731
16j	0.774

Table 8.104: Factor loadings of informative element

	1	2	3	4
12n	0.903	0.062	0.120	0.232
11n	0.869	0.123	0.112	0.256
11m	0.858	0.090	0.301	0.168
12e	0.799	0.230	0.061	0.079
12m	0.798	0.144	0.346	0.216
11e	0.783	0.084	0.063	0.141
12l	0.781	0.227	0.261	0.119
11l	0.699	0.263	0.458	-0.051
11a	0.098	0.905	0.066	0.135
12a	0.067	0.901	-0.005	0.241
16j	-0.009	0.807	0.323	-0.134
11d	0.282	0.777	0.016	-0.183
12d	0.393	0.766	0.027	-0.100
13c	0.194	-0.139	0.744	0.199
16h	0.223	0.351	0.700	0.236
16i	0.485	0.316	0.629	-0.025
11g	0.253	-0.040	0.234	0.822
12g	0.529	0.026	0.125	0.755

In summary of this, as well as the first stage's statistical validity and reliability testing, it can be said that *all* elements yielded statistically valid and reliable measures, once appropriate deletions or alterations had been made. The factor analyses of all these elements showed cohesive groupings and more than general communalities with the element being tested, pointing to the validity of the tests of all elements in both stages. Apart from this, the factor analysis also points to, although it does not prove, the significance of the pairings made in the *model* for internal safety communication, as this model was used as the basis for the pairings in the questionnaire, which were proven statistically valid.

The reliability of the elements, tested primarily by means of the concrete Cronbach's alpha value of that measurement, allows for some comparisons to be made between the findings of the two stages. Although the first stage has a very admirable 0.787 average Cronbach's alpha, the second stage has an excellent average of 0.852. In the first stage, seven of the 16 Cronbach's alpha measurements ranged between acceptable and excellent, with the remaining nine being classified as excellent. In the second stage, however, only two of the Cronbach's alpha ratings out of 18 could not be classified as excellent (being rated between acceptable and excellent), with the overwhelming majority (16) being excellent and above.

It can therefore be seen how the validity of the measurements of the elements improved significantly from the first administration of the questionnaire in Stage 1 to the second administration in Stage 2. Arguably, the intervention separating these two stages can therefore be seen as successful, as it improved the validity of the questionnaire.

The further changes or alterations to the questionnaire, resulting from the second stage of testing, could therefore be taken forward in the construction of the final questionnaire, which serves as the second major output and contribution of this thesis.

8.4 FINAL QUESTIONNAIRE

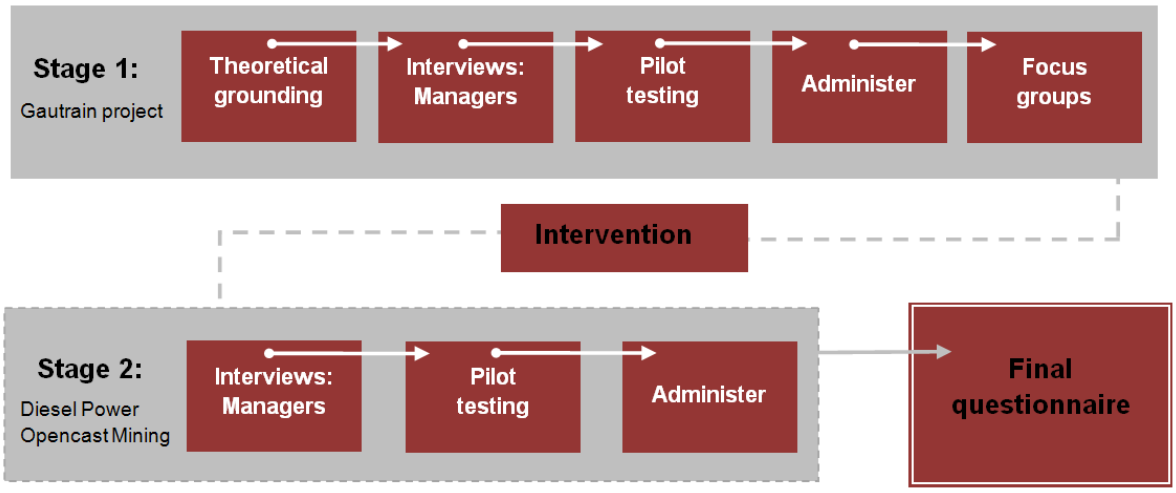


Figure 8.21: Final progression: Final questionnaire

As depicted in the figure above, the findings from the first stage of testing were taken forward by means of alterations to the quantitative questionnaire for internal safety communication to the second stage of testing. As discussed above, these alterations significantly improved the questionnaire specifically in terms of statistical validity. The alterations suggested from this second round of testing could be taken forward to the construction of the final draft of the questionnaire designed to evaluate internal safety communication within the mining and construction industries of South Africa.

The final questionnaire in its entirety can be found in Appendix A of this thesis. Addendum B shows all the items of each questionnaire along with their corresponding sources from the literature, model factor and element they pertain to. The discussion below therefore does not restate this information, but summarises and generally discusses the way in which it is intended for the different sections of the questionnaire to be administered.

Before the page-by-page discussions, some general aspects relating to the questionnaire administration should be noted. In general, the questionnaire's length might still be problematic to some organisations. As was noted in the interviews during the first stage, some organisations might think it too long, as it might keep employees from their production responsibilities. Although the questionnaire was kept to a minimum, all items in the questionnaire serve specific functions and, due to the multi-faceted and abstract nature of many concepts, arguably all need to be included in a questionnaire such as this. Having said that, this questionnaire does test many elements and factors of internal safety communication, as outlined in the model for internal safety communication. If an organisation feels that it would rather focus on some elements or factors and disregard others, for example if one or some aspects prove to be an avenue that the organisation specifically needs to research, then those items relating to the disregarded factor(s) or element(s) can be left out of the questionnaire administration. Addendum B can be used as a guide in this instance, but it should be noted that some items relate to more than one element.

The questionnaire should also be tested for *validity* and *reliability*, respectively, by means of its Cronbach's alpha coefficient and factor analyses applicable to the specific research context. It should be considered that factor analyses are on the

whole more population-specific, meaning that different research populations will make different smaller nuanced discriminations between underlying factors (Laslier 2011:8; Field 2009:35; Keyton 2006:118). These factors can be very telling in terms of the nature of the internal safety communication of that organisation. Using the example discussed earlier in the chapter, although respondents might cluster all items relating to symmetrical accessible communication together, they might still make smaller factor groupings within that element. For example, within the greater groupings, one subgrouping of management communication and one of supervisor communication could further be made. In this example discussed earlier, this pointed to the hierarchical nature of internal safety communication in the mining and construction industries.

The introduction page of the questionnaire gives the general outline of the questionnaire and the research. On this page, respondents are made aware of, inter alia, the nature of the study, the anonymous character of their answers, as well as general instructions in terms of the logistics of the questionnaire. This page should be altered to the needs of each organisation, but the inclusion of all of the more important aspects are recommended, not only for the information of employees following the self-administered route, but also in instances where use is made of a facilitator/translator. This information was found to serve as a prompt for facilitators/translators to ensure that these instructions and assurances were explained to all employees.

The first page and the top part of the second page of the questionnaire comprise the demographical aspects of employees, including standard and typical items such as the gender, age, classification, and so forth of the respondent. Aspects that are particular to questionnaires administered in the mining and construction industries are questions 4 and 7. Question 4 asks respondents to indicate whether or not they are fulltime employees of the organisation being investigated (for example the Gautrain project or DPOM) or contractors working in this organisation. As was discussed in Chapter 3 of the thesis, many organisations ‘outsource’ or contract work at the mines or on construction sites to contracting companies that specialise in certain tasks. It is important in the questionnaire administration to be able to

differentiate between these groups of employees, as contracting employees might have different internal safety communication sources than permanent employees.

Question 7 asks about the union involvement of individuals. This question had to be included, although employees are free to disregard it, because the questionnaire later on enquires about union involvement in internal safety communication under the element of turbulent internal safety communication. Including this question therefore allows the researcher to segment the answers from respondents regarding turbulent communication in terms of those who are and those who are not members of a union.

In general, the demographical aspects of employees are very important in any communication questionnaire in the mining and construction industries of South Africa, the reason being the diversity of employees (see Chapter 2). Due to the fact that employees are segmented into varying groups in these industries as a result of their heterogeneous nature, questionnaires need to make provision for segmenting answers given by respondents. This would give a clearer and more valid representation of the communication of an organisation. For example, in terms of Question 6 of this page, it is important to know the difference in the manner that employees who can read English on an acceptable level answer safety-related aspects in the questionnaire, versus those who cannot. This will allow the researcher insight into the need, for example, of communication that does not require this kind of literacy.

Depending on the kind of relationship being researched between these demographical indicators and the internal safety communication aspects in the questionnaire, Chi^2 tests, t-tests, ANOVAs or simple cross-tabulations can be drawn (for full explanation of each, refer back to Chapter 6). For example, if the researcher wants to determine the different responses yielded by respondents on different job levels, a cross-tabulation can be drawn. Table 8.105 offers an example of such a test done on the different job levels at DPOM and the quality of information received regarding government action affecting the respondents' jobs (item 12d).

Table 8.105: Example of the use of cross-tabulation

		Quality of information on government action affecting work				
		Very dissatisfied	Dissatisfied	Satisfied	Very satisfied	Total
Operator	Count	12	6	29	6	53
	% within 12d	100.0%	85.7%	78.4%	42.9%	75.7%
Supervisor	Count	0	1	1	1	3
	% within 12d	0.0%	14.3%	2.7%	7.1%	4.3%
Safety Officer	Count	0	0	5	3	8
	% within 12d	0.0%	0.0%	13.5%	21.4%	11.4%
Manager	Count	0	0	2	4	6
	% within 12d	0.0%	0.0%	5.4%	28.6%	8.6%
	Count	12	7	37	14	70
	% within 12d	100.0%	100.0%	100.0%	100.0%	100.0%

As can be seen in the table above, the operators and supervisors were the only job levels who indicated dissatisfaction with the quality of information they received regarding government action that affected their jobs. All safety officers and managers indicated that they were satisfied. This could point to the fact that there is a communication disconnection in the chain of communication between safety officers and supervisors, as it is the responsibility (at this organisation) of safety officers to relay information, which they obtain from management, to the supervisors and general workers.

The next page of the questionnaire harbours the second section of the questionnaire, which deals with internal safety communication specifically. Firstly, it tests the downward communication from supervisors or managers to employees – general employees did not have to answer this section, as is stipulated. The last part of the page is dedicated to the testing of the amount of information received though various channels or methods of communication. Through the analysis of this question, researchers can make inferences regarding the over-use or under-utilisation of certain channels of communication at an organisation. During the pre-testing of the questionnaire at the organisation intended for research, the researcher has to make sure that all channels or methods used by the organisation to communicate are listed. The list depicted is generic and serves only as a template in

this instance; therefore, the researcher must ensure that this list is exhaustive before administration.

The next page of the questionnaire has two questions with the exact same items listed under them, relating to integrative holistic communication and informative symmetrical communication. The reason why the items under each of the questions are the same is that the first question asks about the *amount* of information regarding the varying internal safety communication aspects, and the second about the *quality*. As discussed previously in this chapter, findings from the pre-testing and administration of the questionnaire pointed to the fact that respondents had difficulty attending to two aspects in a question or item at the same time. In the original questionnaire from the literature, these two aspects were combined or had only different scales. This was found to be unsuccessful in this research's context; therefore, amount and quality were rather split into two questions.

Three respondents who were self-administrators of the questionnaire indicated that these two questions "asked the same thing". The difference, therefore, needs to be made clear, if the accompanying question and instructions on this page do not suffice.

The fourth page of the questionnaire starts off with a question originally from the ICA's communication satisfaction questionnaire (Downs et al 2004:114) and is followed by a question exploring the upward communication in the organisation. The question dealing with upward communication especially should be paired with the demographical information of the respondent, specifically the respondent's job level in the organisational hierarchy. This will allow for a clear and complete picture regarding upward internal safety communication to emerge.

The last question on this page of the questionnaire relates to the element of reinforced holistic internal safety communication, inasmuch as it deals with the actual action taken on internal safety communication by different departments within the organisation. Once again, the items listed here need to be both exhaustive and relevant, with all applicable departments or people in the organisation being

included. Each organisation will have a different list and this should be subjected to pre-testing to ensure its exhaustiveness and relevance.

The fifth page of the questionnaire has only two questions and the first is primarily from Francis and Woodcock's (1994) communication audit questionnaire. This question includes items that speak to all but one factor of internal safety communication by including aspects of the holistic, turbulent, strategic and symmetrical factors. It does, however, not address the relational factor. This is done in the last question on this page and the first on the next page.

