The tapestry of business stakeholder value

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Abstract

The research work conducted for this dissertation is based on the Action Research principles. This qualitative research process provides the required validity and invites conscious learning from the experience.

The SCQARE\textsuperscript{1} format is used for the logical construction of the dissertation and the reader is taken through the SCQARE loop twice. The main body of the work is divided in two independent volumes, describing the two part research process. Part A of the dissertation summarises some of the personal experience and learning over the two year period of the EMBA programme. This part of the dissertation aims to formulate the system of problems encountered in the Position Papers, Action Research Learning reports and Critical Incident Log reports produced over this period. It results in a practical problem formulation, which is phrased as the question:

“How do we, as practical managers, contribute towards the creation of viable and sustainable organisations?”

Part B deals with the emerging research question. It explores the emergent themes around the research problem area and provides a potential answer to the research question which is phrased as:

“How can we effectively weave an increasing number of stakeholder perspectives and value propositions into the business model?”

The research report employs multi triangulation through theory triangulation, methods triangulation and data triangulation. The multiple perspective approach is taken in order to give a better description of the phenomenon under investigation. The reader is introduced to the De Beers group, Namaqualand Mines and its simplified business model. A phenomenological situational description follows from the normative management, shareholder and investor, customer and global entrepreneurial perspectives. It is argued that the demands on business is ever increasing and changing, eroding the competitive advantage of the business. Therefore, in order to survive, the business needs a very clear picture of what long-term value creation implies in this moving target of broad social needs.

\textsuperscript{1} Ryan, T., 2003, SCQRE: A framework for sense making, handout EMBA5, Cape Town
A model for the creation and management of viability and sustainability at Namaqualand Mines is developed which asserts that there is a **golden triangle between the level of normative management, the level of stakeholder involvement and the level of strategy application efficiency that drives the long-term viability of the business**. It proposes that leadership’s ability to weave the changing normative demands in the business environment into the business strategy is the highest leverage point for management intervention. It concludes by staking the improvement of this management ability as an area for further research.

The research problem is investigated from an Interpretive System Approach, a Functionalist System Approach, a Work System perspective and a Postmodern System Approach.

The “spider-web” metaphor is used to develop a model for the management of business stakeholder value creation. The model is based on the fact that a number of anchors and interactions exist that forms an effective web which weave in the increasing number of stakeholder perspectives. The model is not prescriptive on the number or nature of the anchor points. However, it suggests that the higher the number of anchor points is, the more robust the business stakeholder value creation model will be. In the case of Namaqualand Mines, these anchor points were found to be:

- Communication
- Power relationship management
- Leadership traits and skills
- Appreciative enquiry and hermeneutic listening
- Internal anchors
- Interaction

The increasing number of stakeholder perspectives and value propositions can only be effectively weaved into the tapestry of the business model if it is done on a localized level from within the work system. This implies that stakeholder involvement is required in the value added domain, the innovation domain and the value system domain. Additional research work is required to test the validity of the claim in the spiritual domain as the scope of work for this research was contained to three of
Hoebeke’s Domains of work. The proposed normative business focus ensures a balanced view which sweeps in the divergent views of all stakeholders in an attempt to provide a utilitarian solution.
Glossary of terms

Algedonic signal
This cybernetic term is used in Stafford Beer’s Viable Systems Model and refers to an alarm system for system 5. It signals rapid response requirement based on a threat or opportunity in the external environment which impacts on the entire business. It signals the requirement for rapid response from any part of the business i.e. any recursion level or any system. An example of this, in the human system, is the signal that the nervous system sends to the brain when your hand touches a hot plate. Immediate reaction is required to pull back the hand. An operational business example is the Pick a Pay “arsenic poisoning scare” where immediate action was required from the executive on first signals of potential risk to the customers.

Cybernetics
A cross discipline method of systems thinking that developed in the middle of the last century. Norbert Wiener defined the term cybernetics as the science of communication and control in the animal and machine. Cybernetics focuses on how complex systems control and regulate themselves through feedback processes that rely on information and communication.

Domains of work
Work systems can be categorized in different domains which contribute to the same theme. These domains are the added value domain, the innovation domain, the value-systems domain and the spiritual domain. Each of the domains again consists of three process levels or strata which overlap in order to facilitate communication (e.g. process level 1 to 3 in the added value domain, process level 3 to 5 in the innovation domain, process level 5 to 7 in the value systems domain and process level 7 onwards in the spiritual domain.) Work systems operating at the higher domains create the enabling environment for those at the lower domains. The nature of change is different at each of the domains and therefore tension is always higher at the boundary processes (process levels 3, 5 & 7).
Law of Requisite Variety
The law of requisite variety is a fundamental law of cybernetics, formulated by W. Ross Ashby and states that only variety can destroy variety. Therefore, in order for a system to effectively control another system it has to have a similar or higher degree of variety. It is interwoven with the concepts of variety attenuation (reduction) and amplification. An example of the application of the law can be seen in the interaction of a business, with a low level of variety, with its environment, which as an infinitely higher level of variety. The business system is in a constant search of ways to attenuate the environmental signals and amplify its management’s variety in an effort to generate a richer range of possible actions.

Normative management
Normative management is the ability to deal with social, economic and environmental issues in a systemic fashion with an understanding of the complex interrelating network of activities that influence government, society, organisations and individuals alike. An example of normative management is the balance that has to be struck between economic maximization on the one hand and social and environmental responsibility on the other hand, especially when the economy is down. It is important to note that each management decision has impacts on the internal and external business environment, which again influence the management decision. In addition the short-term and long-term requirements have to be balanced, as the quick fixes will catch you in the end. The focus on the incorporation of ethical judgment decision-making and stakeholder focus has to increase in order to increase the level of normative management in the organisation.

Small Wins
Karl Weick\textsuperscript{2} defined a “small win” as a concrete, implemented outcome of moderate importance. Small Wins are one or two small improvements to a problem in an incremental way. A “re-framing of the problem” brings it about. Small wins can be identified by looking differently at the problem. A series of small wins reveals a pattern of successes. Although it may seem unimportant, a small win attracts allies, deters opponents and lowers resistance for future small wins. The small wins

\textsuperscript{2}Weick, K, 2001, Managing sense in Organisations, Blackwell
approach can be utilized to interact on a localized level of an organisation in order to improve its viability and sustainability.

**Societal change:**
Societal change is impacting on the changing environment of business. Examples of societal change can be seen in increasing resistance which manifests through civil disobedience and rebellious behaviour of customers and society by and large like consumer boycotts and the "Laugh-it-off" campaigns. An increase in environmental and social lobby groups, customer, supplier, shareholder, government and other group behavior (activism) impact on all sectors of the business. External changes or societal behavior in response to the company’s behavior impacts on the company’s performance by imposing extra demands on business and preventing certain actions.

**Sustainability**
The purpose of business is to create and retain customers. In this quest it engages various stakeholders who range from employees to suppliers and affected parties in society at large. Sustainability is exemplified by reproducible value adding service provision to these stakeholders. Sound business decisions, internal and external stakeholder and customer focus, ethical business behaviour, Life time Value (LTV) of customers and customer loyalty are perceived integral to sustainability. Customer loyalty and LTV of customer drives sustainability of business.

**Systems Failure Methodology (SFM)**
The SFM is a systems approach for the analysis of complex messy situations. It provides a structured way to gain understanding of the apparent failure situation and to learn lessons about the cause of the failure and the possible prevention of similar failures in the future. It is important not to step in the common pitfall of jumping to conclusions on the first quick diagnosis of the situation.

**Triple recursive level**
Organisational functions occur at different levels of recursion. Stafford Beer refers to the triple recursion level in which our system-in-focus is embedded at level 1. The system-in-focus forms part of a larger system at the next recursion level (level 0) and
consist of sub-systems at level 2. At level 1 the purpose of the system-in-focus becomes meaningful while still maintaining an identity at level 0.

Variety
Variety refers to the number of states or behaviours a system can exhibit. The higher the variety in a system, the higher the potential interactions and information exchanges possibilities in a system. Examples of this can be seen in the external environment of an organisation where social, economic, political, technical, ecological and legislative variables interact to create an extremely high level of variety.

Viable System Model (VSM)
The VSM is an organisational cybernetic model developed by Stafford Beer based on the human nervous system metaphor. The VSM focuses on organisation rather than structure and propose an arrangement with five functional elements (systems 1-5) that are interconnected through a network of feedback and control loops. The VSM is a rigorous and useful model that can be used by many methodologies. It can be applied to diagnose the viability of a proposed system or to identify potential problem areas for improvement of function organisation.

Work Systems
Work systems consist of the sets of relationships, activities and contributions someone is making in his network of work. Work systems are never anonymous and consist of real people in a real network in which we deploy our activities. Activities can be done on an abstract level but is always done with real people in real networks. The clients, actors and owners (maybe to a lesser extent) can therefore always be identified.
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A tapestry is a beautiful piece of art. When you look at it, from the correct distance, it paints a picture in the observer's mind which links to memories and life experiences beyond the artist’s wildest imagination. Some may even say that it touches the soul!

But stand back too far, and it all becomes a blurry mess of colour which boggles the mind, or too close and you get intrigued by the complexity of the weaving pattern, the edge effect of the colours and the texture of the fabric. Some may even question the sanity and skills of the weaver! So too is business!

As a weaver, the trick of the trade is to find those skill sets, some of which may never be perfected, to use in the creation of a piece that blend in just the correct colours and detail to create a beautiful piece of art!
1. Introduction

The purpose of this chapter is to familiarise the reader with the concept of systems thinking as an alternative method of problem solving to reductionism, which has a proven track record in solving certain types of scientific problems. It also introduces the concept of research, its essential requirements and the different types of research. The Action Research Learning process, which is utilised in the two stage research process described in this report, is explained in more detail. The chapter concludes with a structural roadmap of the dissertation.

1.1. Reductionism and Systems Thinking

Descantes⁴ argued in 1637, even before the scientific revolution, for the method of reductionism as a valid method to understand the world and its problems:

“to divide each of the difficulties that I was examining into as many parts as might be possible and necessary in order to solve it [and] beginning with the simplest objects and the easiest to know…to climb gradually…as far as the knowledge of the most complex”

Reductionism and the natural scientific methods have been successfully applied to certain classes of problems. However, real world problems as experienced by organisations and societies are set in social systems and are far more complex. When dealing with complex problems with highly interconnected parts, the relationships between these parts can sometimes be more important than the parts and “emergent” properties arise from the relationships between the parts. Therefore, even if the most significant features can be isolated, the “emergent” properties can get lost. Hypothesis testing is also problematic when dealing with these complex problems as they seem to have no boundary and repeatability is problematic due to the unknown initial condition. Ethical acceptability of experiments with people and social systems can also be problematic and people can influence the outcome of predictions made about them. Reductionism and scientific methods have therefore only achieved limited success in social and organisational problem applications.