The relational question on this page deals only with the trust element. The reason for this is that trust is such a fundamental aspect in terms of safety in the mining and construction industries, as employees are placing their very lives in the hands of the organisation through different people and departments therein. Gauging where this trust lies and where it is strong or weak gives insight into the safety relationship as a whole. This relationship with all of its elements is tested on the next page, which has only one question. Although predominantly from Grunig and Hon's (1999) relationship management questionnaire, this question also includes items from Díaz-Cabera et al's (2007) safety climate and Grunig et al's (2002) excellence theory employee questionnaires.

The last page of the questionnaire tests the respondents' view on the behaviour of the organisation with regard to different aspects of safety and production. As commented on previously in this chapter, the production element was brought in to act as benchmark and gauging factor to measure internal safety communication. This question interrogates integrative as well as reinforced holistic internal safety communication, as it measures the *behaviour* (as opposed to strategic intent) of the organisation towards and in terms of safety, as weighed against production.

The last question of the questionnaire is an open-ended, qualitative question. This question was inserted into the questionnaire during its testing in order to allow respondents to draw attention to any aspect that the questionnaire might have failed to incorporate. It is the prerogative of a researcher to include or exclude this question in any subsequent research by means of this questionnaire. If it is included, it should

be noted that this question could not be handled in the same way as the quantitative questions, which this chapter focuses on in its discussions.

8.5 CONCLUSION

This chapter focused on discussing the quantitative questionnaire produced from this research as contribution to the field of internal organisational communication. The progress of the formation of the questionnaire was followed, from its theoretical underpinning to the first stage of empirical testing at the Gautrain project, to the intervention between the stages, to the second stage of empirical testing at DPOM. These two stages used different research methods, quantitative and qualitative, employed to test this questionnaire. As the questionnaire had a strong theoretical underpinning, these empirical methods were used to contextualise the questionnaire to internal *safety* communication specifically, and to the administration challenges in, and praxis of, the mining and construction industries of South Africa.

The findings pointed to alterations needed in order for the questionnaire to be specific to internal safety communication and suitable to the mining and construction industries of South Africa. The success to the alterations could be seen in the fact that the statistical reliability of the questionnaire items improved significantly from one administration to the next, indicating that the interventions were indeed successful in their aim of improving the questionnaire. As these items and their groupings are directly traceable to the model for internal safety communication, discussed in the previous chapter, some conviction can be drawn from the successful statistical validation of the items used for its testing.

The next chapter of this thesis relates the findings from the model for internal safety communication as well as from the questionnaire discussed in this chapter to the research aims and statements of the study as a whole.

CHAPTER 9
DISCUSSION OF RESEARCH AIMS AND CONCLUSION

9.1 INTRODUCTION

The previous two chapters focused on discussing and presenting the findings of this research in terms of the model for internal safety communication (Chapter 7) as well as the quantitative questionnaire designed for the testing of those aspects identified in this model (Chapter 8). Each chapter focused on discussing one of the two outputs or contributions of this thesis to the field of internal organisational communication. Summarising and abridging these findings, this chapter acts as a general conclusion of this research by relating the findings to each of the research questions.

In the general conclusion of this chapter and thesis, the main research problem is addressed. The discussion of the research questions is done in the following related pairs: research questions 1 and 4; 2 and 5; 3; 6 and 7. As an *aide memoire*, Table 9.1 below summarises these seven research questions discussed below (see also Table 6.1, in Chapter 6, which relates each of the research questions to methodologies and chapters in this thesis).

Table 9.1: Research questions

Research questions of the thesis	
RQ 1	What are the current proposed methods, models or theory for internal organisational communication according to literature?
RQ 2	What factors impact on internal organisational communication within the South African mining and construction industries?
RQ 3	What are the unique characteristics of internal safety communication?
RQ 4	From the literature, what methods exist for the measurement of internal organisational communication?
RQ 5	What factors impact on the measurement of internal safety communication within the South African mining and construction industries?
RQ 6	How should the current internal organisational communication literature be adapted to the communication of safety information within the South African mining and construction industries?
RQ 7	How should current measuring instruments be adapted or developed to measure internal safety communication within the South African mining and construction industries?

9.2 RESEARCH QUESTIONS 1 AND 4

As seen in Table 9.1, research questions 1 and 4 are closely related, in that both address the same aspect: the first relating it to the model for internal safety communication and the second to the questionnaire for its testing. Research Question 1 asked *What are the current proposed methods, models or theory for internal organisational communication according to literature?* and Research Question 4 *From the literature, what methods exist for the measurement of internal organisational communication?*.

Both questions dealt with the theoretical underpinning of the thesis, which was discussed in chapters 3 to 5. In these chapters, the methods for internal organisational communication were traced chronologically from the systems theory. The systems theory was the inaugurate or starting point, as this was the first theory that dealt with interrelatedness between systems, which from the vantage point of this research, was applied to the organisation and its employees.

Once it was established that the organisation as meta-system should relate to employees as subsystem, internal organisational communication theories started to develop, discussing this phenomenon. The first of these fledgling theories was the stakeholder theory, wherein linking subsystems, as from the systems theory, was described as stakeholders. Moreover, this theory described, for the first time in the organisational vernacular, the impact of relating with stakeholders, of which employees were seen as one of the most important on the organisation's goal attainment and on its bottom line.

Although this theory did offer a view whereby employees as stakeholders and their importance were related to the organisation, and although it did treat the fact that a relationship should exist between the parties, the critique raised against this theory was that it did not in a normative or descriptive way delineate what this *relationship* should or does look like in practice. The next chronological theoretical progression discussed this relationship directly. The relationship management theory explored and eventually described the organisation-employee relationship as from the paradigmatic view offered by the stakeholder theory. This theory identified those

measures of a relationship that existed and were important to underline and decisively noted that it was through internal organisational communication that this relationship was initiated and managed. Critique brought in against this theory was that it does not delineate what communication should look like in this instance, and from this the excellence theory developed.

The excellence theory addresses internal organisational communication, discussing the parameters whereby it can be classified as excellent or not. It identifies measureable and concrete communication aspects that gauge the excellence of this form of communication. The excellence theory, as the stakeholder and relationship management theory that preceded it, considered the association between the organisation and its employees decidedly from the organisation's perspective in terms of responsibility and recompense. The last progression needed, to ensure a complete view of internal organisational communication, was to view this association from the stance of employees.

The last theoretical section discussed in this thesis was therefore satisfaction literature, which looks at employees' perspectives in terms of internal organisational communication. As with the excellence theory, this literature presents measureable and examinable outputs of communication, but this time framed from employees' perceptions rather than organisational endeavours.

In terms of the focus of this study specifically, the methods for internal organisational communication were thus addressed, as the progression of the understanding of this phenomenon was traced from its inception to the point where it was examined from all positions. Most of these theories, as stated above, offered measureable and examinable outputs whereby the successful implementation, application or execution thereof could be ascertained. For this reason, the exploration of these theories also offered answers to Research Question 4, which enquired about the methods proposed in the literature for the measurement of internal organisational communication.

As discussed in Section 8.2.1 of Chapter 8, the relationship theory, the excellence theory as well as the satisfaction literature all had accompanying quantitative

questionnaires designed for the evaluation of the theoretical statements made by these theories. Based on the premise that these theories form part of a holistic view of internal organisational communication, the questionnaires for their testing form part of the complete evaluation of internal organisational communication in all its facets. The systems theory and the stakeholder theory literature, however, did not yield questionnaires directly linked to the theoretical statement evaluation of these particular theories. In order to ensure that these theoretical statements were indeed accounted for, all other quantitative questionnaires available in the literature for the evaluation of internal organisational communication within the specific focus of this study were evaluated. This led to the incorporation and inclusion of questionnaires such as Francis and Woodcock's (1994) audit of communication effectiveness questionnaire and Díaz-Cabera et al's (2007) climate questionnaire.

In this way, this thesis accounted for and reported on all the relevant literature on internal organisational communication, as well as the proposed methods for its evaluation, which is in line with the specific focus of this study and addressed by these two research questions. However, in order to bring the principles of these theories closer to the focus of this research, the next coupled research questions enquired about the specific context in which it functions.

9.3 RESEARCH QUESTIONS 2 AND 5

Research questions 2 and 5 respectively ask *What factors impact on internal organisational communication within the South African mining and construction industries?* and *What factors impact on the measurement of internal safety communication within the South African mining and construction industries?*.

These two research questions are important due to the fact that the mining and construction industries of South Africa are deemed to be unique and inimitable as a meta-context. Chapter 2 of this thesis was hence dedicated to the discussion and understanding of the South African mining and construction industries, tracing its evolution from independent diggers disjointedly managing small-scale opencast operations in the 1800s to some of the greatest and most evolved role-players in the global economic context today. In this chapter it was also seen that the mining and

construction industries and their development and latter-day contexts harmonise as one influences the other, with permeable boundaries and a subsequent ingrained analogous nature.

This evolved from the discussions in Chapter 2, where it was indicated that the uniqueness of the employee body is arguably the most significant defining aspects of internal organisational communication and its measurement in these industries. Although the environment, particularly the macro, task and micro environments, exercise their own influence on internal organisational communication, none are more influential than the parameters of the employee body. This diversity specifically manifests in origin, culture, language and literacy. The *origin* of workers in the mining and construction industries of South Africa is extremely diverse due to the fact that these industries see the highest proportion and number of migrant workers. The migrating workforce sees individuals with vastly different origins and subsequently different *cultures* and *languages*. Historically, this diversity saw the construction of a new culture, very exclusive to the mining and construction industries, epitomised and envisaged by aspects such as gumboot dancers and similar cultural elements. This exclusive or unique culture was apexed by a new and unique language called Fanakalo, which is defined in Chapter 2 as a mainly Zulu-based pidgin language that developed to promote ease of communication by mixing into one all the various languages spoken on the mines.

Relatively recently, however, this language was branded a racist one and English was declared the official vernacular, although in practice Fanakalo, in many instances, stays the *de facto* language. In terms of internal organisational communication, a tower of Babel confusion can therefore ensue where the different languages cause confusion and misinterpretation or misunderstanding of the communication message.

Furthermore, diversity takes hold on communication by means of *literacy levels* as well. The mining and construction industries employ a comparatively large number of unschooled or unskilled labourers alongside highly educated and specialising individuals. The diversity pendulum therefore swings from the extreme of tertiary educated engineers to individuals who are functionally illiterate.

The synopsis for internal organisational communication in these industries is thus that the employee corps, literally and sometimes figuratively, do not speak the same language and cannot all read on the same level. This presents various obstacles to internal organisational communication that should be kept in mind during research and practice.

Narrowing the focus of this study further, from the context described above to the specific focal point, the next research question to be discussed draws the focus of the study to internal *safety* communication specifically.

9.4 RESEARCH QUESTION 3

In line with what is intimated to above, Research Question 3 asks *What are the unique characteristics of internal safety communication?*

Although research questions 2 and 5 contextualise the proposals of internal organisational communication in terms of the mining and construction industries of South Africa in the literature, it does not offer a comprehensive, inclusive or encompassing model, recommendations, or any such guidelines to show how internal organisational communication should be applied to internal safety communication in the industries contextualised above. Within this void, this research investigated the application of internal organisational communication theory to internal safety communication empirically by means of interviews, focus group discussions and quantitative questionnaires (see Chapter 6 for a detailed discussion).

The first step in ascertaining how internal organisational communication should be adapted for internal safety communication was to determine the unique characteristics thereof. Although it was found in the empirical testing that many theoretical aspects of the internal organisational communication literature were translatable to internal safety communication, three major aspects, not necessarily present in any other forms of internal organisational communication, were underlined. These three aspects were the involvement of industry-governing bodies, the communication responsibility and the dichotomy of forces in the organisation.

The *involvement of industry-governing bodies* has been discussed throughout this thesis as an important influence on internal safety communication. Safety in the mining and construction industries is something that is legally governed by government bodies, namely the Department of Mineral Resources (previously the Department of Minerals and Energy) and the Department of Labour. Akin to any other laws in the country that deal with bodily harm, death of an individual or damage or destruction of property, various guidelines or laws are in place for safety in the mining and construction industries. All mining or construction organisations allowed to operate in South Africa by means of the permits that these two departments issue are legally regulated by these laws.

The unique aspect for internal safety communication in this instance is that it is one of the few kinds of internal organisational communication governed to this degree – where imprisonment and permanent shutdown of the operation are possible if these laws are ignored. Internal safety communication is therefore not completely internal, as it is governed and overseen, even directed in some instances, by forces outside of the organisation. An example of how internal safety communication, and not only general safety, is directed by these governing bodies, is the legal requirement of toolbox talks and shift safety meetings, where a safety topic should be discussed with and between workers every day or during every shift.

The second unique aspect of internal safety communication is where the *communication responsibility* lies. The governing bodies of the mining and construction industries require that safety and all of its accompanying aspects be administered and managed by a *competent person*, declared such by nature and virtue of his/her safety training, including qualifications and safety experience (South Africa 1996:sec 102). Internal safety communication as a legal requirement, therefore, does not fall under the communication department of an organisation, but rather under its safety department.

The end result is that safety personnel who are not necessarily competent or knowledgeable communicators take responsibility for this task. It can therefore be argued that internal safety communication is not always practised to its utmost potential in organisations in the mining and construction industries of South Africa,

because it is not practised by a knowledgeable communicator. The excellence theory supports this assertion by making it clear that excellent communication is greatly dependent on communicators who are adequately trained in the field of communication (Grunig & Grunig 2011:3; Grunig et al 2002:6).

It is in this instance that the importance of this study is reiterated and the need for a clear and direct model for internal safety communication becomes necessary, in light of the fact that it is not always practised by a person or persons who have a communication background.

Furthermore and lastly, this communication is complicated by the *dichotomy of forces* in the organisation, particularly the dichotomy of production and safety. Production and safety in the mining and construction industries of South Africa are juxtaposed, with the main underlying premise being that when production is excelled, safety is hampered, and vice versa. The challenge for those responsible for internal safety communication is thus to not engage in the *mêlée* resultant from this dichotomy, but to rather move towards integration, where one form of communication is not seen as more important than the other, but rather as the same thing. The challenge for internal safety communication is thus not to try to replace production communication as the most important form, but to rather see the two forms integrate, both addressing the same and synergised goals of the organisation.

9.5 RESEARCH QUESTION 6

The literature discussed in the first research questions above, its contextualisation to the mining and construction industries as well as the underlying unique aspects to internal safety communication are all cumulatively needed for the answering of Research Question 6, which asks: *How should the current internal organisational communication literature be adapted to the communication of safety information within the South African mining and construction industries?*

The answer to this question is presented in Chapter 7 of this thesis, where a model for internal safety communication within the mining and construction industries was

proposed. This is again presented in Figure 9.1, showing five factors that constitutes the model, each with between two and five elements respectively.

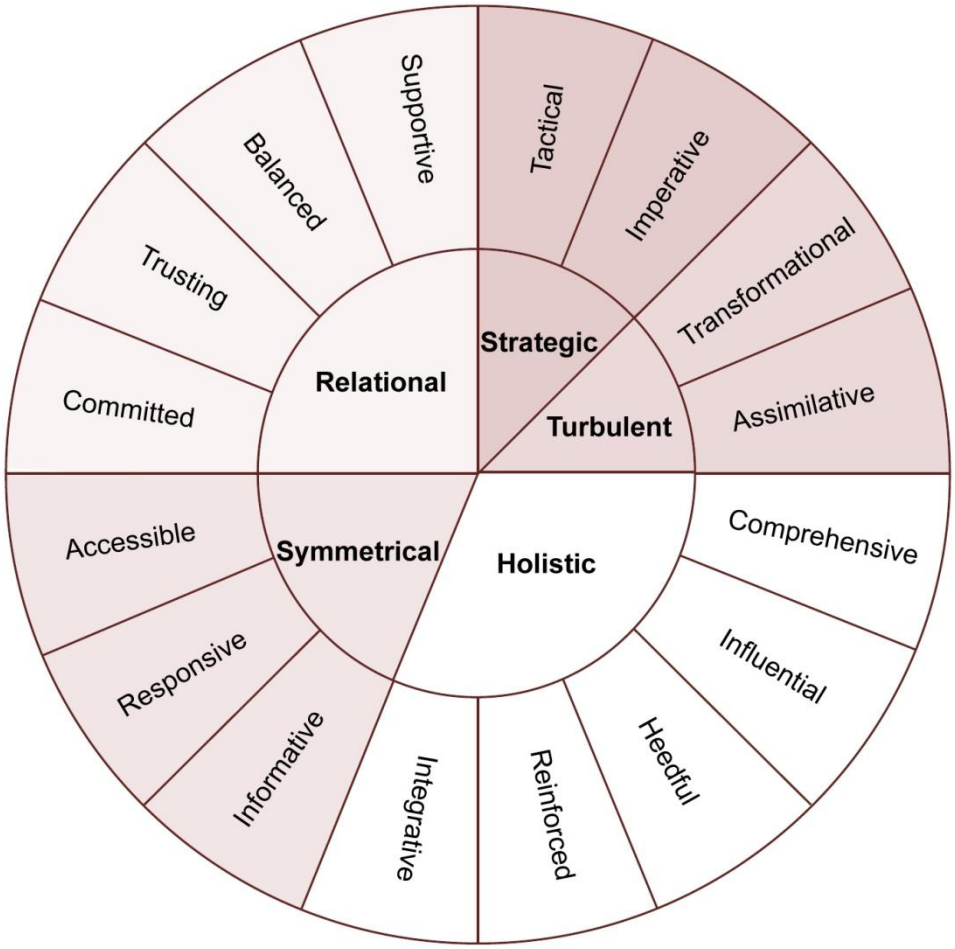


Figure 9.1: Model for internal safety communication

These factors and elements were identified in the literature as the most pertinent of the theoretical statements to internal safety communication. The theoretical statements derived from the literature review were revised in line with empirical testing by means of interviews and focus group discussions, and these revised statements were reordered, re-articulated and sagaciously grouped in line with the focus of internal safety communication. In this way, the proposed model for internal safety communication is based on a sound literature review and strengthened by means of empirical exploration. Herein, it directly answers the question as to how the current internal organisational communication literature should be adapted to internal safety communication within the South African mining and construction industries.

9.6 RESEARCH QUESTION 7

The last research question is worded as *How should current measuring instruments be adapted or developed to measure internal safety communication within the South African mining and construction industries?*

This study argued the appropriateness of making use of a quantitative questionnaire as measuring instrument in Chapter 6, due to four main resounding reasons: Firstly, the nature of a quantitative questionnaire to isolate abstract aspects of communication into separate variables, which allows for easier measurement by individuals less proficient in communication methods and measurement. Secondly, the wide administration and, thirdly, the generalisation capabilities of a quantitative questionnaire that make it particularly suited to measurement in the heterogeneous employee corps of the South African mining and construction industries. Lastly, the fact that the focus of the questionnaire allows for an investigation into the perceptions of employees who the internal safety communication message is aimed at, rather than the strategic intent of the organisation added to the reliable measurement of this phenomenon in context.

Resultantly, it was argued that internal organisational communication questionnaires should be adapted and reworked in line with the model for internal safety communication. Based on the premise that this model outlines the manner in which internal safety communication should be communicated in this context, questionnaires designed for the evaluation of internal safety communication should therefore address those factors and elements identified in this model.

The task of doing so was simplified due to the fact that most of the theories for internal organisational communication discussed in this thesis had accompanying quantitative questionnaires for the testing of the statements of those theories. As stated under the discussion of the related Research Question 4 above, this meant that these quantitative questionnaires as well as the others identified and included alongside it could be adapted to internal safety communication measurement in the same way the model was, through the same empirical methods.

Unlike the model, the questionnaire for the measurement of internal safety communication had to be responsive to the practical *administration* of such a questionnaire in the context that it was designed for. In terms of this administration, many aspects were found to be important to highlight, as discussed in detail in Chapter 8. These aspects included the layout of the questionnaire for ease of completion, taking into consideration the fact that many employees had to do so in rough conditions *on site*; the simplification of the items due to the diverse nature of the employee corps, which included illiterate sampled individuals; the exclusion of the neutral option, which, due to translations, saw respondents opt for this option more times than not; and the reduction of the number of options on the scales used for the evaluation of these items.

What emerged as a direct answer to this question was a quantitative questionnaire underpinned by the literature based on questionnaires identified in the literature or statements from the theories discussed, which was tested and refined based on two stages of administration at two organisations within the mining and construction industries of South Africa.

9.7 CONTRIBUTIONS, LIMITATIONS AND FUTURE RESEARCH

The model and questionnaire for internal safety communication in the mining and construction industries of South Africa, as discussed above, constitutes the main contributions of this research to the field of internal organisational communication. These contributions stem from the need for descriptive and normative literature on internal safety communication, as none currently subsists, notwithstanding the argued importance in terms of the individuals that are employed therein, the organisations that function therein as well as the South African economy as a whole.

These two contributions to the field of internal organisational communication were supported theoretically and explored empirically within the context of the mining and construction industries of South Africa at two organisations in a longitudinal manner. This empirical testing allows for both contributions to be seen as more than conceptual notions, but as material contributions to the field, which also aid in the successful functioning of the mining and construction industries of South Africa.

The contributions are still not without limitations, the first of which stems from the empirical research mentioned above. The model for internal safety communication included empirical research methods in its conceptualisation, but did not employ such methods for its validation. The model therefore was not tested empirically after its inception, a matter that could be explored in future research.

The second limitation of the research, which impacts on both of the contributions it makes, is that internal safety communication was the sole focus of the research theoretically as well as empirically. Other forms of communication, both internal and external, therefore fell outside of the scope of study and were not considered unless they directly and meaningfully impacted on the functioning of internal safety communication as discussed in this thesis, for example the case of production communication. This limitation gives rise to an opportunity for further research, where internal safety communication can either be researched alongside its external counterpart or alongside the other forms of internal organisational communication in the mining and construction industries, which will allow for a more holistic view.

The third and fourth limitations of the research both originate from the sampling methods employed. The sampling of respondents that formed part of the empirical research stages of the model as well as the questionnaire for internal safety communication limits the generaliseablility of the findings to some degree. Although the sampling does allow for the findings to be generalised to the respective organisations from which they hail, it does not allow for industry-wide generalisations or assumptions to be made (see Chapter 6 for a detailed discussion). Furthermore, the size of the sample of respondents at DPOM, the second organisation included in the empirical testing, could ideally have been larger for stronger statistical inferences to be made, for example in terms of factor analyses. The sample size did, however, not hamper or impede any of the testing for the purposes of this research, as it was sufficient for the calculations employed for both the reliability and validity measures, which were what predominantly constituted the statistical testing.

A recommendation for further research is thus to explore the model as well as the questionnaire at more organisations within the mining and construction industries of South Africa, building on the theoretical aspects established in this thesis in order to

ultimately move closer towards absolute theory on this phenomenon, generaliseable to the mining and construction industries as a whole. The last limitation inherently implied in this recommendation is that both the model and the questionnaire are first versions, forged from within a void in the literature. Although both are theoretically grounded and empirically researched, more exploration and elaboration could be sought.

9.8 GENERAL CONCLUSION

At the onset of this thesis, the importance of internal safety communication in the mining and construction industries of South Africa was underlined. Apart from the obvious importance of potentially or ultimately helping to save lives, its importance to organisational success was also argued inasmuch as safety, and by extension internal safety communication, has become a strategic objective for any organisation that wants to be successful under the regulation of the two governmental governing bodies of these industries.

Furthermore, it was seen that a definite and pertinent void existed in internal organisational communication literature, as no clear guidelines or directives are identified for internal safety communication. Very little research could be found on the communication context of the mining and construction industries of South Africa, which had been argued to be unique and particular. Regarding the fact that the mining and construction industries of South Africa are some of the highest contributors to the economy of the country, employing an equally impressive number of its workforce, especially unschooled labourers (Hermanus 2007:53; SSA 2004:9), but also regarding the fact that it is equally the greatest contributor to employee deaths, the nefariousness of this void becomes clear.

This study positioned itself within this vacuity in communication research by theoretically proposing approaches to internal safety communication and empirically exploring the context and situating the research findings therein. In this way, this study made use of methodological triangulation by employing both qualitative and quantitative methods for the exploration of the research context in order to allow the findings to be contentedly and authentically aligned to practice. The product of these

methods as well as an extensive literature review resulted in the first proposed model for internal safety communication in the literature.

This contribution to the field of organisational communication was expanded through the compilation of a quantitative questionnaire for the testing of the elements and aspects identified in the model. This was done based on the argument that internal safety communication in the mining and construction industries is, arguably, the most important communication in the organisation for general employees to be cognisant of, as it is usually the employees at the proverbial ‘coal face’ who face the most danger on a day-to-day basis. Therefore, it is important to know how internal safety communication should be directed to employees in a descriptive and normative way to ensure that the perceptions and opinions of those employees at whom this communication is directed are also understood.

This questionnaire was tested longitudinally within the mining and construction industries in two stages. The first stage was at the Gautrain project and the second at Diesel Power Opencast Mining. The findings from the first stage offered alterations and improvements to the questionnaire that could be effected before the questionnaire was tested empirically a second time. In the previous chapter, the success of the intervention stage was highlighted, especially in terms of the significant improvement of the statistical reliability thereof.

With respect to these two outputs or contributions, this study therefore offers the mining and construction industries a holistic strategic tool in the form of a normative and descriptive model as well as a quantitative questionnaire for its measurement. This can be used for the improvement of safety in organisations and the lives of those individuals who work in these industries. Apart from this practical importance, these outputs also provide contributions and progression to the field of internal organisational communication.