⁴ Descantes, R., 1968, Discourse on Method and the Meditations, Translated by F.E. Sutcliffe, Penguin Classics, Harmondsworth. p 41
Checkland\textsuperscript{4} argues that Systems thinking can be seen as a reaction to the failure of the natural sciences and the reductionism approach to deal with complex real-world problems set in social systems. Systems thinkers propose holism as an alternative in these situations. Holism focuses on the relationships between parts and the emergent properties or themes created by these parts. Systems thinkers uses models rather than laboratory experiments to study the problem and do not impose any arbitrary boundary. Different perspectives of the nature of the problem are also encouraged in order to obtain a holistic appreciation.

The systems approach or holistic thinking has a long history but began to take the form of a discipline in the late 1940s and early 1950s with the works of Wiener\textsuperscript{5} on cybernetics and von Bertalanffy\textsuperscript{6} on the theory of open systems in physics and biology. From the 1950s to the 1970s, systems thinking had a big influence on the management sciences and presented as the theoretical justification for practical methodologies such as operational research. Sociologists like Parsons, Levi-Strauss and Piaget were also influenced by system theory and cybernetics. Systems thinking up to the 1970s had a strong focus on empirical observations and analysis by methods that has been adapted and enhanced from the natural sciences. The latter causing the strong positivism and functionalism characteristics of systems thinking up to then.

Strong criticism followed in the 1970s and 1980s on functionalism in disciplines like sociology and organisational theory. This gave rise to the birth of alternative systems approaches like soft systems thinking, organisational cybernetics and critical systems thinking. In the ensuing debates, systems thinking broke free from its traditional positivist and functionalist paradigm of hard systems thinking. Checkland’s\textsuperscript{7} work on the Soft System Methodology (SSM) moved systems from an objective existence to a mental constructs of the observer, while Senge’s work on “The fifth discipline” in the 1990s became the foundation of the learning organisation. During this period, Maturana and Varela’s work on “autopoietics” or self-producing systems influenced sociology, law and family therapy and critical system thinking moved towards the reconstruction of systems thinking on pluralist foundations.

\textsuperscript{5} Wiener, N., 1948, Cybernetics, Wiley, New York.
This dissertation builds on these Systems Thinking foundations as an approach to problem solving which can more adequately articulate and discuss the issues at hand.

1.2. Elements required for research

Checkland\(^7\) summarises the three required elements for any research as:

- the **framework of ideas** which contains the knowledge of the situation being researched including current theory of the discipline,
- the **methodology** which embodies the framework and dictates the various methods, tools and techniques in line with the framework and
- the **area of concern** or problem

![Diagram of elements required for research](Image)

**Figure 1: Elements required for research (adapted from Checkland and Holwell)**

\(^8\) Checkland, P.B. and Holwell, S., 1998, Information, Systems and Information Systems, Wiley, Chichester, p 23
1.3. Meta-methodology, methodology and methods

Meta-methodology, methodology and methods are hierarchically connected. Meta-methodology explores the nature and use of methodology while methodology involves the study of the principles of methods used. Methods in turn include the use of procedures, models, tools and techniques.

Jackson\textsuperscript{9} classify systems methodologies into four categories based on the most common research approaches found in social sciences namely functionalist, interpretive, emancipatory and post-modern.

1.4. Types of research

The different types of research can be categorized into four main classes.

Firstly, there is “scholarship” which focuses on the current framework in a specific discipline, embodied in methods regarded as good practice in that discipline and applied to an area of concern in that discipline. In this type of research there is rarely a focus on real-world problems.

Secondly, there is positivist hypothesis testing as applied in the traditional natural scientific approach. The framework of ideas of the relevant science is used to derive hypotheses that claim to describe the behaviour of parts of the real-world. These hypotheses are then rigorously tested through experiments and observations as described by the specific science in order to support or refute each hypothesis. This type of research, called Mode 1 by Gibbons\textsuperscript{10} et al, has a strong focus on the framework of ideas which is controlled by the academic community. The academic and discipline needs are of higher interest than the possible users of the research outcomes.

Thirdly, there is Gibbons et al’s Mode 2 research where the area of concern rather than the framework of ideas drive the research. The focus is on knowledge creation to satisfy the demands of the particular user. This implies that the researcher is

\begin{itemize}
  \item \textsuperscript{9} Jackson, M. C., 2000, Systems Approaches to management, Kluwer, New York, p 11.
  \item \textsuperscript{10} Gibbons, M., Limoges, C., Nowotry, H., Schwartzman, S., Scott, P. and Trow, M., 1994, The New Production of Knowledge; the Dynamics of Science and Research in Contemporary Societies, Sage, London.
\end{itemize}
accountable to the public. The research is usually trans-disciplinary and more attention is given to the method, which becomes a transferable problem solving capability. Mode 2 research has to be flexible to adapt to the emergent problems and the quality should be judged wider than the contribution to a specific discipline. Applied systems thinking can be categorized as Mode 2 research.

Finally, there is Action Research which originated in the work of Kurt Lewis in the late 1940s. On realising the shortcomings of the reductionism approach in the study of complex social and psychological processes, he proposed the alternative of testing theory in action, in a process of implementation. Rapoport\textsuperscript{11} defined action research as contributing:

“...both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually agreed ethical framework”

Action Research can focus on theory (the framework of ideas) or practice (area of concern) and might be classified as a variant of either Mode 1 or Mode 2 research.

Unlike the positivist natural scientific methods, where for objectivity reasons it is important that the researcher and his/her instruments do not influence the outcome of an experiment, Action Research focuses on influencing the situation being investigated. Checkland and Holwell\textsuperscript{12} defined the distinguishing characteristic of interpretive Action Research as the ability of the researcher and the process itself, to influence the situation being investigated. However, the researcher must declare the framework and methodology up-front and reflect on the learning about the framework, methodology and area of concern (see figure 1 above). The Action Research Learning (ARL) cycle is a continuous learning process starting with a declaration of intent about the problem situation under investigation, followed by action and then a review process (see figure 1 below).

\textsuperscript{11} Rapoport, A., 1970, Three dilemmas in action research, Human Relations, 23: 499.
\textsuperscript{12} Checkland, P.B. and Holwell, S., 1998, Information, Systems and Information Systems, Wiley, Chichester
The research work conducted for this dissertation is based on the Action Research principles. This qualitative research process provides the required validity and invites conscious learning from the experience.

1.5. **SCQARE format**

The SCQARE\(^{14}\) format is used for the logical construction of the dissertation. It is a structured approach which takes the reader through a description of the situation (S), area of concern (C), a formulated question (Q), the answer to the question (A), the rationale followed in obtaining the answer (R) and in conclusion an evaluation (E). The evaluation covers the relevance, utility, validity and ethical arguments.

The reader is taken through the SCQARE loop twice. The first loop (Part A) deals with the practical problem while the second loop (Part B) deals with the research problem which emerged from the process in Part A. The process is graphically depicted in figure 3 below.

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\(^{13}\)Ryan, T., 2004, *Formulating the Practical Problem: EMBA5 handout*, Cape Town

Figure 3: Two part Research Process (adapted from Ryan)\(^{15}\)

1.6. **Structure of chapters**

Charter one introduces general research concepts, types of research and gives a brief overview of the structure of the dissertation. The main body of the work is divided in two parts, describing the two part research process followed. The report is structured as two independent volumes, Part A and B, which could be read as independent reports.

Part A of the dissertation summarises some of the personal experience and learning over the two year period of the EMBA programme. This part of the dissertation aims to formulate the system of problems encountered in the position papers, action research learning reports and critical incident log reports produced over this period. It results in a problem formulation, which in turn leads to the formulation of the related research question. Part A of this dissertation explores the emergent themes around the practical problem area which is framed as the question:
“How do we, as practical managers, contribute towards the creation of viable and sustainable organisations? “

Chapter two sets the scene and explains the general theoretical and historical background and aims to introduce the reader to the subject matter by providing certain anchor points in time, history and theory. Chapter three describes the situational background while Chapter four defines the concern. Chapter five distils the practical problem to a question while Chapter six provides an answer to the question in the form of a management theory and includes a sneak preview of the research answer. Chapter seven explains the rationale behind the answer provided and concludes by highlighting the emerging research problem.

Part B deals with the emerging research question, the research problem and proposes a potential answer to the research question. It explores the emergent themes around the research problem area and provides a potential answer to the research question which is phrased as:

**How can we effectively weave an increasing number of stakeholder perspectives and value propositions into the business model?**

Chapter eight builds on stage four of chapter seven. It provides the bridge between part A and B of the research report and deals with the link between the practical problem and the research question, research data and methodology of Part B.

Charter 9 engages the context of the Research Problem and identifies the key stakeholders.

Four different perspectives are used to investigate the research phenomena. Peter Checkland’s SSM is utilized to uncover some of the deeper rooted soft issues as discussed in chapter 10. In Chapter 11 use is made of Stafford Beer’s VSM to investigate the improvement of system viability from a functionalistic perspective. The VSM is seen as an important step in understanding the work system we are
dealing with. Chapter 12 investigates the Research Problem from Hoebeke’s work system perspective while chapter 13 covers Stacey’s postmodernist viewpoint.

The final step in the research methodology, chapter 14, is to create actionable knowledge or context dependant theory. This actionable knowledge helps to answer the practical problem and the research loop (Part B) is closed.

The last chapter, chapter 15, covers an evaluation of the process followed. It addresses issues of relevance, utility, validity and ethics.

1.7. Conclusion

This chapter has introduced the reader to the systems thinking concept as an alternative method of problem solving. It has also introduces the concept of research, its essential requirements and the different types of research. The Action Research Learning process utilised in the two stage research process (Part A and B of this volume) and the SCQARE structural framework have also been explained. In the next chapter the relevant theory, guiding the design of the research, is explained in order to build a contextual theoretical background for the dissertation.
Part A: Formulating the Mess

Ackhoff’s\textsuperscript{16} definition of a mess is a system of problems that cannot be solved by simply solving the constituent problems.

2. Setting the scene

This chapter discusses the theory guiding the design of the investigation. It focuses on introducing the required preparatory theoretical work on social theory and theory development. It introduces some of the key theorists work to build the contextual background for the dissertation. The key types of social theory is summarised in a table which list the four main research approaches. The chapter concludes with a description of the methodology followed in this pragmatic qualitative study.

2.1. Toward theory development

A theory describes the relationship between concepts within a framework of boundary assumptions and constructs. According to Bacharach\textsuperscript{17} the function of a theory is to prevent an observer from being dazzled by the full-blown complexity of normal concrete events. Whetten\textsuperscript{18} details the four essential elements for complete theory as:

- What forms part of the explanation of the social or individual phenomena of interest?
- How are they related?
- Why? The psychological, economic or social dynamics that justify the What and How.
- Who, Where and When limitations of the proposition.

2.2. Multiparadigm perspective and social theory

Organisational reality is multi-faceted by nature. Therefore, Gioia and Pitre\textsuperscript{19} suggest a multiparadigm perspective in organisational theory building. According to Sekiguchi\textsuperscript{20} these paradigms contain the “way of thinking that reflects the fundamental beliefs and assumptions about the nature of organisational phenomena

\textsuperscript{16} Waring, A., 1996, Practical System Thinking, Edition 2000, p 90
\textsuperscript{17} Bacharach, S., B., 1989, Organization Theories: Some criteria for evaluation, Academy of Management Journal, 14, pp 496 – 515.
\textsuperscript{20} Sekiguchi, T., 2004, Theory Development, Handout EMBA5, Cape Town
(ontology), the nature of knowledge about these phenomena (epistemology), and the nature of ways of studying those phenomena (methodology”).

On a review of the different social theories, one quickly finds oneself stuck in a swamp of different paradigms and perspectives. Haralambos and Holborn\textsuperscript{21} categorized the social theories into five categories. Craib\textsuperscript{22} again saw the distinction between action and structure and combined four of these five categories into one. He divides social theories into three paradigms:

I. Action paradigm
II. Structure paradigm
III. Structure and action paradigm

Jackson suggests that the perspective and purpose of the reviewer will determine the most appropriate way of classifying different social theory. The perspective assumed in this review is to use and improve systems approaches. As such, this review has polarized only those social theories which could enhance the definition of the systems approach. The focus is on practical social theory in an attempt to highlight the theory to practice link and to draw the distinction to different social theories when applied in practice. What follows is a high level overview which does not aim to draw the detailed social scientist’s theoretical distinctions.

Burrel and Morgan developed a four paradigm framework of theories about the social world, which is well applied in the systems community. This framework was applied by Checkland to uncover and differentiate the soft systems mythology’s view of social reality. Jackson also used it to show how social theory affects the capacity of the soft system thinking approach to intervene and change social reality. The four paradigm framework is organized along the objective-subjective and regulation-radical change dimensions.

\textsuperscript{21} Haralambos, M. and Holborn, M., 1995, Sociology; Themes and Perspectives, Collins Educational, London.
\textsuperscript{22} Craib, I., 1992, Modern social Theory: From Parsons to Habermas, Harvester-Wheatsheaf, Hemel Hempstead.
Adopting the perspective of each paradigm affects the way we perceive the problem situation and system:

- From the objective sociology of regulation (functionalist) paradigm, systems are perceived to have a hard, easily identifiable existence, independent of the observers. Systems are studied to understand the status quo better in order to facilitate prediction and control of the system.

- From the subjective sociology of regulation (interpretive) paradigm, systems seem much softer, elude easy identification and exist only as the construct of human beings. The purpose of studying systems is the same as for the functionalist paradigm.

- From the objective sociology of radical change (radical structuralist) paradigm, systems seem to have a hard independent existence. The purpose of studying systems is to understand radical change with a focus on conflicts and contradictions in the system which could free people from presently existing social structures.

- From the subjective sociology of radical change (radical humanist) paradigm, systems are the creative constructions of human beings and therefore the intensions of the human beings who constructed them have to be understood. The focus is on social arrangements that are seen as constraining human behaviour.
The Burrell and Morgan grid plays down the difference between the positivist and structuralist epistemologies thereby giving little attention to structuralism as a unified approach in social theory, apart from its radical form. However, from a systems thinking analysis point of view it is significant to identify the nature of a structuralist orientation in order to distinguish for example cybernetics from hard systems thinking. Theorists active in the structuralism domain are Marx, Althusser, Chomsky, Levi-Strauss and Piaget. Craib highlights that the advantage of structuralism is that, apart from focusing on relationships between variables, it also focuses on digging deeper for the structure underlying the surface. This structure may be less observable but could have more explanatory power than the surface variables. However, care should be taken not to reduce the world to this level thereby losing the surface level meaning.

2.3. Metaphors
The comparison and evaluation of competing claims of knowledge produced from within different paradigms can be difficult as the scientists working in the different paradigms lack a common understanding. The Metaphor method provides a theory construction vehicle for debate and conflict resolution. Pepper\textsuperscript{24} defined the “root metaphor method” as a method whereby:

“A man desiring to understand the world looks about for a clue to its comprehension. He pitches upon some area of common-sense fact and tries to see if he cannot understand other areas in terms of this one…”

According to Morgan, effective managers and professionals can use metaphors to read situations with different scenarios in mind and generate appropriate action from the insights obtained. Morgan\textsuperscript{25} highlighted his selection of “images of an organization” in a popular organisational literature review. He selected “machines”, “organisms”, “brains”, “cultures”, “political systems”, “psychic prisons”, “flux and transformation” and “instruments of domination”. The insights obtained about “learning organisations” through the brain metaphor and the importance of “shared values and beliefs” through the culture metaphor are examples of this method in use. Metaphors facilitate creative insights and develop critical thinking.

\textsuperscript{23} Jackson, M. C., 2000, Systems Approaches to management, Kluwer, New York, p 11.
2.4. Critical theory

Critical theorists criticize what they see based on a vision of what could be. An example of this can be seen in Marx’s highly political work on the alienating nature of work in capitalist societies. The radical paradigms discussed above and the “psychic prison” and “instrument of domination” metaphors for organisations are additional examples. Following in the footsteps of the earlier work at the Frankfurt Institute for Social Science, Habermas is the most influential modern thinker of critical theory. According to Habermas, knowledge acquisition is driven by technical and practical interests in what he terms fundamental cognitive interests. These interests are derived from our socio-cultural form of life which depends on “work” and “interaction”. Technical mastery is required over the environment in order to achieve work goals which in turn bring about material well-being. In order to achieve this, free and open communication is required. This could be blocked by the way power is exercised in a social structure, giving rise to a third subordinate interest of emancipation. The critical sciences are tied to this emancipatory interest. Habermas’ concepts of “communicative competence” and “distorted communication” can be used to highlight “systemically distorted communication” where power imbalances or imbalances in opportunity to participate result in false consensus.

2.5. The Enlightenment, Modernism and Post-Modernism

Originating in the eighteenth century the Enlightenment was a European intellectual movement that worked towards replacing the myths and prejudices of previous generations with reason and science as building blocks for a better world. Kant described it as an escape from the self-imposed traditions. Haralambos and Holborn quote Harvey on the idea of the Enlightenment:

“…to use the accumulation of knowledge generated by many individuals working freely and creatively for the pursuit of human emancipation and the enrichment of daily life. The scientific domination of nature promised freedom from scarcity, want, and the arbitrariness of natural calamity. The development of rational forms of social organisation and rational modes of thought promised liberation from the irrationalities of myth, religion, superstition, release from the
arbitrary use of power as well as from the dark side of our own human natures.”

The modernist theorists contributing to the sociological paradigms, metaphors of the organisation and critical theory operate within the traditions of the Enlightenment. Although critical theorists like Habermas have their concerns about instrumental reason’s domination of the Enlightenment project, he wants the full potential realized rather than abandoned. Modernism believes in order and searches for unity, identity and consensus. Modernism, with its seriousness and depth characteristics, offers security through rational explanations of phenomena.

Post-modernist theorists in contrast see the Enlightenment rationale as flawed and want to abandon it. Post-Modemism thrives on instability, disruption, disorder, contingency, paradox and indeterminacy and offer little stability. It opposes the modernist’s certainties of rationality, truth and progress, denies the scientific objective truth concept and rejects history as the progressive realization and emancipation of humans. Post-Modern science asks questions about purpose and views the search for detailed knowledge about systems as misguided. In their view, attempts to limit individual initiative, based on systemic requirements, destroy that novelty the system requires to adjust to its environment. Post-modern theorists like Foucault reject the argument for epistemological progress and the autonomous human being as a subject for history. He believes that discourses shape the world as well as the individuals’ social identity and way of seeing. He argues that knowledge is power which generates a myriad of power struggles which shape society.

Alvessor and Deetz\textsuperscript{27} distilled seven common themes / ideas among post-modern writers, relevant to organisational research:

I. the centrality of discourse
II. the discursive production of the individual
III. the discursive production of natural objects rather than language as an mirror of regularity

\textsuperscript{26} Haralambos, M. and Holborn, M., 1995, Sociology; Themes and Perspectives, Collins Educational, London. p 908.
IV. the loss of power of the grand narratives  
V. the power/ knowledge connections  
VI. research aimed at revealing indeterminacy and encouraging resistance rather than at maintaining rationality, predictability and order  
VII. hyper-reality – simulations replaced the real-world in the current world order

These post-modernist themes have considerable challenges and implications for systems thinking. On the one hand, one of the most prominent themes system practitioners face is the recognition of power and the social and political context of their work, on the other hand there is call for a less serious approach with more humor, lightness, irony and sarcasm brought into systems theory. …and this is no sarcastic light conclusion to the social theory review.

2.6. Summary of Research Approaches

Jackson argues that the social theories reviewed above mainly concentrate on four categories namely:

- Functionalist approaches
- Interpretive approaches
- Emancipatory approaches
- Post-modern approaches

The functionalist approaches, as identified by Burrell and Morgan (see 2.2 above), make up a huge chunk of the systems methodologies and models, A finer definition can be obtained of this paradigm based on Morgan’s metaphors or the positivism and structuralism epistemology. The interpretive approaches also contained in Burrell and Morgan, accommodate systems methodologies like the Soft Systems Methodology (SSM) and provide alternative approaches to the functionalist hard and cybernetic systems approaches. Burrell and Morgan’s radical paradigms, Haberman’s emancipatory and critical thinking methodologies and the “psychic prison” and “instrument of domination” metaphors are all contained in the emancipatory approaches class. The post-modern approaches class contains the main themes as categorized by Avessor and Deetz (see 2.5 above), recent critical thinking work and emergent chaos and complexity theory approaches as suggested by the work of Stacey. Finding support in his categorization of the main approaches, Jackson

adopted a summary table from the work of Alvesson and Deetz\textsuperscript{29} on different research approaches, which will also be used in this dissertation.