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APPENDIX A
QUANTITATIVE QUESTIONNAIRE FOR THE EVALUATION OF INTERNAL SAFETY COMMUNICATION

Safety Communication and Relationship Questionnaire for XXX

Dear Participant,

We are hereby inviting you to participate in this research project of Unisa that studies the safety communications in your organisation. This questionnaire asks a variety of questions about your opinion of safety communications. Please note that this is not a test – your opinion is the only right answer. The results of this research will help management to make better informed decisions regarding safety communications.

Your answers are completely confidential and anonymous (this means that your answers will not be identified with you personally), so be as open and honest as you wish. Your participation is also completely voluntary and there is no penalty if you do not participate.

If you do choose to participate, please fill out the questionnaire completely and we will collect it from you once you are done.

If you have any questions or queries about the questionnaire, or research in general, please feel free to contact Mrs. WJ Greeff on 012 429 3886 or greefwj@unisa.ac.za

Thank you.

UNISA university of south africa

General questions:

Please tick the grey block. Select only one per question, unless prompted otherwise.

1. Gender: Male [1] Female [2]

2. Age: Younger than 20 [1] 20-29 [2] 30-39 [3] 40-49 [4] 50-59 [5] 60 and older [6]

3. Classification: Asian [1] Black [2] Coloured [3] White [4] Other _____

4. Which of the following applies to your current position?

Fulltime employee of XXX [1] Contractor under XXX [2]

5. Please indicate your current job level.

Operator [1] Manager [4] Supervisor [2] Safety Officer [3] Other _____

6. Indicate your proficiency level in the following languages.
Select only those that you have some level of proficiency in, but as many as necessary.

	Understand			Read		
	Low	Medium	High	Low	Medium	High
Afrikaans	1	2	3	1	2	3
English	1	2	3	1	2	3
isiNdebele	1	2	3	1	2	3
isiXhosa	1	2	3	1	2	3
isiZulu	1	2	3	1	2	3
Northern Sotho (Sesotho sa Leboa)	1	2	3	1	2	3
Sesotho	1	2	3	1	2	3
Setswana	1	2	3	1	2	3
siSwati	1	2	3	1	2	3
Tshivenda	1	2	3	1	2	3
Xitsonga	1	2	3	1	2	3
Fanagalo	1	2	3	1	2	3
Other _____				1	2	3
Other _____				1	2	3

7. Are you a member of a union?

Yes [1] No [2]

1

8. What is your highest qualification?

None	1
Primary school (Grades 1-7) / ABET 1-3	2
High school (Grades 6-10) / ABET 9	3
Tertiary (After school)	4

When referring to THE ORGANISATION please think of [insert name of the organisation] that you work for / under.

9. Answer this question only if you are a MANAGER OR SUPERVISOR.
Indicate your satisfaction with the following:

	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
a. Extent to which my subordinates are responsive to my communication	1	2	3	4
b. Extent to which my subordinates fell free to supply me with information	1	2	3	4
c. Extent to which my subordinates are responsive to my safety communication	1	2	3	4
d. Extent to which my subordinates fell free to supply me with safety related information	1	2	3	4

10. How would you rate the <u>AMOUNT</u> of safety information you usually receive through the following METHODS?

	Nothing	Too little	Enough	Too much	I do not have access to this method
a. Informal face-to-face contact	1	2	3	4	5
b. Telephone calls	1	2	3	4	5
c. Written communication from managers (letters, memo's etc.)	1	2	3	4	5
d. Team briefings / structured meetings / special talks / shift meetings	1	2	3	4	5
e. Policy statements	1	2	3	4	5
f. Notice boards	1	2	3	4	5
g. E-mail	1	2	3	4	5
h. Intranet	1	2	3	4	5
i. Company Website	1	2	3	4	5
j. Induction programmes	1	2	3	4	5
k. Annual reports	1	2	3	4	5
l. Safety training	1	2	3	4	5
m.Posters	1	2	3	4	5
n. Newsletters	1	2	3	4	5

2

11. How satisfied are you with the AMOUNT of information that you receive from the organisation on the following ISSUES?

	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
a. Information about organisational policies	1	2	3	4
b. Information about how my job compares to others	1	2	3	4
c. Recognition of my efforts	1	2	3	4
d. Information about government action affecting my organisation	1	2	3	4
e. Information about benefits and pay	1	2	3	4
f. Information about our organisation's achievements against goals	1	2	3	4
g. Information as to how to do my work safely	1	2	3	4
h. My safety performance and what is expected of me	1	2	3	4
i. My production performance and what is expected of me	1	2	3	4
j. How decisions that affect the safety of my job are reached	1	2	3	4
k. News about the organisation's safety success and failures	1	2	3	4
l. Health issues	1	2	3	4
m. Safety issues	1	2	3	4
n. Environmental issues	1	2	3	4

12. How satisfied are you with the QUALITY of information that you receive from the organisation on the following ISSUES?

	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
a. Information about organisational policies	1	2	3	4
b. Information about how my job compares to others	1	2	3	4
c. Recognition of my efforts	1	2	3	4
d. Information about government action affecting my organisation	1	2	3	4
e. Information about benefits and pay	1	2	3	4
f. Information about our organisation's achievements against goals	1	2	3	4
g. Information as to how to do my work safely	1	2	3	4
h. My safety performance and what is expected of me	1	2	3	4
i. My production performance and what is expected of me	1	2	3	4
j. How decisions that affect the safety of my job are reached	1	2	3	4
k. News about the organisation's safety success and failures	1	2	3	4
l. Health issues	1	2	3	4
m. Safety issues	1	2	3	4
n. Environmental issues	1	2	3	4

13. Please indicate how SATISFIED you are with the following:

	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
a. Extent to which my superiors understand my safety problems	1	2	3	4
b. How the organisation's safety communication motivates me to meet its goals	1	2	3	4
c. How supervisors offer me guidance for solving safety related problems	1	2	3	4
d. Safety communication as a whole	1	2	3	4

14. How often do you have the opportunity to <u>SEND</u> information about the following topics?

	Never	Seldom	Often	Always
a. Reporting on my success and achievements related to safety	1	2	3	4
b. Reporting safety problems in my work	1	2	3	4
c. Requesting clearer instructions	1	2	3	4
d. Expressing opinions about doing my job safely	1	2	3	4
e. Giving my opinions on the safety performance of my immediate supervisor	1	2	3	4
f. Reporting safety irregularities / incidents	1	2	3	4

15. If you did report a safety problem (or did send some information) how would you describe the ACTION TAKEN by the relevant people / departments?

	Always bad	Mostly bad	Mostly good	Always good
a. Immediate work colleagues	1	2	3	4
b. Supervisors	1	2	3	4
c. Middle management (e.g. safety officer, surveyor)	1	2	3	4
d. Senior and top management (e.g. site manager, safety manager)	1	2	3	4
e. Training department	1	2	3	4
f. Unions	1	2	3	4
g. Safety department as a whole	1	2	3	4

4

16. How do you feel about the following statements?

	Totally disagree	Disagree	Agree	Totally agree
a. Almost everyone, no matter what their job level, can accurately describe the safety objectives of the organisation	1	2	3	4
b. When changes in safety procedures / strategies are made, great efforts are made to explain the reasons to me	1	2	3	4
c. I am encouraged to work safely	1	2	3	4
d. I am encouraged to work safely in a team	1	2	3	4
e. Supervisors forward clear safety suggestions/ instructions supported by strong arguments	1	2	3	4
f. Managers forward clear safety suggestions / instructions supported by strong arguments	1	2	3	4
g. Managers at every level make great efforts to keep in touch with everyone below them	1	2	3	4
h. Information that I need (to do my job safely) is easily available	1	2	3	4
i. Information on general safety is easily available	1	2	3	4
j. I am frequently updated with news about the safety success of the organisation	1	2	3	4
k. I feel comfortable communicating between status levels	1	2	3	4
l. There is a genuine conversation between representatives of the workforce and management	1	2	3	4
m. Everyone has equal treatment regardless of race colour, sex or creed	1	2	3	4
n. Those lower down in the organisation feel that management fully understand their safety problems	1	2	3	4
o. Those lower down in the organisation feel that supervisors fully understand their safety problems	1	2	3	4
p. Safety communication changes the way I do my job	1	2	3	4

17. Please indicate your <u>TRUST</u> of each of the following in terms of working together.

	Never	Seldom	Often	Always
a. Immediate work colleagues	1	2	3	4
b. Supervisors	1	2	3	4
c. Middle management (e.g. safety officer, surveyor)	1	2	3	4
d. Senior and top management (e.g. site manager, safety manager)	1	2	3	4
e. Training department	1	2	3	4
f. Unions	1	2	3	4
g. Safety department as a whole	1	2	3	4

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18. How do you feel about the following statements?	Totally disagree	Disagree	Agree	Totally agree
a. This organisation can be relied upon to keep its promises	1	2	3	4
b. I feel very confident about this organisation's skills	1	2	3	4
c. This organisation treats me fairly and just	1	2	3	4
d. I believe this organisation takes my opinions into account when making decisions	1	2	3	4
e. I believe this organisation takes my needs into account when making decisions	1	2	3	4
f. The organisation really listens to what I have to say	1	2	3	4
g. I can see that this organisation wants to maintain a relationship with me	1	2	3	4
h. When I interact with the organisation, I have some control over the situation	1	2	3	4
i. I am loyal to this organisation	1	2	3	4
j. I am happy with this organisation	1	2	3	4
k. Both the organisation and I benefit from this relationship almost equally	1	2	3	4
l. In general, I am happy with my relationship with the organisation	1	2	3	4
m. This organisation is concerned about my welfare	1	2	3	4
n. This organisation helps me without expecting anything in return	1	2	3	4
o. This organisation takes care of people who are likely to reward the organisation	1	2	3	4
p. I am competent to do my work safely	1	2	3	4
q. Those around me are competent to do their work safely	1	2	3	4
r. The results of incident and accident investigation are used for the revision of practices	1	2	3	4
s. Following safety rules and procedures is valued in this organisation	1	2	3	4
t. If I work safely, I avoid being sanctioned by the organisation	1	2	3	4
u. If I work safely, I obtain recognition form managers and workmates	1	2	3	4
v. I share the safety mission and goals of the organisation	1	2	3	4
w. Departments and sections in this organisation work together like a well-oiled machine	1	2	3	4
x. This organisation is open to ideas from the outside	1	2	3	4

6

19. How would you rate the organisation's <u>BEHAVIOUR</u> with regards to:

	Very negative	Negative	Positive	Very positive
a. Safety	1	2	3	4
b. Safety training	1	2	3	4
c. Applying safety procedures in the work environment	1	2	3	4
d. Environmental issues	1	2	3	4
e. Health issues	1	2	3	4
f. Production	1	2	3	4

20. Any other comments about the safety in the organisation:

7

APPENDIX B
STAGE ONE ADMINISTERED QUESTIONNAIRE

Safety Communication and Relationship Questionnaire for Bombela Civil Joint Venture

Please fill out the questionnaire with care and honesty – the intention is to benefit everyone in the organisation.

Your answers are completely confidential, so be as frank as you wish. This is not a test – your opinion is the only right answer.

We appreciate your time in answering these questions. It should take you about 20 minutes to do so.

9. What is your highest qualification?

None	1
ABET/Class 1 - Standard 5 (Primary school)	2
Standard 6 - 10 (High school)	3
ABET 4	4
Tertiary (After school)	5

10. If you had the opportunity of doing the same work, would you work for another company?

Yes 1 No 2

When referring to THE ORGANISATION please think of Bombela Civil Joint Venture you work for / under.