<table>
<thead>
<tr>
<th>Features</th>
<th>Functionalist</th>
<th>Interpretive</th>
<th>Emancipatory</th>
<th>Post-Modern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic goal</td>
<td>Demonstrate law like relations among objects</td>
<td>Display unified culture</td>
<td>Unmask domination</td>
<td>Reclaim conflict</td>
</tr>
<tr>
<td>Method</td>
<td>Nomothetic science</td>
<td>Hermeneutics, ethnography</td>
<td>Cultural and ideological critique</td>
<td>Deconstruction genealogy</td>
</tr>
<tr>
<td>Hope</td>
<td>Efficiency, effectiveness, survival and adaptation</td>
<td>Recovery of integrative values</td>
<td>Re-formation of social order</td>
<td>Claim a space for lost voices</td>
</tr>
<tr>
<td>Organisational metaphor</td>
<td>Machine, organism, brain, flux and transformation</td>
<td>Culture, political system</td>
<td>Psychic prison, instruments of domination</td>
<td>Carnival</td>
</tr>
<tr>
<td>Problems addressed</td>
<td>Inefficiency, disorder</td>
<td>Meaninglessness, illegitimacy</td>
<td>Domination, consent</td>
<td>Marginalization, conflict suppression</td>
</tr>
<tr>
<td>Narrative style</td>
<td>Scientific / technical , strategic</td>
<td>Romantic, embracing</td>
<td>Therapeutic directive</td>
<td>Ironic, ambivalent</td>
</tr>
<tr>
<td>Time identity</td>
<td>Modern</td>
<td>Pre-Modern</td>
<td>Late-Modern</td>
<td>Post-Modern</td>
</tr>
<tr>
<td>Organisational benefits</td>
<td>Control, expertise</td>
<td>Commitment, quality of work life</td>
<td>Participation, expand knowledge</td>
<td>Diversity, creativity</td>
</tr>
<tr>
<td>Mood</td>
<td>Optimistic</td>
<td>Friendly</td>
<td>Suspicious</td>
<td>Playful</td>
</tr>
<tr>
<td>Social fear</td>
<td>Disorder</td>
<td>Depersonalization</td>
<td>Authority</td>
<td>Totalization, Normalization</td>
</tr>
</tbody>
</table>

Table 1: Features of four research approaches (adapted from Alvesson and Deetz by Jackson)\textsuperscript{30}


\textsuperscript{30} Jackson, M. C., 2000, Systems Approaches to management, Kluwer, New York
2.7. Methodology

This section first gives a brief theoretical introduction to triangulation before it introduces the methodology that is used in the research process.

2.7.1. Pragmatism

Pierce, an American philosopher, argued that knowledge is an activity while the Oxford Advance Learner’s dictionary defines the term pragmatism as follows:

“...belief that the truth or value of a theory can only be judged by its practical results.”

This research report follows the pragmatic approach.

2.7.2. Triangulation

Triangulation is a research approach, whereby more than one research strategy is used in a single investigation. The triangulation technique was adapted from navigation where three reference points are used to plot a position. At least five types of different triangulation are found in research

I. Data triangulation
II. Investigator triangulation
III. Theory triangulation
IV. Method triangulation
V. Multiple triangulation (combining two or more triangulation techniques)

Qualitative researchers use triangulation to assure completeness of findings as it reveals the varied dimensions of a phenomenon and helps to generate a more accurate description. It can also be used to confirm findings and conclusions by combining different strategies which complement each other. When the same information is uncovered from different vantage points, investigators can compare and contrast information to confirm the validity of the findings. The choice and type of triangulation used by the researcher depends on the research question asked and the complexity of the phenomenon under study.

Data triangulation involves the use of more than one source of data in a single investigation. Three types of data triangulation exist namely: time, space and person. Time triangulation involves the collection of data about the phenomenon at different points in time. Space triangulation involves the collection of data at more than one site while person triangulation involves the collection of data from more than one level of person or groups. Data triangulation contributes to the rigor of a qualitative study when carried out responsibly.

Methods triangulation involves the use of two or more research methods in an investigation and can occur at the level of design (between method triangulation) or data collection (within method triangulation). The standards of rigor for each research method should be met when combining methods. When doing qualitative research sampling should be purposive, data generation should occur until saturation occurs and theory should emerge from findings and not be forced by researchers. If data saturation has not occurred and knowledge is incomplete, additional data collection and analysis should reconcile the differences or augment data to increase understanding. The imprecise use of method triangulation may increase the error and enhance the weakness of each method.

Investigator triangulation involves the use of multiple investigators, each with a prominent role and complementary area of expertise which will increase the understanding of the phenomenon.

Theory triangulation involves the use of more than one theory or lens in the analysis of the same data set. The emerging theories are investigated through rival explanations until a complete or holistic understanding is gained.

2.7.3. Data sources and triangulation

Data for this qualitative study was collected over a period of two years from critical incidents as recorded in the Critical Incident Logs (CIL) as well as two multi-disciplinary workshops and a public participation workshop. The multi-disciplinary focus group workshops provided uncovered problem areas from different discipline perspectives and provided good data triangulation in the form of person triangulation while the CIL process provided data triangulation in the form of behavior over time.
In this qualitative study, the two different data sets obtained from the CIL processes and the focus group workshops data collection methods were combined. This was done in order to provide a better and more holistic perspective of the phenomenon, balancing personal subjective observations in the CILs with objective observations from the focus group findings. This process is also known as a within method triangulation.

The weaving of grounded theory, ethnographic and literature data provides further “between methods” triangulation. This research report therefore employs multi triangulation as theory triangulation, methods triangulation and data triangulation was used.

2.8. Conclusion

This chapter has introduced the preparatory theoretical social theory and some of the key theorists work to build the contextual background for the dissertation. The summarised table of the four main research approaches forms a reference point for the pluralistic research approach followed. Next the process of triangulation was discussed highlighting the methods of triangulation used in the research process.
3. Situation – The changing face of business value

This chapter introduce the reader to the background situation of the particular business problem. The description starts with a very wide business societal focus and is continuously narrowed down to the specific impact of the societal factors on the business. The multiple perspective approach is taken in order to give a better description of the phenomenon under investigation.

3.1. Introduction

John Harvey-Jones\(^{33}\) stated:

“… there can never be any single correct solution for any management problem, or any all-embracing system which will carry one through a particular situation or period of time… the skill of management consists of knowing them all… choosing the particular ideas which are most appropriate for the position and time in which he finds himself.”

Therefore, in order to create and manage a viable and sustainable business we have swept in a variety of perspectives to build a level of understanding of the conceptual models and theories of reality that aim to model the business in its business environment. The business model is first investigated to build an understanding of the business. This is followed by a discussion of the business environment and the rules of the game.

3.2. The business model

3.2.1. The business idea

Namaqualand Mines (NM) forms part of De Beers Consolidated Mines. De Beers Societe Anonyme (Dbsa) is the holding company of De Beers Consolidated Mines Limited and De Beers Centenary AG.

De Beers Consolidated Mines was formed on the 12\(^{th}\) March 1888 from the merger of Barney Barnato’s Kimberley Central Company and Cecil John Rhode’s De Beers

De Beers was listed on the JSE in August 1893, but went private after 113 years in June 2001. In his Chairman’s statement of 2001, Nicky Oppenheimer states the reason for taking the company private as: “…The need to liberate De Beers from the inherent short-termism of the stock market, thus enabling it to take the long view and tailor its decisions more closely to the needs of the diamond industry, was one of those convictions. Another was the need to reinforce and enhance De Beers’ great and singular strength: its total and exclusive dedication to the mining and marketing of one product. It is this obsessive sense of focus which underpins the company’s role as leader of the world diamond industry…”

De Beers and its business partners constitute the largest diamond-mining group in the world and currently produce around 38% of world production by value. The group’s mining operation spans every category of diamond mining; open-pit, underground, alluvial, surfzone and deep-sea.

Namaqualand Mines conducts all alluvial mining and prospecting operations on the licenses held by De Beers Consolidated Mines along the west coast of South Africa in the area between the Olifants River and Port Nolloth.

The value adding activities in the diamond business, referred to as the diamond pipeline, consist of exploration, diamond winning (resource estimation and production planning, mining and treatment operations), marketing of rough diamonds, cut and polishing and finally distribution through retailers. Namaqualand Mines participate in the exploration and extraction phases of the diamond pipeline and sells all rough diamonds directly to the Diamond Trading Corporation (DTC).

The first step in the diamond pipeline is exploration. Secondary diamond deposit exploration was transformed with the introduction of Arial Electro-Magnetic technology (AEM). This enabling technology allows the surveying of large areas for the presence of marine or fluvial secondary deposits. The AEM survey results are used to identify targets for the large diameter auger-drilling programme. The resulting data from the drilling programme is transformed through geo-statistical analysis into a geological model referred to as the Resource model. Reserve estimation, a process

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involving the selection of a subset of economically exploitable resource blocks, follows. The resulting Reserve is used in the Mine Planning process that focuses on the scheduling of mining and treatment activities over the life-of-mine.

Mining operations involve the annual stripping and back dumping of approximately 40 million tonnes of overburden to expose the diamondiferous gravels. This is followed by the excavation and in some instances screening of ore before hauling to one of four treatment plants. Manual or mechanical sweeping operations, depending on the bedrock condition, follow the mass excavation process. Rehabilitation of the waste dumps concludes the mining operations.

![MINING ACTIVITIES](image)

**Figure 5: Mining Activities**

Material from the treatment plants is transported to the Recovery plant where final diamond winning takes place.

Diamond production from the land based mining operations is augmented with production from the surfzone contractors. These contractors mine material from the
inter-tidal zone with small scale diver assisted suction equipment. Their equipment mainly consists of a tractor modified to drive a rotary classifier and pump, to which the suction hose is attached. Concentration is done with a mobile jigging plant operated on site. Surfzone contractor mining contribute less than 1% of the total Namaqualand Mines diamond production.

Namaqualand Mines is responsible for the production of approximately 1 million carats per annum. Although this forms only approximately 2% (by weight) of the total De Beers production, the diamonds produced are of a superior quality and are in high demand.

![Treatment Operations](image)

Figure 6: Treatment Operations

All Namaqualand Mines’ diamond production gets absorbed in the DTC intake. No differentiation of the Namaqualand diamonds takes place in the DTC supplier model as diamonds are supplied to the sight holders in a mix containing a specific assortment of stone size, colour & clarity. The DTC is a cash business and sightholders pay for their goods before it is despatched.

The marketing and sales arm of the De Beers group has gone through various phases of transition since the first sales contract was signed with the London Diamond
Syndicate in 1890. Changing over time to meet the increasingly competitive business environment, the DTC was a transformation of the Central Selling Organisation (CSO) – transforming the single channel marketing structure to a successful Supplier of choice initiative which drives growth in the consumer demand for diamond jewellery. This change in marketing strategy is aimed at tapping into the opportunity to grow the diamond business and match the growth rates enjoyed by the leading companies in the luxury goods sector.

The DTC is operational in 16 markets, the largest of which is America with just over 50%, followed by an approximately equal distribution of the remaining market share between Japan, Europe, Asia-Arab area and the Asia-Pacific area. There is still large untapped potential in China and India.

An independently managed and operated company was formed between De Beers and LVMH Moet Hennessy Louis Vuitton, the world's leading luxury products group, to drive the De Beers brand as a premier consumer brand.

An analysis of the current business, through a number of interviews and a SWOT analysis has shown that Namaqualand Mines presently utilizes three main distinct competencies

- The ability to conduct secondary deposit (not limited to diamonds) exploration.
- The ability to mine secondary deposits at current depth (this is a rapidly shrinking distinctive competency).
- Unique marketing arrangement through the DTC creating differentiation and association with the De Beers brand.

Figure 7 below shows the basic business idea, with its most important distinctive competencies, which emanated from this process.
Figure 7: The Business Idea

In the current De Beers business model the DTC and its network of site holders is Namaqualand Mine’s internal business process customer. However, the customers of the diamond value chain, of which Namaqualand Mines only forms one link, are the general diamond buying public.

Unlike the wine industry there is no differentiation of product by origin and therefore no “diamonds of West Coast Marine origin.” Differentiation of product takes place at the DTC where the marketing approach is to only differentiate De Beers’s diamonds from other producers.

The combination of exploration, mining and treatment capabilities and expertise drives Namaqualand Mines’ ability to conduct large scale secondary deposit mining.
The latter determines the mines ability to meet its diamond production commitments to the DTC in terms of quantity and specific assortment of stone size and quality. It is therefore Namaqualand Mines’ ability to conduct large scale secondary deposit mining that drives its profitability.

3.2.2. Recursion levels of the system under investigation

Organisational functions occur at different levels of recursion. Stafford Beer refers to the triple recursion level in which our system-in-focus is embedded at level 1. The system-in-focus forms part of a larger system at the next recursion level (level 0) and consist of sub-systems at level 2. At level 1 the purpose of the system-in-focus becomes meaningful while still maintaining an identity at level 0.

The stated vision of Namaqualand Mines is: “To thrive in 2028 and beyond”. For the purposes of this exercise the current myopic focus on diamond mining narrow the purpose to be pursued down to: “To produce diamonds sustainable in 2028 and beyond”. The current consensus interpretation of the purpose is that it implies continuous sustainability between now and Namaqualand Mines’ centenary year.

As indicated in figure 8 below, the system-in-focus (level 1) is Namaqualand Mines. De Beers Consolidated Mines forms recursion level 0 and the recursion level 2 systems that comprise Namaqualand Mines are: the Buffels Marine Complex (BMC) Production system, the Koingnaas Complex (KNC) Production system, the New Capability Construction system and the Mineral Resource Development system.
3.2.3. The “Rules of the Game” links to the environment

The core business of De Beers and therefore Namaqualand mines, is the mining and marketing of rough diamonds. This is done against a strong backdrop of brand development through the DTC Supplier of Choice strategy. In order to achieve this, it is of utmost importance that all Namaqualand Mines’ business decisions are evaluated against, and aligned with, the overall De Beers marketing strategy as any negative connotation with the brand can have a disproportionate effect on the brand and consumer confidence. In this context, adherence to business ethics, social responsibility, strict safety standards and environmental guidelines like the ISO14001 are not only required from a good corporate governance point of view, but also from a brand support perspective. Any legislation or changes to environmental legislation form part of the rules of the game and the group adheres to international guidelines in this respect.
Regulation plays a crucial part in the diamond industry. The success of the Kimberley certification process is critical for the reputation of the diamond industry as a whole – failure to protect against the tainting of the diamond trade image is not an option. De Beers has adopted a code of practise to ensure that all its diamonds are conflict free and all De Beers sight holders are required to adhere to the same code of practise. The De Beers “forever” mark is therefore a distinguishing competency as this creates a differentiating capability.

The political environment also forms part of the “Rules of the Game”. A change in the South African political dispensation in 1994 has sparked major influences and shifts in the management and ownership of South-African mines. Political changes brought about by a change in government have also initiated changes in the Value System domain of society. The call for radical change and transformation in the South African mineral development was first made in the African National Congress’s (ANC) Freedom Charter and later highlighted in the current Mineral and Petroleum Resources Development Act No. 28 of 2002, its regulations and the Broad-Based Economic Empowerment Charter with its associated Mining Charter Scorecard. There have been important changes in the South African mineral development “Rules of the Game” after the 1994 election. Cawood summarises these changes as:

- “A drastic change in politics ushered in by negotiation, a spirit of reconciliation and a desire to settle disputes peacefully
- The globalisation of the South African mining industry in tandem with the opening of domestic mineral resources to foreign capitalists and
- The introduction of sustainable development as a holistic approach to mineral development in order to replace traditional narrow-minded environmental management”

The potential future introduction of a Mineral and Petroleum Royalty bill could lead to a royalty payment of 8% on diamond revenue. This will deliver a devastating blow to the Namaqualand Mines financial model. These changes hold huge potential opportunities and threats for the South African minerals industry. Therefore, a thorough understanding of the variables at play is required in order to harness these opportunities and reduce potential risks.

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3.3. The business environment

The business environment can be segmented into the macro, market and internal business environments. The macro environment comprises of the political, legal, economic, social, physical and technical environment; whilst the market environment comprises of competitors, consumer organisations, stakeholders, suppliers and customers. Employees contributing to the effective operation of the business, non human resources, raw material, mineral resources and financial resources constitute the internal environment.

The interfaces between the organisational system and each of these environmental systems are of interest, for it is at these interfaces where continuous changes are experienced. A change in communication technology like cell phones, e-mail and internet and Global Positioning Systems (GPS) provide good examples of changes in technology that led to changes in sociological, legislative and societal change. Although there is a definite temporal difference where some of these changes like legislative changes lag the original societal behaviour changes, iterative societal behavioural changes are required in order to adapt to the secondary and tertiary rounds of change in the macro (political, social and legislative) environment. This interface between business and society is tightly weaved andblurry and is best described by Hoebekes' comments when he states: "There are no boundaries. System boundaries are an illusion. We choose to create boundaries." This blurring of "boundaries not only exist in the activities described as business or environment, but also in terms of the people participating and in the temporal axis. Therefore, the necessity to adopt or adapt to these changes is just as important for business survival as for society by and large. Companies ignoring these changes, through ignorance or design in their business strategy, soon meet with growing customer resistance. In this fabric of society, language carries the colours of culture, changing as identity and perceptions change. The language command and associated metaphors influences culture which in turn impacts on the business environment and the customer needs.

On focusing on the internal environment we find the ever changing pressures on normative management requirements, as well as stakeholder and shareholder value creation demanding a sustainable increase in the long term worth of the organisation.

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36 Hoebekes, L. 2004, EMBA 5 module 6 lecture, UCT, Cape Town
A multi perspective approach is followed in order to build a better understanding of the business situational environment and value proposition. A phenomenological situational description follows from the normative management, shareholder and investor, customer and global entrepreneurial perspectives.

### 3.3.1. Normative management perspective

Charles Handy stated:

“Corporations not only have citizens, they are also citizens. They have rights in the societies where they operate, but they also have responsibilities, which law and custom impose on them. We increasingly expect our corporate citizens to act decently.”

Organisations do not operate as separate and individual units; they form part of a larger whole—the Supra system we commonly refer to as society.

A system, operating in this Supra system, is subjected to the influences from society whilst the internal business process sub systems, which make up the organisational system, influence the surrounding society. It is this systemic interaction that is of interest as growth of this Supra system, rather than only the organisation, will ensure the health of the larger social, environmental and economic well being of society and all its components. Evidence of this interaction can be seen in the day-to-day business interaction of organisations and society, accelerated by the increased ease of use, speed and effectiveness of modern global information and distribution systems. Never before in human history has it been so true that bad news travels faster than a forest fire. Within hours of a disapproved action by an organisation, society’s reaction can be felt in every market where the organisation conducts business. This reaction manifests in terms of the level of human rights vigilante actions, the level of rebel shareholder action, the level of supplier and industrial consumer demands for involvement in the organisational decision-making process and finally a total change in customer spending behaviour. As the society’s level of awareness of sustainable development issues increase the level of prevalence of organisations and communities bounded and bonded by common values increase, which in turn accelerates the feedback to the organisation and can lead to a change in the business confidence level. Examples of this phenomenon can be seen in the increased involvement of National
authorities, Provincial authorities and Non-Governmental Organisations (NGOs) in the monitoring and influence on Namaqualand Mines’ economic and social activities. Important stakeholders in this network are the Succulent Karoo Ecosystem Programme (SKEP), Fishing and Mariculture Development Association (FAMDA), the Department of Economic Affairs and Tourism (DEAT) - Marine & Coastal Management (MCM), Northern Cape Department of Tourism, Environment and Conservation and the Northern Cape Provincial Coastal Committee stakeholder representative committee. In this symbiotic relationship it is important that Namaqualand Mines has a very well developed sense of its impact on the environment as well as an ability to align its actions accordingly. It is in the latter application that normative management fulfills a key role. Normative management is the management process that seeks to find the balance between the economic, political, social, cultural and environmental (ecological) values of an organisation. Normative management includes topical issues like governance, economic returns as well as environmental and social issues and it provides the organisation a vision for the “Common Good” which gives a high degree of social cohesion and individual purpose.

Additional normative management triangulation points are also supplied by the targets set for social development in the Mining Charter Scorecard (see Appendix 1)

### 3.3.2. Shareholder or investor perspective

The concept of shareholder or investor value creation and management has been in transformation over at least the last century. The changing nature of business has influenced and is still influencing: how business is created, how it is funded, who it employs, what activities it engage in, how it manages relationships and what it perceived to be of value. To understand this change we have to look at the driving forces around the creation of business and what is perceived to be of value as a return for the risk of undertaking that business. A short historic overview of the changing nature of business and the transformation in the concept of business shareholder value can be found in Appendix II. The purpose of this review is to highlight the changing perceptions on what constitutes shareholder value.

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37 Handy, C., 1999, The Hungry spirit, Doubleday Broadway Books
Managing for increased shareholder value has to be viewed in a normative context as the overlap between the triple bottom line interests is crucial for the sustainability of the corporation. In this context, shareholder value is a much wider concept than the definition of extreme profits to a few investors and business should concentrate on more than just profits for shareholders. This view is highlighted by Sir Mark Moody-Stuart\textsuperscript{38} the chairman of Anglo American PLC a major shareholder in DBCM when he stated:

“Sustainable development is absolutely central to the future acceptability of our business and to its ongoing success and profitability. Our businesses have high environmental and social impacts, many deplete a non-renewable (albeit generally recyclable) resource, and global concerns like climate change and HIV/AIDS are highly relevant to us. These issues reflect upon our licence to operate, our sustainability as an investment, our ability to attract the most talented recruits and our acceptability to governments and communities. Moreover, our ability to understand and address societal concerns is fundamental to our good name and the value of that reputation.”

3.3.3. The customer perspective

Peter Drucker\textsuperscript{39} stated:

“A business is not defined by the company’s name, status, or articles of incorporation. It is defined by the want the customer satisfies when he buys a product or service. To satisfy the customer is the mission and purpose of every business. The question “What is our business?” can, therefore, be answered only by looking at the business from the outside, from the point of view of customer and market.”

Therefore, in order to create and manage customer value we have to build a level of understanding of customer needs and the business environment the system operate in. There is a systemic interaction between technology and society. In this causal relationship, the level of technological change influence the level of sociological, legislative and societal change which in turn changed societal behaviour and customer needs.

Political, social and legislative changes cause societal behaviour changes which in turn lead to changes in customer demands. Companies ignoring these changes, through ignorance or design in their business strategy, soon meet with growing customer resistance. This resistance manifests through civil disobedience and rebellious behaviour of customers and society by and large. Examples of this type of behaviour could be seen in consumer boycotts and the "Laugh it off" campaigns.