11. How do you feel about the AMOUNT of safety information you are receiving from the following SOURCES?

	Too much	Enough	Too little
a. Immediate work colleagues	1	2	3
b. Supervisors	1	2	3
c. Middle management (example surveyor, safety officer)	1	2	3
d. Senior and top management (example site manager, safety managers)	1	2	3
e. Training department	1	2	3
f. Human resources department	1	2	3
g. Unions / associations	1	2	3
h. Safety department as a whole	1	2	3

12. Answer this question only if you are a MANAGER OR SUPERVISOR. Indicate your satisfaction with the following:

	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
a. Extent to which my subordinates are responsive to my communication	1	2	3	4
b. Extent to which my subordinates fell free to supply me with information	1	2	3	4
c. Extent to which my subordinates are responsive to my safety communication	1	2	3	4
d. Extent to which my subordinates fell free to supply me with safety related information	1	2	3	4

13. How would you rate the AMOUNT of safety information you usually receive through the following METHODS?

	Too much	Enough	Too little	Not applicable
a. Informal face-to-face contact	1	2	3	4
b. Telephone calls	1	2	3	4
c. Written communication from managers (letters, memos)	1	2	3	4
d. Team briefings / Structured meetings / Special talks / Shift meetings	1	2	3	4
e. Policy statements	1	2	3	4
f. Notice boards	1	2	3	4
g. E-mail	1	2	3	4
h. Intranet	1	2	3	4
i. Company Website	1	2	3	4
j. Induction programmes	1	2	3	4
k Billboards in the community	1	2	3	4
l. Annual reports	1	2	3	4
m. Safety training	1	2	3	4
n. Posters	1	2	3	4
o. Newsletters	1	2	3	4

14. How satisfied are you with the AMOUNT of information that you get from the organisation on the following ISSUES?

	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
a. Personal news about my colleagues	1	2	3	4
b. Information about organisational policies	1	2	3	4
c. Information about how my job compares to others	1	2	3	4
d. Recognition of my efforts	1	2	3	4
e. Information about government action affecting my organisation	1	2	3	4
f. Information about benefits and pay	1	2	3	4
g. Information about our organisation's achievements against goals	1	2	3	4
h. Information as to how to do my work safely	1	2	3	4

15. How satisfied are you with the QUALITY of information that you get from the organisation on the following ISSUES?

	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
a. Personal news about my colleagues	1	2	3	4
b. Information about organisational policies	1	2	3	4
c. Information about how my job compares to others	1	2	3	4
d. Recognition of my efforts	1	2	3	4
e. Information about government action affecting my organisation	1	2	3	4
f. Information about benefits and pay	1	2	3	4
g. Information about our organisation's achievements against goals	1	2	3	4
h. Information as to how to do my work safely	1	2	3	4

16. Please indicate how SATISFIED you are with the following:

	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
a. Extent to which my superiors understand my safety problems	1	2	3	4
b. How the organisation's safety communication motivates me to meet its goals	1	2	3	4
c. How supervisors offer me guidance for solving safety related problems	1	2	3	4
d. Extent to which conflicts are handled appropriately through the proper communication channels	1	2	3	4
e. Emergency communication procedures	1	2	3	4
f. Safety communication as a whole	1	2	3	4

17. How often do you have to opportunity to SEND information about the following topics?

	Never	Seldom	Often	Always
a. Reporting on my success and achievements related to safety	1	2	3	4
b. Reporting safety problems in my work / requesting clearer instructions	1	2	3	4
c. Expressing opinions about doing my job safely	1	2	3	4
d. Giving my opinions on the safety performance of my immediate manager	1	2	3	4
e. Reporting safety irregularities / incidents	1	2	3	4
f. Reporting health issues	1	2	3	4
g. Reporting human rights issues	1	2	3	4

18. If you did report a safety problem (or did send some information) how would you describe the ACTION TAKEN by the relevant people / departments?

	Always bad	Mostly bad	Mostly good	Always good
a. Immediate work colleagues	1	2	3	4
b. Supervisors	1	2	3	4
c. Middle management (example surveyor, safety officer)	1	2	3	4
d. Senior and top management (example site manager, safety managers)	1	2	3	4
e. Training department	1	2	3	4
f. Human resources department	1	2	3	4
g. Unions / associations	1	2	3	4
h. Safety department as a whole	1	2	3	4

19. How do you feel about the AMOUNT of information you are RECEIVING on the following ISSUES?

	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
a. My safety performance and what is expected of me	1	2	3	4
b. How decisions that affect the safety of my job are reached	1	2	3	4
c. Pay, benefits of employment, conditions of employment	1	2	3	4
d. Performance appraisal systems/ promotional opportunities	1	2	3	4
e. Career development opportunities	1	2	3	4
f. Training	1	2	3	4
g. News about the organisation's safety success and failures	1	2	3	4
h. The safety goals of the organisation	1	2	3	4
i. How my job contributes to the organisation	1	2	3	4
j. How doing my job safely contributes to the organisation	1	2	3	4
k. Health issues	1	2	3	4
l. Safety issues	1	2	3	4
m. Environmental issues	1	2	3	4
n. The handling of human rights issues by the organisation	1	2	3	4
o. My production performance and what is expected of me	1	2	3	4

20. How do you feel about the following statements?

	Totally disagree	Disagree	Agree	Totally agree
a. Almost everyone, no matter what their job level, can accurately describe the safety objectives of the organisation	1	2	3	4
b. Supervisors are convincing when communicating safety information to me	1	2	3	4
c. Management is convincing when communicating safety information to me	1	2	3	4
d. When changes in safety procedures / strategies are made, great efforts are made to explain the reasons to me	1	2	3	4
e. I am encouraged to work safely	1	2	3	4
f. I am encouraged to work safely in a team	1	2	3	4
g. Supervisors forward clear safety suggestions/ instructions supported by strong arguments	1	2	3	4
h. Managers forward clear safety suggestions / instructions supported by strong arguments	1	2	3	4
i. Managers at every level make great efforts to keep in touch with everyone in their department	1	2	3	4
j. Information that I need (to do my job safely) is easily available	1	2	3	4
k. Information on general safety is easily available	1	2	3	4
l. I am frequently updated with news about the safety success of the organisation	1	2	3	4
m. I feel comfortable communicating between status levels	1	2	3	4
n. There is a genuine conversation between representatives of the workforce and management	1	2	3	4
o. Everyone has equal treatment regardless of race colour, sex or creed	1	2	3	4
p. Those lower down in the organisation feel that top management fully understand their safety problems	1	2	3	4
q. Those lower down in the organisation feel that supervisors fully understand their safety problems	1	2	3	4
r. Supervisors talk frequently with people throughout the organisation about safety	1	2	3	4
s. Managers talk frequently with people throughout the organisation about safety	1	2	3	4
t. Managers frequently collect information on the thoughts and feelings of the workforce about safety	1	2	3	4
u. Supervisors frequently collect information on the thoughts and feelings of the workforce about safety	1	2	3	4
v. Safety communication changes the way I do my job	1	2	3	4

21. How do you feel about the following statements?	Totally disagree	Disagree	Agree	Totally agree
a. This organisation can be relied upon to keep its promises	1	2	3	4
b. I feel very confident about this organisation's skills	1	2	3	4
c. This organisation treats me fairly and just	1	2	3	4
d. Whenever this organisation makes an important decision, I know it will be concerned about me	1	2	3	4
e. This organisation has the ability to accomplish what is says it will do	1	2	3	4
f. This organisation does not mislead me	1	2	3	4
g. I believe this organisation takes my opinions into account when making decisions	1	2	3	4
h. In dealing with me, this organisation has a tendency to push me around	1	2	3	4
i. The organisation really listens to what I have to say	1	2	3	4
j. I can see that this organisation wants to maintain a relationship with me	1	2	3	4
k. When I interact with the organisation, I have some control over the situation	1	2	3	4
l. I am loyal to this organisation	1	2	3	4
m. I am happy with this organisation	1	2	3	4
n. This organisation usually helps non-employees	1	2	3	4
o. Both the organisation and I benefit from this relationship	1	2	3	4
p. In general, I am happy with my relationship with the organisation	1	2	3	4
q. I am important to this organisation	1	2	3	4
r. This organisation is very concerned about my welfare	1	2	3	4
s. This organisation takes advantage of people who are vulnerable	1	2	3	4
t. This organisation helps me without expecting anything in return	1	2	3	4
u. This organisation will accommodate me, only when it knows that it will gain something	1	2	3	4
v. This organisation takes care of people who are likely to reward the organisation	1	2	3	4
w. This organisation expects me to work safely	1	2	3	4
x. The working environment enables me to work safely	1	2	3	4
y. This organisation only use people to reach their goals	1	2	3	4
z. Whenever this organisation gives or offers me something, it generally expects something in return	1	2	3	4

22. Please circle the number which accurately describes if you TRUST each of the following in terms of working together.

	Never	Seldom	Often	Always
a. Immediate work colleagues	1	2	3	4
b. Supervisors	1	2	3	4
c. Middle management (example surveyor, safety officer)	1	2	3	4
d. Senior and top management (example site manager, safety managers)	1	2	3	4
e. Training department	1	2	3	4
f. Human resources department	1	2	3	4
g. Unions / associations	1	2	3	4
h. Safety department	1	2	3	4

23. How would you rate the organisation's BEHAVIOUR with regards to:

	Very negative	Negative	Positive	Very positive
a. Employee benefits	1	2	3	4
b. Community relations	1	2	3	4
c. Safety training	1	2	3	4
d. Applying safety procedures in the work environment	1	2	3	4
e. HIV/Aids	1	2	3	4
f. Other health risks e.g. STDs, TB	1	2	3	4
g. Housing	1	2	3	4
h. Environmental issues	1	2	3	4
i. Training to do my job	1	2	3	4
j. Training for personal development (e.g. ABET)	1	2	3	4
k. Career development and planning	1	2	3	4
l. Affirmative action	1	2	3	4
m.Transformation	1	2	3	4
n. Labour relations/ dispute management	1	2	3	4
o. General business conduct	1	2	3	4
p. Human rights	1	2	3	4
q. Production	1	2	3	4

24. Any other comments about the safety in the organisation:

APPENDIX C
STAGE TWO ADMINISTERED QUESTIONNAIRE

DIESEL POWER
OPENCAST MINING (PTY) LTD

buildmax
materials·equipment·services

Safety Communication and Relationship Questionnaire for Diesel Power Opencast Mining

Dear Participant,

We are hereby inviting you to participate in this research project of Unisa that studies the safety communications in your organisation. This questionnaire asks a variety of questions about your opinion of safety communications. Please note that this is not a test – your opinion is the only right answer. The results of this research will help management to make better informed decisions regarding safety communications.

Your answers are completely confidential and anonymous (this means that your answers will not be identified with you personally), so be as open and honest as you wish. Your participation is also completely voluntary and there is no penalty if you do not participate.

If you do choose to participate, please fill out the questionnaire completely and we will collect it from you once you are done.

If you have any questions or queries about the questionnaire, or research in general, please feel free to contact Mrs. WJ Greeff on 012 429 3886 or greefwj@unisa.ac.za

Thank you.

UNISA university of south africa

General questions:

Please tick the grey block. Select only one per question, unless prompted otherwise.

1. **Gender:** Male [1] Female [2]

2. **Age:** Younger than 20 [1] 20-29 [2]
   30-39 [3] 40-49 [4]
   50-59 [5] 60 and older [6]

3. **Classification:** Asian [1] Black [2]
   Coloured [3] White [4]
   Other _____

4. **Which of the following applies to your current position?**
   Fulltime employee of Diesel Power [1] Contractor under Diesel Power [2]

5. **Please indicate your current job level.**
   Operator [1] Manager [4]
   Supervisor [2]
   Safety Officer [3] Other _____

6. **Indicate your proficiency level in the following languages.**
   Select only those that you have some level of proficiency in, but as many as necessary.

	Understand			Read		
	Low	Medium	High	Low	Medium	High
Afrikaans	1	2	3	1	2	3
English	1	2	3	1	2	3
isiNdebele	1	2	3	1	2	3
isiXhosa	1	2	3	1	2	3
isiZulu	1	2	3	1	2	3
Northern Sotho (Sesotho sa Leboa)	1	2	3	1	2	3
Sesotho	1	2	3	1	2	3
Setswana	1	2	3	1	2	3
siSwati	1	2	3	1	2	3
Tshivenda	1	2	3	1	2	3
Xitsonga	1	2	3	1	2	3
Fanagalo	1	2	3	1	2	3
Other _____						
Other _____						

7. **Are you a member of a union?**
   Yes [1] No [2]

8. What is your highest qualification?

None	1
Primary school (Grades 1-7) / ABET 1-3	2
High school (Grades 6-10) / ABET 9	3
Tertiary (After school)	4

When referring to THE ORGANISATION please think of Diesel Power Opencast Mining that you work for / under.

9. Answer this question only if you are a MANAGER OR SUPERVISOR.
Indicate your satisfaction with the following:

	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
a. Extent to which my subordinates are responsive to my communication	1	2	3	4
b. Extent to which my subordinates fell free to supply me with information	1	2	3	4
c. Extent to which my subordinates are responsive to my safety communication	1	2	3	4
d. Extent to which my subordinates fell free to supply me with safety related information	1	2	3	4

10. How would you rate the <u>AMOUNT</u> of safety information you usually receive through the following METHODS?

	Nothing	Too little	Enough	Too much	I do not have access to this method
a. Informal face-to-face contact	1	2	3	4	5
b. Telephone calls	1	2	3	4	5
c. Written communication from managers (letters, memo's etc.)	1	2	3	4	5
d. Team briefings / structured meetings / special talks / shift meetings	1	2	3	4	5
e. Policy statements	1	2	3	4	5
f. Notice boards	1	2	3	4	5
g. E-mail	1	2	3	4	5
h. Intranet	1	2	3	4	5
i. Company Website	1	2	3	4	5
j. Induction programmes	1	2	3	4	5
k. Annual reports	1	2	3	4	5
l. Safety training	1	2	3	4	5
m.Posters	1	2	3	4	5
n. Newsletters	1	2	3	4	5

2

11. How satisfied are you with the <u>AMOUNT</u> of information that you receive from the organisation on the following ISSUES?