In this fabric of society, where both business and its customers operate, language carries the colours of culture, changing as identity and perceptions change. The language command and associated metaphors influences culture which in turn impacts on the business environment and the customer needs and the way they perceive the organisation meeting their needs. This in turn influences the internal business processes.

Namaqualand Mines partake in the extremely image and perception sensitive diamond market. Customer resistance to any business behaviour at Namaqualand Mines or De Beers operation can have catastrophic impacts on the bottom line. Blood diamonds associated with civil war and child labour poses the biggest threat. To this extent, the Kimberley Process plays an important part in the regulation of the diamond industry. The adherence to good corporate governance principles in mineral resource management and diamond stock movement are therefore crucial to ensure the creation of customer value. Due consideration should also be given to the potential emerging threat of customer demands with regard to company social investment.

3.3.4. The global entrepreneurial perspective

All over the world, business is facing increasing pressure from ever increasing stakeholder groups. These radical changes are key drivers of the evolving corporate culture in the global business environment. Therefore, in order to create value through Globalisation and Entrepreneurship, we first have to build a level of understanding of these key drivers. An example of this systemic interaction can be seen where the level of perceived political risk influence the engagement strategies of a company\(^{40}\). These engagement strategies not only influence the company structure, but also the financial instruments the company elects for funding, which in turns influence the level of technology applied and the human resource requirements. These selections in turn directly impacts on the quantity of money that flows back to the government in the form of taxes and the level of education and training passed on to the workforce. In the long run, these benefits of business influence societal perceptions which in turn influence government’s perception of business. And it is only through stable governments that political risks can be minimised.

The external macro environmental force field comprise of social and demographic changes, competition, changing world trade agreements, resources, political pressures and economic forces. To complicate matters even further, each of these forces have a local and global component which in some instances operate in opposite directions.

3.4. Summary and conclusion

The situation or business scene can be described as a sea of change with currents in all directions. In this operating environment the level of risk is high and the level of ambiguity even higher.

The different perspectives of what business is all about also swing like a pendulum. Examples of this can be seen in the value proposition of shareholder value and normative management. As social paradigms, political paradigms and even philosophical paradigms shift, so does the value proposition. Now that we have built an insight of the situation, it becomes evident that the challenge or concern for the businessman or practising manager is to evade the potentially lethal blow by one of

\(^{40}\) Handy, C., 1999, The Hungry spirit, Doubleday Broadway Books
these swinging pendulums as he negotiates his way through the business race in the quest for value addition.
4. The Concern

This chapter builds an argument that the situation at hand is a practical problem that has consequences and that a cost is going to be incurred if it is not satisfactory addressed. It argues that the demands on business is ever increasing and changing, eroding the competitive advantage of the business. Therefore, in order to survive, the business needs a very clear picture of what long-term value creation implies in this moving target of broad social need.

4.1. Introduction

The concern is that on the one hand business is “handicapped by shrinking time horizons and a growing preoccupation with short-term profits” whilst on the other hand there is a constant transformation of society which is controlling business sustainability through the shaping of perceptions of what constitutes legitimate and valued business actions. Based on Schwaninger’s three levels of organisational fitness / systemic effectiveness model, different criteria and control variables apply to each organisational level (Operative, Strategic and Normative levels). Although these control mechanisms may steer the organisation in different directions, they need to be managed and balanced simultaneously.

In line with the multi perspective view the area of concern is first investigated with a wide angle lens and then through a telephoto lens. This approach provides a macro view of the concern as well as a detailed look at the impact on the system in focus.

4.2. “Wide-angle” lens

Worldwide governments are playing an increasing role in laying down the laws by which organisations have to live. This is even more evident in the South-African environment where business in the young democracy is finding a new path against a backdrop of the golden triangle created by government, labour and business. Although there are some deviations, business is guided by these laws. Therefore, when there are radical changes in these laws, business behavior has to radically change in order to ensure value creation within these laws.

41 Berger et al, 1989, Toward a New Industrial America; Scientific American, Volume 260, as sited by Schwaninger, M., 1993, A Concept of Organisational Fitness; Campus Verlag;
42 Schwaninger, M., 1993, A Concept of Organisational Fitness; Campus Verlag
When we weave in the normative stands, the evidence around us that ethical standards around the world are deteriorating becomes part of the area of concern. The effects of this deterioration of ethical values are evident all over the world in issues such as family violence, drug abuse and the increased divisiveness of social and political life. Additional evidence in the form of religious fanaticism and little government or business assistance for the needy, coupled with the conspicuous scandals uncovered in the upper levels of business organisations - as exemplified by the Enron and WorldCom scandals – are becoming more common phenomena than ever before. This decline of ethical standards is attributed to the reduced influence of such long-standing teachers of values as religion, schools, and the family. However, when we look back at history to find the signals and guidance for good normative management direction, we get mixed signals of good and bad from almost every field. We’ve used technology to create nuclear power, which saved and destroyed lives; created communication systems that made the world a small village but destroyed local culture and we practised politics which on the one hand led to the breakdown of Apartheid in one area of the world, but on the other led to the creation of fanatical terrorist groups in other areas of the world.

The threat of terrorism is imposing global changes in the political, social and legal environment which is continually changing the customer value concept. On the one hand these changes impose a stricter regulatory environment which could impede on production management efficiency whilst on the other hand creating special customer needs for additional value adding through quality assurance. Examples of this type of customer value addition can be seen through the provision of secure on-line shopping solutions in the information service industry and the provision of “societal acceptable and quality assured” diamond trade through the Kimberley process of certification in the diamond industry.

The area of concern can be narrowed to the interaction between the key variables that drive viability and sustainability in the business and those external environmental drivers that impact on the business model. The increased ease of use, speed and effectiveness of modern global information and distribution systems continuously shortens the business cycle turnaround time. Within hours of a disapproved action by
an organisation, society’s reaction can be felt in every market where the organisation conducts business. In this symbiotic relationship it is therefore important that the organisational organism has a very well developed sense of its impact on the environment as well as an ability to align its actions accordingly.

The concern is therefore focused around the interplay of relationships between business and the key stakeholders that determine the viability and sustainability of the business. Past myopic focus on shareholder value, neglecting the political demands has caused strains in these relationships that affect both the current efficiency and long term sustainability and viability of business.

Despite the lack of constant clear unambiguous steer from the past or present, we have to stand back and take a stance on what is right and act on this. The mere notion that it is difficult to draw the line does not imply that we should not draw the line between right and wrong. Normative management is therefore enacting the moral obligation to play an active part in shaping a better future thereby reducing the level of apathy and indifference.

4.3. “Telephoto” lens

On focussing this concern on the Namaqualand Mines’ system for the creation and management of viability, value and sustainability, the impact of the external environmental and societal changes is highlighted. The diamond market business plan is build on differentiation driving the distinctive competency mix. Strong customer demands for a product with an unblemished reputation place an ever increasing demand on the delivery from the production system. Diamonds compete in the luxury goods market for the free disposable income of customers. This market is highly sensitive to the customer’s perception of value. Any change in the customer’s perception of value can cause a short sharp knock in the diamond market. An analogy can be drawn between the once booming fur trade and the diamond market. Both diamonds and fur compete in the highly competitive and perception sensitive luxury goods market. Not unlike diamonds today, fur was once cat walked and eloquently displayed as a trend-setting symbol of success to be admired and desired by the rest. Nevertheless, over a very short period, the entire market perception changed and fur became the unwanted symbol of death - associated with a dirty industry banished due to its inability to self-regulate. There is a very strong analogy with the diamond
market of today. The roll of blood diamonds in the maintenance of conflicts on the African continent has been well publicized. Thanks to the involvement of international pressure groups and the media, the actions of the warlords were uncovered and the level of ethical sensitivity of society was increased concerning the unethical behaviour closely linked to the diamond supply chain. Unlike the participants in the fur traders, De Beers accepted their social responsibility and stewardship position in the diamond market and was swift in reaction to initiate the Kimberley process to curb the supply of diamonds from these sources. Political leaders also stepped in and in America (>50% of De Beer’s market) tough policy reform followed to curb the trade in Blood Diamonds. Had the Kimberley process not been initiated or had it been unsuccessful, the diamond market could have followed the fur trade. Although a catastrophic collapse of the diamond market was averted, this type of policy reform could have been proactively initiated earlier through action steps derived from a detailed normative model. However, this is just a localized intervention which needs continuous monitoring and intervention or a long-term solution.

As customers become more enlightened on environmental and social issues, the level of demands for sustainable development on environmental and social front increases. Adherence to quality assurance programmes like ISO 14001 becomes an integral part of the total product/service delivery of a mining company. As social societal conscious develop these demands and customer value attributes will migrate and develop. This has already led to policy reform in the form of the new Minerals and Petroleum Resource development act\textsuperscript{43} which will impact on the environmental, social and economic demands on the organisation. A critical component of value creation is therefore business’ ability to deal with this change. Not only does change erode the distinctive competencies of the business, but it also converts the broad social need into a moving target.

Based on Hoebeke’s domains of work, different work system focus areas, dilemmas feedback and control information types and nature of change drive the different domains of work. Although there is a lot of improvement potential still in the value added domain, there is a growing concern that there is an imbalance in focus on the

\textsuperscript{43} Act No. 28 of 2002
value added domain to the decrement of the innovation and value systems domains. This imbalance is aggravated by efficiency improvements which neglect to focus on the medium to long-term future requirements of the business. Reductions in human resources inevitably lead to the short-term survival activities being attended to the decrement of longer-term goals. Although the latter may not be an intentional management decision, manpower availability forces the behaviour.

In the current business model, unfavourable changes in the Rand: US$ exchange rate, increased costs due to increased legislative requirements and the inability to secure new mineable resources are leading to a rapidly shrinking mineable reserve and a resultant reduction in profitability. The combination of the factors listed above, combined with the depletion of a non-renewable mineral resource are also threatening the life of mine. To add insult to injury, major changes in the administrative and financial requirements around mine closure will place a further burden on investor returns.

Namaqualand Mines is confronted with a problem situation containing a multitude of interconnected variables which constantly change due to the perceived unpredictable interactions between the variables. The resulting anxiety and confusion caused by the sense of powerlessness to make any meaningful intervention can lead to erratic management behaviour. Our area of concern is therefore best described from the view of John Harvey-Jones when he stated that management theories change over time and have to be reviewed, especially in times of rapid change in environmental conditions.

4.4. Actionable knowledge and Mitroff’s error identification

Chris Argyris\(^4\) highlights the difference between “theories of description and explanation and theories of description and explanation in the service of creation”. When creating actionable knowledge, the aim of management research is to enhance the manager’s ability to take action in a real life situation. In his view actionable knowledge is only created if the generated theory describes what is going to happen and how to create the conditions and actions.

Mitroff highlighted five categories of errors, which he terms errors of the third kind, which could potentially cause problems in the link between the concern and question formulation which in turn could result in solving the wrong question precisely. These error conditions were prevented by addressing the five respective categories as highlighted by Mitroff.

1. Picking the correct stakeholders: The perspectives of the most pertinent stakeholders were taken into account. Addressing the perspectives as highlighted in the section above should address all relevant angles.

2. Picking a broad enough set of perspectives on the problem: The perspectives selected above should cover the political, economic, social, technical, ethical and legislative angles on the problem and represent the interested and affected parties that could make the system stop.

3. The correct phrasing of the problem: The articulation of the problem was considered from various angles and the most appropriate selected.

4. Expansion of the boundaries: The scope of the problem lies within the Namaqualand Mines recursion level as defined above. However, it could have relevance in other mining operations in South Africa experiencing similar ambiguous environmental signal.

5. Failing to think systemically: A systems thinking approach is taken in addressing the problem. Emphasis is placed on the inter-relatedness of the variables.

4.5. Summary and conclusion

I am writing about the viability and sustainability of Namaqualand Mines because I am trying to demonstrate to the reader that the inability to manage the system that creates viability and sustainability at Namaqualand Mines may cause the extinction of the mine, causing job losses, local industry impacts, tax losses, diamond supply losses and shareholder profit opportunity losses to name a few. We therefore need a theory on how viability and sustainability is created in this rapidly changing environmental condition. This theory needs to incorporate the pluralistic perspectives on viability and sustainability. In the next chapter the concern area will be further narrowed down and the problem statement distilled to a question in need of an answer.
5. The Practical Problem - Question

This chapter distils the problem statement to the question in need of an answer:
“How do we, as practical managers, contribute towards the creation of viable and sustainable organisations?”

5.1. Introduction

The creation of a viable and sustainable business requires a detailed understanding of the business in its operating environment. To address the concern surfaced in the previous chapter, we need to know which variables determine the viability and sustainability of Namaqualand Mines, and how they interact with each other and the environment. From Argyris, we have also learnt that we need to build an understanding of how to create conditions to improve the current viability and sustainability in order to manage the situation.

5.2. Distilling the Big Question

Where are the changing value systems and needs in the operating environment creating weaknesses in the current system for the management of long-term viability and how do we fix them? If we can answer this question we will be well on our way to address the viability and sustainability issue through the creation of a series of small wins which address these weaknesses.

The multi-faceted characteristics of viability, as discussed in the situation analysis in chapter three, demands a systemic approach to viability management as small changes to any one variable will influence the behaviour of the remaining variables in the system. In addition the temporal difference in reaction of the system to any changes has to be kept in mind. The goal is therefore to attain a long-term state that moves to stability (note that this does not imply a point of stability of stagnation, just a systemic behaviour towards a desired state).

The question could be articulated as: “How can Namaqualand Mines improve and manage its long-term viability given the changing value systems and needs of its operating environment?”
In line with “Mitroff’s phrasing” requirement, “Argyris’ action ability” requirement and the temporal difference in systemic behaviour brought about by management intervention, the question to be addressed is changed to:

“How do we, as practical managers, contribute towards the creation of viable and sustainable organisations?”

This question enfolds the concept of multi perspective viability sustained over more that one cycle of the behaviour over time graphs of the business system. It implies that for any given point in time the system may not be fully optimized from a pure functionalistic viewpoint. The focus is further on action ability and the need to impact on an individual level towards the creation of a better system.

5.3. Summary and conclusion

One of the greatest pitfalls in dealing with a management problem is being precisely inaccurate. As discussed in Chapter four, the work of Mitroff provided some guidance in steering around the five categories of traps. This chapter articulated the problem area into a management question. In the next chapter a potential answer will be provided to this question.
6. Answer – It all starts at the heart

This chapter offers an answer to the management question. It asserts that there is a golden triangle between the level of normative management, the level of stakeholder involvement and the level of strategy application efficiency that drives the long-term viability of the business. It proposes that leadership’s ability to weave the changing normative demands in the business environment into the business strategy is the highest leverage point for management intervention. It concludes by staking the improvement of this management ability as an area for further research.

6.1. Introduction
Viability, and ultimately sustainability, of an organisation is created by a complex system of interacting variables. System behavioural characteristics are just as much a function of the interaction between the variables in the system as they are a function of the individual variables.

6.2. The theory on the creation and management of long-term organisational viability and sustainability
The business model for the creation and management of long-term organisational viability and sustainability is built on a foundation consisting of:

- The level of normative management
- The level of stakeholder involvement
- The level of strategy application efficiency

The interaction between these three variables forms the golden triangle that supports and drives the creation and management of long-term organisational viability and sustainability. It is through the interaction with these variables that the practising manager can attain the highest leverage to influence long-term viability and sustainability. It all starts at the heart! The business model is anchored in the ethical behavioural orientation of each and every individual manager who is contributing to the colour and detail of the tapestry. These individual managers, interact with the system on a local level and are again involved in complex and sometimes chaotic
networks. Each of these managers is driven by the benefits derived from the relationships and interactions with the system.

After identification of the golden triangle that supports and drives the creation and management of long-term organisational viability and sustainability, the next step is to establish the intervention level that will create the highest leverage for the practical manager.

The Systems Failure Methodology has highlighted that maximum management leverage could be obtained through intervention at:

- The leadership’s ability to conceptualise the demands and changes in the external and internal environments and then to transform it into action.
- The ability of the leadership to create an entrepreneurial environment where the human capital can execute the strategy.

6.3. The Research Question

Identified weaknesses in the current system for the management and creation of viability and sustainability drive the action research learning question towards addressing the effective incorporation of stakeholder value propositions in the tapestry of the business.

Indications exist of weaknesses at various process levels and activities in the Value System, Innovation and Value Add domains which could be linked to the above. Mixed with a lack of the appropriate leadership competencies it could form a lethal potion administered to the organisational system.

6.4. Sneak pre-view of the Research Answer

The Research question and answer is dealt with in detail in Part B (Chapter 8 – 14). However, as the answer to the Research Question is an integral building block in addressing the Practical Problem, a short summary of the Research Answer is provided.
Identified weaknesses in the current system for the creation of viability and sustainability is addressed through action research learning around the effective incorporation of stakeholder value propositions in the tapestry of the business.

The viability and ultimately sustainability of an organisation is directly proportional to the quality of the communication network and the ability to make behavioural adjustment based on the translated environmental feedback information. Important aspects are the quality of the relationships (measured by the level of respect, trust and forgiveness present), listening and two way communication in the relationship, level to which a common understanding was created, willingness and commitment to adapt to change, quality of knowledge sharing and mutual benefit creation.

The increasing number of stakeholder perspectives can only be effectively weaved into the tapestry of the business model if a couple of main anchor points are used. These anchor points were found to be:

- Communication
- Power relationship management
- Leadership traits and skills
- Appreciative enquiry and hermeneutic listening
- Internal anchors
- Interaction

Organisational learning (which includes quality information formulation) forms a key link in the continuation of the relationship. To this extent information systems and knowledge management plays a crucial role.

### 6.5. Summary and Conclusion

*From a structural perspective a tapestry behaves like a fishing-net, when pulled. When it is grabbed and pulled by one corner only, the shape and picture distorts. In order to prevent a distorted picture, equalizing forces must be applied on all other main strands. Stakeholder and society anchoring provides these equalising forces to the business. By creating a more society integrated organisation the organisation becomes the best it can be.*
One of the most powerful personal insights during this research process was that a spider’s web is most probably the best example of a tapestry weaved by nature. Not only is everyone a unique artistic creation, but each one has got its own unique catch. However, they all have one thing in common: A weaver whose livelihood depends on the maintenance of each and every anchor points which has to stay well anchored against the wind and elements.
7. Rationale

This chapter has a dual purpose. Firstly, it gives a detailed description of how the answer provided in chapter six, was derived. Secondly, it identifies the research problem which forms the starting point of Part B of this dissertation. It takes the reader through a four stage process which involves the development of a management theory for the creation of viability and sustainability at Namaqualand Mines. In the final stage, stage four, the research problem is identified.

7.1. Introduction

Stage one involved the development of my conceptual model for the creation of viability and sustainability at Namaqualand Mines from the key perspective of the business: the normative perspective, the shareholder perspective, the customer perspective, the stakeholder perspective and the entrepreneurial perspective.

In stage two of the work, four theories or conceptual models were constructed to use as lenses.

Stage three involved the interrogation of the conceptual model through the Systems Failure Methodology to identify the areas of strength and weakness of the Namaqualand Mines’ model for the creation of viability and sustainability.

In stage four a research problem is identified based on the strengths and weaknesses surfaced in stage three. The identified research problem forms the starting point of Part B of this dissertation.

7.2. Stage 1: Model for the creation of viability and sustainability at Namaqualand Mines

The model was constructed based on the ARL projects, Position Papers and Critical Incident Logs completed during the EMBA programme. These concepts were synthesised in a Causal Loop Diagram (CLD) for the creation of viability and sustainability at Namaqualand Mines. For ease of explanation, the conceptual model is constructed in five phases. The first phase contains the basic variables that keep
the organisation alive. In each additional detail is added to enhance the richness of the model.

**Phase 1 - It all starts at the heart…..**

The level of normative management present in the organisation is central to the model. It serves as a lens for the interpretation of societal change on the business environment and to determine the level of self regulation applied in the organisation. This normative steer ensures that the correct business behaviour is driven in order to increase overall operational process efficiency. The level of success in delivering the operational goals in turn influences the level of customer satisfaction. Customer satisfaction in turn is the key variable that turns operational activities into cash-flow and profits which are the drivers for viability. Higher levels of viability increase the sustainability of the business provided that the normative management regulatory principles are in place as described above. This re-enforcing loop is closed and prevented from going into a tailspin when profits are ploughed back in the next iteration of the business cycle.

![Figure 10: NM Viability and Sustainability system – Phase 1](image)

A market survey of the Financial Mail indicated that investors are willing to pay a premium of up to 33% for well-governed emerging market organisations, compared to
similar financial performing, but less honest and transparent organisations. Although there are substantial rewards for high normative standards, there are also severe penalties for not complying with the required normative management standards.

In phase 2 the human element of the model is enriched ....

As the company’s level of normative management and level of sustainability increases its chances to attract and retain skilled employees will increase. An increase in the level of diversity in the skilled employee pool will result in an increase in the level of diversity of the mind, culture and behaviour. This gives rise to an increase in the level of creativity and innovation to deal with new situations. Human value addition through an increase in the level of diversity not only leads to better insight into the market place, creativity, innovation in problem solving and enhanced systems but it also creates a positive work environment that attracts new resources and skills which in turn leads to greater economic contribution.

Figure 11: NM Viability and Sustainability system – Phase 2

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45 Financial Mail, 22 March 2002, p. 22
In phase 3 the role of strategy is highlighted ....