	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
a. Information about organisational policies	1	2	3	4
b. Information about how my job compares to others	1	2	3	4
c. Recognition of my efforts	1	2	3	4
d. Information about government action affecting my organisation	1	2	3	4
e. Information about benefits and pay	1	2	3	4
f. Information about our organisation's achievements against goals	1	2	3	4
g. Information as to how to do my work safely	1	2	3	4
h. My safety performance and what is expected of me	1	2	3	4
i. My production performance and what is expected of me	1	2	3	4
j. How decisions that affect the safety of my job are reached	1	2	3	4
k. News about the organisation's safety success and failures	1	2	3	4
l. Health issues	1	2	3	4
m. Safety issues	1	2	3	4
n. Environmental issues	1	2	3	4

12. How satisfied are you with the <u>QUALITY</u> of information that you receive from the organisation on the following ISSUES?

	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
a. Information about organisational policies	1	2	3	4
b. Information about how my job compares to others	1	2	3	4
c. Recognition of my efforts	1	2	3	4
d. Information about government action affecting my organisation	1	2	3	4
e. Information about benefits and pay	1	2	3	4
f. Information about our organisation's achievements against goals	1	2	3	4
g. Information as to how to do my work safely	1	2	3	4
h. My safety performance and what is expected of me	1	2	3	4
i. My production performance and what is expected of me	1	2	3	4
j. How decisions that affect the safety of my job are reached	1	2	3	4
k. News about the organisation's safety success and failures	1	2	3	4
l. Health issues	1	2	3	4
m. Safety issues	1	2	3	4
n. Environmental issues	1	2	3	4

13. Please indicate how SATISFIED you are with the following:

	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
a. Extent to which my superiors understand my safety problems	1	2	3	4
b. How the organisation's safety communication motivates me to meet its goals	1	2	3	4
c. How supervisors offer me guidance for solving safety related problems	1	2	3	4
d. Safety communication as a whole	1	2	3	4

14. How often do you have the opportunity to <u>SEND</u> information about the following topics?

	Never	Seldom	Often	Always
a. Reporting on my success and achievements related to safety	1	2	3	4
b. Reporting safety problems in my work	1	2	3	4
c. Requesting clearer instructions	1	2	3	4
d. Expressing opinions about doing my job safely	1	2	3	4
e. Giving my opinions on the safety performance of my immediate supervisor	1	2	3	4
f. Reporting safety irregularities / incidents	1	2	3	4

15. If you did report a safety problem (or did send some information) how would you describe the ACTION TAKEN by the relevant people / departments?

	Always bad	Mostly bad	Mostly good	Always good
a. Immediate work colleagues	1	2	3	4
b. Supervisors	1	2	3	4
c. Middle management (e.g. safety officer, surveyor)	1	2	3	4
d. Senior and top management (e.g. site manager, safety manager)	1	2	3	4
e. Training department	1	2	3	4
f. Unions	1	2	3	4
g. Safety department as a whole	1	2	3	4

16. How do you feel about the following statements?

	Totally disagree	Disagree	Agree	Totally agree
a. Almost everyone, no matter what their job level, can accurately describe the safety objectives of the organisation	1	2	3	4
b. When changes in safety procedures / strategies are made, great efforts are made to explain the reasons to me	1	2	3	4
c. I am encouraged to work safely	1	2	3	4
d. I am encouraged to work safely in a team	1	2	3	4
e. Supervisors forward clear safety suggestions/ instructions supported by strong arguments	1	2	3	4
f. Managers forward clear safety suggestions / instructions supported by strong arguments	1	2	3	4
g. Managers at every level make great efforts to keep in touch with everyone below them	1	2	3	4
h. Information that I need (to do my job safely) is easily available	1	2	3	4
i. Information on general safety is easily available	1	2	3	4
j. I am frequently updated with news about the safety success of the organisation	1	2	3	4
k. I feel comfortable communicating between status levels	1	2	3	4
l. There is a genuine conversation between representatives of the workforce and management	1	2	3	4
m. Everyone has equal treatment regardless of race colour, sex or creed	1	2	3	4
n. Those lower down in the organisation feel that management fully understand their safety problems	1	2	3	4
o. Those lower down in the organisation feel that supervisors fully understand their safety problems	1	2	3	4
p. Safety communication changes the way I do my job	1	2	3	4

17. Please indicate your <u>TRUST</u> of each of the following in terms of working together.

	Never	Seldom	Often	Always
a. Immediate work colleagues	1	2	3	4
b. Supervisors	1	2	3	4
c. Middle management (e.g. safety officer, surveyor)	1	2	3	4
d. Senior and top management (e.g. site manager, safety manager)	1	2	3	4
e. Training department	1	2	3	4
f. Unions	1	2	3	4
g. Safety department as a whole	1	2	3	4

18. How do you feel about the following statements?	Totally disagree	Disagree	Agree	Totally agree
a. This organisation can be relied upon to keep its promises	1	2	3	4
b. I feel very confident about this organisation's skills	1	2	3	4
c. This organisation treats me fairly and just	1	2	3	4
d. I believe this organisation takes my opinions into account when making decisions	1	2	3	4
e. I believe this organisation takes my needs into account when making decisions	1	2	3	4
f. The organisation really listens to what I have to say	1	2	3	4
g. I can see that this organisation wants to maintain a relationship with me	1	2	3	4
h. When I interact with the organisation, I have some control over the situation	1	2	3	4
i. I am loyal to this organisation	1	2	3	4
j. I am happy with this organisation	1	2	3	4
k. Both the organisation and I benefit from this relationship almost equally	1	2	3	4
l. In general, I am happy with my relationship with the organisation	1	2	3	4
m. This organisation is concerned about my welfare	1	2	3	4
n. This organisation helps me without expecting anything in return	1	2	3	4
o. This organisation takes care of people who are likely to reward the organisation	1	2	3	4
p. Whenever this organisation gives or offers me something, it generally expects something in return	1	2	3	4
q. I am competent to do my work safely	1	2	3	4
r. Those around me are competent to do their work safely	1	2	3	4
s. The results of incident and accident investigation are used for the revision of practices	1	2	3	4
t. Following safety rules and procedures is valued in this organisation	1	2	3	4
u. If I work safely, I avoid being sanctioned by the organisation	1	2	3	4
v. If I work safely, I obtain recognition form managers and workmates	1	2	3	4
w. Most employees share the safety mission of the organisation	1	2	3	4
x. The safety goals of the organisation are different to my own goals	1	2	3	4
y. Departments and sections in this organisation seem to work together like a well-oiled machine	1	2	3	4
z. This organisation is open to ideas from the outside	1	2	3	4

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19. How would you rate the organisation's <u>BEHAVIOUR</u> with regards to:

	Very negative	Negative	Positive	Very positive
a. Employee benefits	1	2	3	4
b. Safety training	1	2	3	4
c. Applying safety procedures in the work environment	1	2	3	4
d. Environmental issues	1	2	3	4
e. Training to do my job	1	2	3	4
f. Production	1	2	3	4

20. Any other comments about the safety in the organisation:

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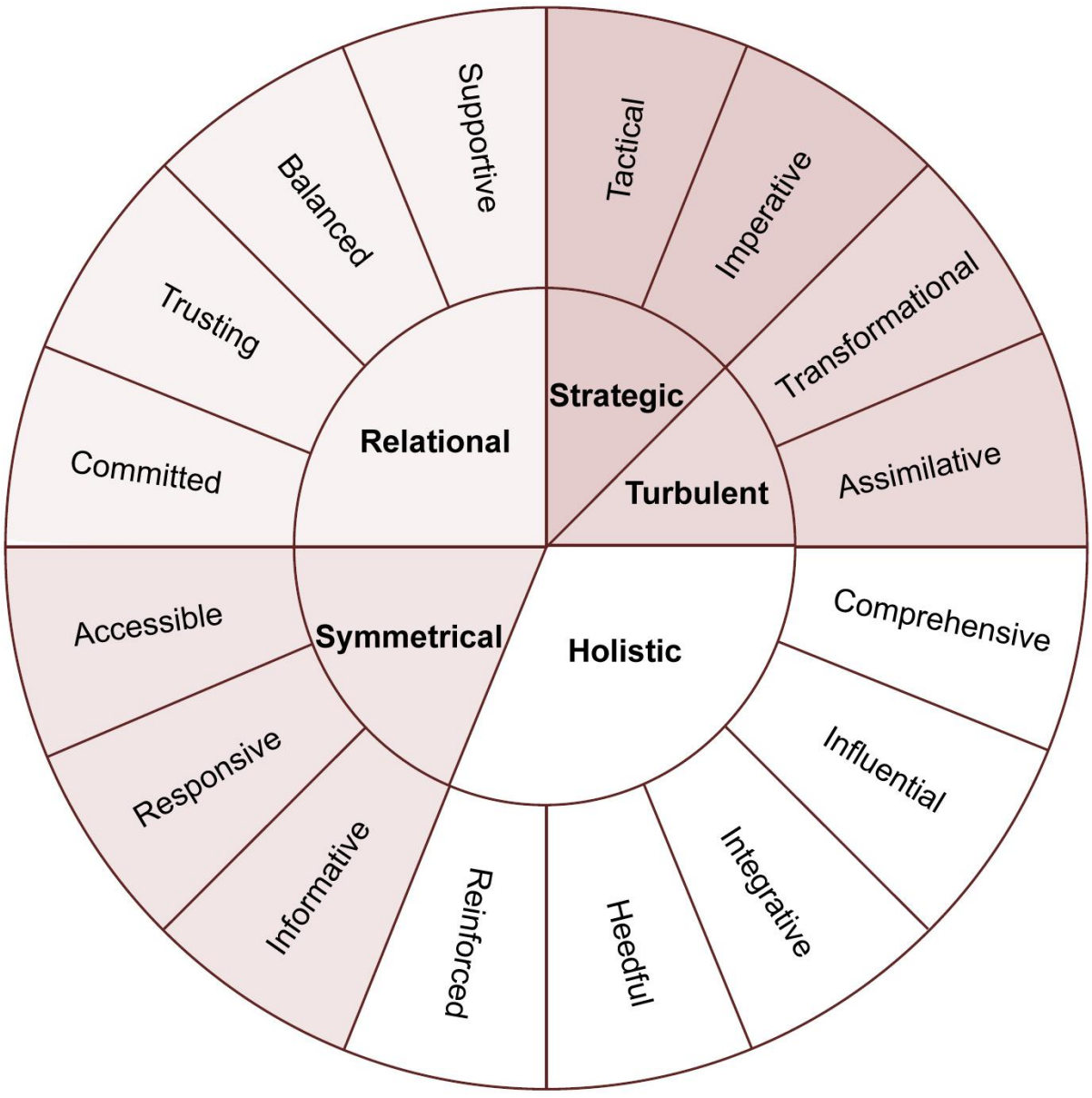
APPENDIX D
MODEL FOR INTERNAL SAFETY COMMUNICATION



ADDENDUM A
THEORETICAL STATEMENTS OF LITERATURE REVIEW

1 SYSTEMS THEORY

(See chapter 3)

1.1 The whole is always greater or more than the sum of its parts.

1.2 The complex organisation of the whole creates manifestations which do not exist where the parts of the system are considered separately.

1.3 Systems are hierarchical in nature, with assertions of higher-level systems taking credence over lower-level systems.

1.4 All systems that have contact with one another necessarily influence one another and change in one system unavoidably constitutes change in other systems which make all systems interrelated and interdependent.

1.5 All the systems which fall within a larger system have to work together towards mutually defined and observed goals.

1.6 All systems have an *integrative* tendency and a *self-assertive* tendency.

1.7 If a system does not respond to, or change in terms of its environment, a state of entropy could be entered.

1.8 The change and subsequent adaptation of a system could drive a system forward *beyond* the previously experienced equilibrium: to a state of dynamic equilibrium.

2 THE STAKEHOLDER THEORY

(See chapter 4)

2.1 Any organisation needs to be heedful of more groups than just those who offer the organisation compensation in monetary terms - not only their shareholders but all stakeholders.

2.2 The optimal functioning of an organisation can only be reached once the organisation is described in terms of its stakeholder relationships.

2.3 Supporting stakeholder interests is in the best interest of an organisation, as the value that the organisation receives from these constituencies hang in the balance.

2.4 Aspects of business and ethics need to be seen and practised in an integrative manner, as it makes business sense to act in an ethical manner.

2.5 It should be evaluated for whom value is created and value destroyed, or who is harmed or benefited by business decisions.

2.6 Stakeholders can be classified as primary or secondary, with primary stakeholders classified as the most important due to the fact that the value they add or withhold from the organisation is directly proportionate to the success that the organisation experiences.

3 THE RELATIONSHIP MANAGEMENT THEORY

(See chapter 4)

3.1 An organisation needs to build and maintain relationships with all constituency groups, defined as stakeholders, if the organisation will see itself survive competitively.

3.2 Communication can be viewed as the strategic management function which facilitates the organisation-stakeholder relationship that affects the organisational mission, goals and objectives.

3.3 A good relationship between the organisation and its employees will increase the likelihood that stakeholders will be satisfied with the organization and their jobs, which makes them more likely to support and less likely to interfere with the mission of the organisation.

3.4 Good relationships between an organisation and its stakeholders can only be maintained if each party has access to the other.

3.5 Disclosure of information is important if organisations expect to have any kind of quality relationship with their stakeholders.

3.6 Each one of the parties in the relationship needs to be responsive to the other – or open to their input.

3.7 The organisational-stakeholder relationship should be governed in the spirit of positivity.

3.8 Assurances need to be made by the parties in the relationship to assure one another that they and their concerns are legitimate.

3.9 It is suggested that organisations build networks or coalitions with the same groups that their stakeholders do, or find important.

3.10 Organisations and the relevant stakeholder group(s) should share in solving joint or separate problems.

3.11 The contending parties to a relationship should agree that one or both may rightfully influence the other, or to the power balance in the relationship.

3.12 Trust should be evident in the relationship between an organisation and its stakeholders, where each party's level of confidence in and willingness to open itself up to the other party is evident.

3.13 There should be a degree of commitment in the organisational-stakeholder relationship, where each party believes and feels that the relationship is worth spending energy to maintain and promote.

3.14 Positive expectations in the organisational-stakeholder relationship need to be reinforced, in order for satisfaction to be experienced therein.

3.15 Parties to the relationship should, ideally, not only offer benefit to the other as it is expected that this other will reciprocate accordingly, but because of a concern with the others welfare.

4 THE EXCELLENCE THEORY

(See chapter 5)

4.1 For excellence in organisational communication, the knowledge of communicators needs to reach further than just technical skills: The knowledge of communicators needs to be of such an order as to enable the employment of two-way communications.

4.2 Excellent communication is symmetrical, when it is two-way, as the content generated by the feedback of organisational stakeholders is interpreted, taken into account, and where applicable, acted upon in the organisation.

4.3 Communication should or could be used to move or shift the perceptions of both parties to the organisational-stakeholder relationship to an understanding wherein both feel that their needs have been honoured, if not met.

4.4 The communicator has to be part of the dominant coalition, and thus be part of the top strategising and decision making group of the organisation.

4.5 Participative organisational cultures are seen to be ones more conducive to communication excellence.

4.6 Communication programmes in the organisation should be managed strategically.

4.7 The organisation should provide a mechanism for coordinating the different safety programmes run by different departments or functions.

4.8 Equal opportunity should be offered to diversity in terms of internal organisational communication.

4.9 The organisational structure should be organic as turbulent environments with activist groups are encouraged.

5 COMMUNICATION SATISFACTION

(See chapter 5)

5.1 The communication climate in an organisation should reflect the strategic goals and objectives of the organisation, with the perceived importance not contradicting the strategic intent.

5.2 In order for employees to be satisfied with internal organisational communication, they should receive communication integrating them *personally* to the organisation.

5.3 Cross-sectional integration is needed in organisations, where all departments, groups and specialisations within organisations should work interactively as to not oppose but rather further organisational goals.

5.4 Organisations need to be heedful of the media quality of channels used to convey communications, as their data- as well as symbol carrying capacities are taken into consideration.

5.5 Information should be given out concerning the organisation and its goals and performance. It also encompasses knowledge about external events such as new government policies, which impact on the organisation.

5.6 For employees to be satisfied with their superiors and these superiors' communications skills, superiors should truly listen to communication sent upwards from subordinates.

5.7 Superiors should be in a position to offer guidance to subordinates in terms of solving job-related problems, if the subordinates' communication needs are to be satisfied.

5.8 Subordinates should receive accurate (personalised) information regarding their performance in the organisation, as the perimeters by which they are judged are clear.

Theme	Statement	Theory	Statement number
Holistic	The whole is always greater or more than the sum of its parts	Systems theory	1.1
	The complex organisation of the whole creates manifestations which do not exist where the parts of the system are considered separately	Systems theory	1.2
	Systems are hierarchical in nature, with assertions of higher-level systems taking credence over lower-level systems	Systems theory	1.3
	All systems that have contact with one another necessarily influence one another and change in one system unavoidably constitutes change in other systems which make all systems interrelated and interdependent	Systems theory	1.4
	All the systems which fall within a larger system have to work together towards mutually defined and observed goals	Systems theory	1.5
	All systems have an *integrative* tendency and a *self-assertive* tendency	Systems theory	1.6
	If a system does not respond to, or change in terms of its environment, a state of entropy could be entered	Systems theory	1.7
	Any organisation needs to be heedful of more groups than just those who offer the organisation compensation in monetary terms - not only their shareholders but all stakeholders	Stakeholder theory	2.1
	The optimal functioning of an organisation can only be reached once the organisation is described in terms of its stakeholder relationships	Stakeholder theory	2.2
	Supporting stakeholder interests is in the best interest of an organisation, as the value that the organisation receives from these constituencies hangs in the balance	Stakeholder theory	2.3
	Aspects of business and ethics need to be seen and practised in an integrative manner, as it makes business sense to act in an ethical manner	Stakeholder theory	2.4

	It should be evaluated for whom value is created and value destroyed, or who is harmed or benefited by business decisions	Stakeholder theory	2.5
	Stakeholders can be classified as primary or secondary, with primary stakeholders classified as the most important due to the fact that the value they add or withhold from the organisation is directly proportionate to the success that the organisation experiences	Stakeholder theory	2.6
	An organisation needs to build and maintain relationships with all constituency groups, defined as stakeholders, if the organisation will see itself survive competitively	Relationship management theory	3.1
	Positive expectations in the organisational-stakeholder relationship need to be reinforced, in order for satisfaction to be experienced therein	Relationship management theory	3.14
	The organisation should provide a mechanism for coordinating the different safety programmes run by different departments or functions	Excellence theory	4.7
	The communication climate in an organisation should reflect the strategic goals and objectives of the organisation, with the perceived importance not contradicting the strategic intent	Communication satisfaction	5.1
	In order for employees to be satisfied with internal organisational communication, they should receive communication integrating them *personally* to the organisation	Communication satisfaction	5.2
	Cross-sectional integration is needed in organisations, where all departments, groups and specialisations within organisations should work interactively as to not oppose but rather further organisational goals	Communication satisfaction	5.3
	Subordinates should receive accurate (personalised) information regarding their performance in the organisation, as the perimeters by which they are judged are clear	Communication satisfaction	5.8
Turbulent	The change and subsequent adaptation of a system could drive a system forward *beyond* the previously experienced equilibrium: to a state of dynamic equilibrium	Systems theory	1.8
	A good relationship between the organisation and its employees will increase the likelihood	Relationship management	3.3

	that stakeholders will be satisfied with the organization and their jobs, which makes them more likely to support and less likely to interfere with the mission of the organisation	theory	
	Organisations and the relevant stakeholder group(s) should share in solving joint or separate problems	Relationship management theory	3.10
	Equal opportunity should be offered to diversity in terms of internal organisational communication	Excellence theory	4.8
	The organisational structure should be organic as turbulent environments with activist groups are encouraged	Excellence theory	4.9
Strategic	Communication can be viewed as the strategic management function which facilitates the organisation-stakeholder relationship that affects the organisational mission, goals and objectives	Relationship management theory	3.2
	For excellence in organisational communication, the knowledge of communicators needs to reach further than just technical skills: The knowledge of communicators needs to be of such an order as to enable the employment of two-way communications	Excellence theory	4.1
	The communicator has to be part of the dominant coalition, and thus be part of the top strategising and decision making group of the organisation	Excellence theory	4.4
	Communication programmes in the organisation should be managed strategically	Excellence theory	4.6
Relational	The organisational-stakeholder relationship should be governed in the spirit of positivity	Relationship management theory	3.7
	Assurances need to be made by the parties in the relationship to assure one another that they and their concerns are legitimate	Relationship management theory	3.8
	It is suggested that organisations build networks or coalitions with the same groups that their stakeholders do, or find important	Relationship management theory	3.9
	The contending parties to a relationship should agree that one or both may rightfully	Relationship management	3.11

	influence the other, or to the power balance in the relationship	theory	
	Trust should be evident in the relationship between an organisation and its stakeholders, where each party's level of confidence in and willingness to open itself up to the other party are evident	Relationship management theory	3.12
	There should be a degree of commitment in the organisational-stakeholder relationship, where each party believes and feels that the relationship is worth spending energy to maintain and promote	Relationship management theory	3.13
	Parties to the relationship should, ideally, not only offer benefit to the other as it is expected that this other will reciprocate accordingly, but because of a concern with the other's welfare	Relationship management theory	3.15
Symmetrical	Good relationships between an organisation and its stakeholders can only be maintained if each party has access to the other	Relationship management theory	3.4
	Disclosure of information is important if organisations expect to have any kind of quality relationship with their stakeholders	Relationship management theory	3.5
	Each one of the parties in the relationship needs to be responsive to the other – or open to their input	Relationship management theory	3.6
	Excellent communication is symmetrical, when it is two-way, as the content generated by the feedback of organisational stakeholders is interpreted, taken into account, and where applicable, acted upon in the organisation	Excellence theory	4.2
	Communication should or could be used to move or shift the perceptions of both parties to the organisational-stakeholder relationship to an understanding wherein both feel that their needs have been honoured, if not met	Excellence theory	4.3
	Participative organisational cultures are seen to be ones more conducive to communication excellence	Excellence theory	4.5
	Organisations need to be heedful of the media quality of channels used to convey	Communication satisfaction	5.4

	communications, as their data as well as symbol carrying capacities are taken into consideration		
	Information should be given out concerning the organisation and its goals and performance. It also encompasses knowledge about external events such as new government policies, which impact on the organisation	Communication satisfaction	5.5
	For employees to be satisfied with their superiors and these superiors' communications skills, superiors should truly listen to communication sent upwards from subordinates	Communication satisfaction	5.6
	Superiors should be in a position to offer guidance to subordinates in terms of solving job-related problems, if the subordinates' communication needs are to be satisfied	Communication satisfaction	5.7

ADDENDUM B
QUESTIONNAIRE ITEMS PER SOURCE

Number in final questionnaire	Number in last questionnaire administered	Number in first questionnaire administered	Original source	Model factor	Model element
Quesitons1-8	Quesitons1-8	Questions 1-10: 10 & 8 omitted	-	- (demographical information)-	- (demographical information)-
Item 9a	Item 9a	Item 12a	ICA questionnaire	Symmetrical	Responsive Accessible
Item 9b	Item 9b	Item 12b	ICA questionnaire	Symmetrical	Accessible
Item 9c	Item 9c	Item 12c	ICA questionnaire	Symmetrical	Responsive Accessible
Item 9d	Item 9d	Item 12d	ICA questionnaire	Symmetrical	Accessible
Question 10 (a-n)	Question 10 (a-n)	Item 13 (a-o): k omitted	Lonmin questionnaire	Symmetrical	Informative
Items 11a & 12a	Items 11a & 12a	Items 14b & 15b	ICA and Lonmin questionnaire	Symmetrical	Informative
Items 11b & 12b	Items 11b & 12b	Items 14c & 15c	ICA and Lonmin questionnaire	Holistic	Integrative
Items 11c & 12c	Items 11c & 12c	Items 14d & 15d	ICA and Lonmin questionnaire	Holistic	Integrative
Items 11d & 12d	Items 11d & 12d	Items 14e & 15e	ICA and Lonmin questionnaire	Symmetrical	Informative
Items 11e & 12e	Items 11e & 12e	Items 14f & 15f	ICA and Lonmin questionnaire	Symmetrical	Informative
Items 11f & 12f	Items 11f & 12f	Items 14g & 15g	ICA and Lonmin questionnaire	Holistic	Integrative
Items 11g & 12g	Items 11g & 12g	Items 14h & 15h	ICA and Lonmin questionnaire	Symmetrical	Informative

Number in final questionnaire	Number in last questionnaire administered	Number in first questionnaire administered	Original source	Model factor	Model element
Items 11h & 12h	Items 11h & 12h	Item 19a	ICA and Lonmin questionnaire	Holistic	Integrative
Items 11i & 12i	Items 11i & 12i	Item 19o	ICA and Lonmin questionnaire	Holistic	Integrative
Items 11j & 12j	Items 11j & 12j	Item 19b	ICA and Lonmin questionnaire	Relational	Balanced
Items 11k & 12k	Items 11k & 12k	Item 19g	ICA and Lonmin questionnaire	Holistic	Integrative
Items 11l & 12l	Items 11l & 12l	Item 19k	ICA and Lonmin questionnaire	Symmetrical	Informative
Items 11m & 12m	Items 11m & 12m	Item 19l	ICA and Lonmin questionnaire	Symmetrical	Informative
Items 11n & 12n	Items 11n & 12n	Item 19m	ICA and Lonmin questionnaire	Symmetrical	Informative
Item 13a	Item 13a	Item 16a	ICA questionnaire	Holistic	Heedful
				Relational	Balanced
Item 13b	Item 13b	Item 16b	ICA questionnaire	Strategic	Tactical
Item 13c	Item 13c	Item 16c	ICA questionnaire	Symmetrical	Informative
Item 13d	Item 13d	Item 16f	ICA questionnaire	General	General
Item 14a	Item 14a	Item 17a	Lonmin questionnaire	Holistic	Integrative
				Relational	Balanced
Item 14b	Item 14b	Item 17b	Lonmin questionnaire	Symmetrical	Accessible
				Relational	Balanced
Item 14c	Item 14c	Item 17b	Lonmin questionnaire	Symmetrical	Accessible
				Relational	Balanced
Item 14d	Item 14d	Item 17c	Lonmin questionnaire	Symmetrical	Accessible
				Relational	Balanced

Number in final questionnaire	Number in last questionnaire administered	Number in first questionnaire administered	Original source	Model factor	Model element
Item 14e	Item 14e	Item 17d	Lonmin questionnaire	Symmetrical	Accessible
				Relational	Balanced
Item 14f	Item 14f	Item 17e	Lonmin questionnaire	Relational	Balanced
Question 15 (a-g)	Question 15 (a-g)	Question 18 (a-h): f omitted	Lonmin questionnaire	Holistic	Reinforced
				Symmetrical	Responsive
				Turbulent	Transformational
Item 16a	Item 16a	Item 20a	Audit of communication effectiveness questionnaire	Strategic	Tactical
Item 16b	Item 16b	Item 20d	Audit of communication effectiveness questionnaire	Turbulent	Assimilative
Item 16c	Item 16c	Item 20e	Audit of communication effectiveness questionnaire	Holistic	Integrative
Item 16d	Item 16d	Item 20f	Audit of communication effectiveness questionnaire	Holistic	Integrative
Item 16e	Item 16e	Item 20g	Audit of communication effectiveness questionnaire	Strategic	Tactical
Item 16f	Item 16f	Item 20h	Audit of communication effectiveness questionnaire	Strategic	Tactical
Item 16g	Item 16g	Item 20i	Audit of communication effectiveness questionnaire	Turbulent	Assimilative

Number in final questionnaire	Number in last questionnaire administered	Number in first questionnaire administered	Original source	Model factor	Model element
Item 16h	Item 16h	Item 20j	Audit of communication effectiveness questionnaire	Symmetrical	Informative
Item 16i	Item 16i	Item 20k	Audit of communication effectiveness questionnaire	Symmetrical	Informative
Item 16j	Item 16j	Item 20l	Audit of communication effectiveness questionnaire	Symmetrical	Informative
Item 16k	Item 16k	Item 20m	Audit of communication effectiveness questionnaire	Symmetrical	Accessible
Item 16l	Item 16l	Item 20n	Audit of communication effectiveness questionnaire	Holistic	Heedful
				Relational	Balanced
Item 16m	Item 16m	Item 20o	Audit of communication effectiveness questionnaire	Symmetrical	Accessible
Item 16n	Item 16n	Item 20p	Audit of communication effectiveness questionnaire	Holistic	Heedful
				Symmetrical	Responsive
					Accessible
Item 16o	Item 16o	Item 20q	Audit of communication effectiveness questionnaire	Holistic	Heedful
Item 16p	Item 16p	Item 20v	Audit of communication effectiveness questionnaire	Holistic	Reinforced
					Heedful
Question 17 (a-g)	Question 17 (a-g)	Question 22 (a-h): f omitted	Lonmin questionnaire	Relational	Trusting

Number in final questionnaire	Number in last questionnaire administered	Number in first questionnaire administered	Original source	Model factor	Model element
Item 18a	Item 18a	Item 21a	Relationship questionnaire	Relational	Trusting
Item 18b	Item 18b	Item 21b	Relationship questionnaire	Relational	Trusting
Item 18c	Item 18c	Item 21c	Relationship questionnaire	Relational	Trusting
Item 18d	Item 18d	Item 21g	Relationship questionnaire	Holistic	Heedful
				Symmetrical	Responsive
				Relational	Balanced
					Supportive
Item 18e	Item 18e	Item 21g	Relationship questionnaire	Holistic	Heedful
				Symmetrical	Responsive
				Relational	Balanced
					Supportive
Item 18f	Item 18f	Item 21i	Relationship questionnaire	Holistic	Heedful
				Relational	Balanced
					Supportive
Item 18g	Item 18g	Item 21j	Relationship questionnaire	Turbulent	Assimilative
				Relational	Committed
Item 18h	Item 18h	Item 21k	Relationship questionnaire	Relational	Balanced
Item 18i	Item 18i	Item 21l	Relationship questionnaire	Relational	Committed
Item 18j	Item 18j	Item 21m	Relationship questionnaire	Relational	General
Item 18k	Item 18k	Item 21o	Relationship questionnaire	Relational	Balanced

Number in final questionnaire	Number in last questionnaire administered	Number in first questionnaire administered	Original source	Model factor	Model element
Item 18l	Item 18l	Item 21p	Relationship questionnaire	Relational	General
Item 18m	Item 18m	Item 21r	Relationship questionnaire	Relational	Supportive
Item 18n	Item 18n	Item 21t	Relationship questionnaire	Relational	Supportive
Item 18o	Item 18o	Item 21v	Relationship questionnaire	Relational	Supportive
--	Item 18p	Item 21z	Relationship questionnaire	Relational	Supportive
Item 18p	Item 18q	--	Theoretical Statement from literature (Mohamed 2002)	Relational	Trusting
Item 18q	Item 18r	--	Theoretical Statement from literature (Mohamed 2002)	Relational	Trusting
Item 18r	Item 18s	--	Safety culture questionnaire	Holistic	Reinforced
Item 18s	Item 18t	--	Safety culture questionnaire	Holistic	Reinforced
Item 18t	Item 18u	--	Safety culture questionnaire	Holistic	Reinforced
Item 18u	Item 18v	--	Safety culture questionnaire	Holistic	Reinforced
Item 18v	Item 18w	--	Excellence theory questionnaire	Holistic	Heedful
--	Item 18x	--	Excellence theory questionnaire	Turbulent	Assimilative
Item 18w	Item 18y	--	Excellence theory questionnaire	Holistic	Integrative
					Influential
Item 18x	Item 18z	--	Excellence theory questionnaire	Holistic	Influential
Question 19 (a-f)	Question 19 (a-f)	Condensed Question 23	Lonmin questionnaire	Holistic	Reinforced
					Comprehensive

Questions per model factor and element:

Model Factor	Model element	Number in final questionnaire	Number in last questionnaire administered	Number in first questionnaire administered
Holistic	**Comprehensive**	Question 19 (a-f).	Question 19 (a-f).	Question 23 (a-q)
	Influential	Item 18y; and Item 18z.	Item 18y; and Item 18z.	
	Heedful	Item 13a; Item 16l; Item 16n; Item 16o; Item 16p; Item 18d; Item 18e; Item 18f; and Item 18w.	Item 13a; Item 16l; Item 16n; Item 16o; Item 16p; Item 18d; Item 18e; Item 18f; and Item 18w.	Item 16a; Item 20n; Item 20p; Item 20q; Item 20v; Item 21g; From 21g; and Item 21i.
	Reinforced	Question 15 (a-g); Item 16p; Item 18s; Item 18t; Item 18u; Item 18v; and Question 19 (a-f).	Question 15 (a-g); Item 16p; Item 18s; Item 18t; Item 18u; Item 18v; and Question 19 (a-f).	Question 18 (a-h); and Item 20v.

Model Factor	Model element	Number in final questionnaire	Number in last questionnaire administered	Number in first questionnaire administered
	Integrative	Items 11b & 12b; Items 11c & 12c; Items 11f & 12f; Items 11h& 12h; Items 11i& 12i; Items 11k& 12k; Item 14a; Item 16c; Item 16d; and Item 18y.	Items 11b & 12b; Items 11c & 12c; Items 11f & 12f; Items 11h& 12h; Items 11i& 12i; Items 11k& 12k; Item 14a; Item 16c; Item 16d; and Item 18y.	Items 14c & 15c; Items 14d & 15d; Items 14g & 15g; From 19a; From 19o; From 19g; Item 17a; Item 20e; and Item 20f.
Turbulent	**Transformational**	Question 15 (a-g).	Question 15 (a-g).	Question 18 (a-h).
	Assimilative	Item 16b; Item 16g; and Item 18g.	Item 16b; Item 16g; Item 18g; and Item 18x.	Item 20d; Item 20i; and Item 21j.
Strategic	**Tactical**	Item 13b; Item 16a; Item 16e; and Item 16f.	Item 13b; Item 16a; Item 16e; and Item 16f.	Item 16b; Item 20a; Item 20g; and Item 20h.

Model Factor	Model element	Number in final questionnaire	Number in last questionnaire administered	Number in first questionnaire administered
	Imperative	Items 11h& 12h; Items 11i& 12i; Item 19b; Item 19c; Item 19d; and Item 19f.	Items 11h& 12h; Items 11i& 12i; Item 19b; Item 19c; Item 19d; and Item 19f.	From 19a; From 19o; Item 23c; Item 23d; Item 23h; and Item 23q.
Relational	**Supportive**	Item 18d; Item 18e; Item 18f; Item 18m; Item 18n; and Item 18o.	Item 18d; Item 18e; Item 18f; Item 18m; Item 18n; Item 18o; and Item 18p.	Item 21g From Item 21g Item 21i Item 21r; Item 21t; Item 21v; and Item 21z.

Model Factor	Model element	Number in final questionnaire	Number in last questionnaire administered	Number in first questionnaire administered
	Balanced	Items 11j& 12j; Item 13a; Item 14a; Item 14b; Item 14c; Item 14d; Item 14e; Item 14f; Item 16l; Item 18d; Item 18e; Item 18f; Item 18h; and Item 18k.	Items 11j& 12j; Item 13a; Item 14a; Item 14b; Item 14c; Item 14d; Item 14e; Item 14f; Item 16l; Item 18d; Item 18e; Item 18f; Item 18h; and Item 18k.	From 19b; Item 16a; Item 17a; Item 17b; Item 17c; Item 17d; Item 17e; Item 20n; Item 21g; From 21g; Item 21i; Item 21k; and Item 21o.
	Trusting	Question 17 (a-g); Item 18a; Item 18b; Item 18c; Item 18q; and Item 18r.	Question 17 (a-g); Item 18a; Item 18b; Item 18c; Item 18q; and Item 18r.	Question 22 (a-h); Item 21a; Item 21b; and Item 21c.

Model Factor	Model element	Number in final questionnaire	Number in last questionnaire administered	Number in first questionnaire administered
	Committed	Item 18g; and Item 18i.	Item 18g; and Item 18i.	Item 21j; and Item 21l.
	General	Item 18j; and Item 18l.	Item 18j; and Item 18l.	Item 21m; and Item 21p.
Symmetrical	**Accessible**	Item 9a; Item 9b; Item 9c; Item 9d; Item 14b; Item 14c; Item 14d; Item 14e; Item 16k; Item 16m; and Item 16n.	Item 9a; Item 9b; Item 9c; Item 9d; Item 14b; Item 14c; Item 14d; Item 14e; Item 16k; Item 16m; and Item 16n.	Item 12a; Item 12b; Item 12c; Item 12d; Item 17b; Item 17c; Item 17d; Item 20m; Item 20o; and Item 20p.
	Responsive	Item 9a; Item 9c; Question 15 (a-g); Item 16n; Item 18d; and Item 18e.	Item 9a; Item 9c; Question 15 (a-g); Item 16n; Item 18d; and Item 18e.	Item 12a; Item 12c; Question 18 (a-h); Item 20p; Item 21g; and From Item 21g.

Model Factor	Model element	Number in final questionnaire	Number in last questionnaire administered	Number in first questionnaire administered
	Informative	Question 10 (a-n); Items 11a & 12a; Items 11d & 12d; Items 11e & 12e; Items 11g & 12g; Items 11l & 12l; Items 11m& 12m; Items 11n & 12n; Item 13c; Item 16h; Item 16i; and Item 16j.	Question 10 (a-n); Items 11a & 12a; Items 11d & 12d; Items 11e & 12e; Items 11g & 12g; Items 11l & 12l; Items 11m& 12m; Items 11n & 12n; Item 13c; Item 16h; Item 16i; and Item 16j.	Question 13 (a-o); Items 14b & 15b; Items 14e & 15e; Items 14f & 15f; Items 14h & 15h; From 19k; From 19l; From 19m; Item 16c; Item 20j; Item 20k; and Item 20l.
General	**General**	Item 13d.	Item 13d.	Item 16f.