Business models drive internal business processes that inform the processes that
convert resources into business rewards. The level of understanding of these models
and skills applied in this conversion process plays an important part in the
management process. The availability of resources drives these internal business
processes while normative management and organisational self-regulation shaped
them. The mobilization of people in pursuit of desired aims and objects can be
measured by the level of definition of values and clarity of organisational direction
(Purpose, Vision, Mission & Values), the level of appropriateness of systems of
shared meaning, the level of value adding (distinctive competency and broad social
need overlap) and the level of management success.

Figure 12: NM Viability and Sustainability system – Phase 3
Phase 4 focuses on the importance of stakeholders…….

The level of stakeholder involvement is driven by the level of normative management and human resource management in the organisation. The level of stakeholder involvement in turn influences strategy application efficiency through the incorporation of additional models and worldviews.

Figure 13: NM Viability and Sustainability system – Phase 4
Phase 5 highlights the systems interface with societal change........

Changes in the external environment influences societal behaviour and value perceptions. Societal behavioural changes in turn cause an impact on company performance by imposing extra demands on business and preventing certain actions which impact on viability, sustainability and the company’s abilities to attract and retain skills and to apply its strategy efficiently.

The level of resistance from society is radically reduced when an organisation assumes the responsibility to apply self regulation to internal mechanisms of organisational behaviour.

Figure 14: NM Viability and Sustainability system – Phase 5
7.3. Stage 2: Theories and conceptual model construction

During group work in the last module of the EMBA programme, three different conceptual models and theories were developed based on the course work presented. These theories were used to investigate the constructed group model for the creation of viability and sustainability of a business. These lenses were used as a base for the development of four lenses for the evaluation of the developed model. The final lenses were kept as close as possible to the original group developed lenses. This was done to ensure that a wide range of perspectives were swept in, covering different industries and background perspectives.

7.3.1. Mike Jackson lens

The Jackson lens focuses on holism. With this concept the boundaries are always stretched and the elements of a system are all related and inter-related. In order to understand a system one therefore always has to go wider. It also implies that any change to a system will impact on the entire system – impacting on the Meta-system. As every system has an output which feeds into the Meta-system, just being in a system even as an observer changes the system. The latter concept can be used in a constructive way to impact through Small Wins or intervention, creating a new system with a new output. The second concept that features prominently in the Jackson lens is the focus on creativity. Multiple perspectives are swept in to enrich the framing of a situation and to increase diversity. The third feature of the lens is the cybernetic focus. Although there is a slight emphasis difference, both the Jackson and Hoebeke lens has a strong focus on feedback and control systems. The focus on communication is therefore a strong aspect of this lens.

Three different metaphors are used to depict a viable and sustainable organisation which can then be used as a lens. These metaphors each contain certain key characteristics perceived to be of importance to viability.

The first metaphor is that of an octopus. An entrepreneurial octopus is not only a good swimmer at depth as well as in the shallows but is also well suited to anchor to
multiple anchor points and flexible enough to crawl through the smallest crevasses, utilising any opportunity.

The second metaphor is that of an eco system which is interrelated, inter-dependant, adaptable and regenerative with a survival drive which is intuitive. Complex adaptive eco systems have the ability to adjust to conditions, given enough response time.

The third metaphor is that of a child which is non judgemental, unbiased, somewhat gullible but has a diverse interest and always absorbs its environment. A child learns continuously and stretches boundaries through its curiosity.

7.3.2. Luc Hoebeke lens
The Hoebeke lens focuses on the nature of work conducted by the work system and the span of relationships required to facilitate these. It also focuses on the enquiry about the control (command) and audit information (monitoring & feedback) required by each process level in the various work domains as well as process level specific developmental activities. Interventions are made through domain specific discussions. These interventions focus on clear targets & means in the Added Value domain, creativity & environmental awareness in the Innovation domain, Strategic talk in the Value domain and guiding philosophies in the Spiritual domain.

The lens identifies four domains of work, each of which has a different objective and change management focus. In the first domain, the Value Added domain the focus is on throughput time, volume, quality and price. It is the primary economic domain. The transformations and core dilemmas revolve around minimising waste (efficiency), meeting client’s needs and developing alternative products. Identify the participant, boundaries, elements & relationships. The second domain, the Innovation domain, focuses on new products services and processes for added value in the future. The transformations and core dilemmas revolve around alternative products, risks of reformulating the needs of clients, reaction of stakeholders and timely detection of new stakeholders and formulating the rules of the game for the next decade therefore creating new networks of relations. The third domain, the Value-system domain, focuses on debates around stimulating activities and appreciative systems to create new language, values and culture for members of referent groups. Tension due to widespread world views have to be managed and anchoring in existing value system
is important. Appreciation, appreciative systems and appreciative enquiry belong to this domain but goals strategies and decisions cannot belong to this domain. The fourth domain, the spiritual domain, focuses on the creation of universally recognizable expressions of human life and death through works of art or behaviour that breaks through temporality boundaries.

“Hoebeke” Lens

![Diagram](image)

Figure 15: Luc Hoebeke Lens

7.3.3. Ralph Stacey lens

The Stacey lens focuses on the aspects of complexity which demands emotional intelligence based on situational leadership and interaction. The awareness and understanding of transformative causality, where the individual constructs of the world we perceive can transform the environment and systems we operate, forms a key aspect of the lens. This awareness and understanding of transformative causality can be used to create a collective identity through localised interaction with other people. Key to this lens is the understanding that there is no “Autonomous Individual”. Self consciousness is good but we need to be involved and detached at the same time.

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46 EMBA5 Group 3, 2004, Model for organisational viability, UCT, Cape Town
The Stacey lens polarises the view that organisations are processes, not things and therefore they are continuously reproduced. It also focuses on Power which is a structural characteristic of relationships and has to incorporate turn taking as well as turn making. This lens highlights that values influence norms and choices. Interactions are done as localised interactions, congruent with the Small Wins concept. Another area of overlap is the concept of continuous communication during interaction which overlaps with feedback and control systems.

“Stacey” Lens

Figure 16: Ralph Stacey Lens

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47 EMBA5 Group 3, 2004, Model for organisational viability, UCT, Cape Town
7.3.4. Dave Bond & Ailsa Stewart-Smith lens

The Bond & Stewart-Smith lens focuses on the importance of strategic conversations and the building of common understanding through hermeneutic listening and understanding testing. The Key focus areas swept in through Palmer and Hardy\(^{48}\) are people, power, culture, leadership, strategy, organisational learning, organisational change and structure.

The CLD model developed during Group 6 modular work was used as this model swept in the views of the group, as well as adjustments which were made after class inputs. Therefore, it captures the multiple divergent perspectives of the wider group as oppose to a singular perspective. The model is based on the principle that the level of stakeholder pressure drives certain behavioural aspects in leadership. Leadership’s abilities then drive culture change, ensure that the right things are done and enhance the commitment levels of employees. Corporate cultural aspects again drive the ability to absorb change which if done efficiently with motivated people increase the fitness of the organisation. Doing the right things right ensures viability which in turn increases the triple bottom line. Performance on the triple bottom line of the company satisfies stakeholder demands but also raise additional expectorations for the next business cycle.

![Diagram of Dave Bond & Ailsa Stewart-Smith Lens]

Figure 17: Dave Bond & Ailsa Stewart-Smith Lens \(^{49}\)


\(^{49}\) EMBA5 Group 3, 2004, Model for organisational viability, UCT, Cape Town
7.4. **Stage 3: Systems Failure Methodology (SFM)**

In stage three of the work the Systems Failure Methodology (SFM) is applied to the Namaqualand Mines system for the creation of viability and sustainability. The four lenses developed in stage one are used to evaluate the conceptual model as detailed in stage two above. On evaluation of the NM system for the creation and management of viability and sustainability, certain discrepancies are found.

7.4.1. **Interrogation of the NM viability model through the Jackson Lens**

**Octopus metaphor**

De Beers can add value to external stakeholders by changing its mainly ethnocentric strategic orientation to a regiocentric\(^{50}\) orientation. It will require a higher focus on regional influences on strategy which tie in with the principle of glocalisation – thinking globally, but acting locally. An increased capability to deal with risk and ambiguity - through the increase in level of entrepreneurial management - will further add stakeholder value. Some business structure efficiency might have to be sacrificed in order to ensure resilience and the ability to deal with ambiguity but rapid organisational learning, based on high levels of knowledge management, can reduce the impact.

**Eco system metaphor**

The NM model was found lacking in this area due to the lack of reliable information feed and a lack of a translator function to adjust to environmental conditions. This is compounded with the lack of modelling and predictive systems that can support scenario planning. This deficiency is mainly associated with the inability of the business strategy to absorb societal changes and to convert it into an efficient organisational structure to mobilise human behaviour. Due to this the NM system is not able to regenerate despite its survival drive.

**Child metaphor**

Namaqualand Mines can improve its viability through better absorption of the business environmental signals and stretching the boundaries through curiosity.

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(expanding of perspectives). The ability to absorb acquired knowledge and to integrate changes into the production and business processes are therefore crucial. This level of organisational learning will increase customer, shareholder and stakeholder value.

7.4.2. Interrogation of the NM viability model through the Hoebeke Lens

The Hoebeke lens indicate the same focus areas in the added value domain (efficiency & waste reduction) as the current NM model but highlights weaknesses around the Strategy efficiency, Human value addition and stakeholder involvement variables and interaction of the NM model. These activities belonging to the innovation domain are currently a weakness. Problems exist around the understanding of the dynamics of the required new networks of relationships and the rules of the game for the next decade. We need a better handle on which people we have to include as work system participants, build trust relationships and construct an environment for communication. According to the Hoebeke lens one will only be able to effectively influence the work system from within through these relationships.

The second weakness is around the value-system domain where the focus is on debates around stimulating activities and appreciative systems to create new language, values and culture for members of the referent groups. Although some of these debates exist, not enough effort is made to manage the widespread world views and to anchor it in existing value systems.

It could be argued that the brand development drive around the De Beers, “A diamond is forever” concept belongs to the spiritual domain where the focus is on the creation of universally recognizable expressions of human life and death through works of art or behaviour that breaks through temporality boundaries. This view is however limiting the debates in the innovation domain to diamond mining activities to the exclusion of other opportunities which could be an area of weakness due to the lost opportunities it doesn’t explore in totally new areas. No known debates or parliaments exist to explore new meaning around wider concepts around our purpose. What if the De Beers purpose is: “to help people express their emotions – with diamonds being only one way”? 
7.4.3. Interrogation of the NM viability model through the Stacey Lens

The Stacey model also points to weaknesses around the same area as the innovation domain of the Hoebeke model. It adds focus to shortfalls around the recognition of values in strategy formulation as well as the recognition of power shifts and maximisation of its effects in leadership. This lens also highlights the importance of formally recognizing the influence of transformative localised interaction of societal change at all levels of the business model.

This lens also indicates weaknesses in the current model around the strategy efficiency, Human value addition and operational management efficiency interaction. This can be traced back to a lack of communication when implementing new technology. More care should be taken not to send contradictory signals into the business. There is a delicate balance between human focus and technology focus. The implementation of IT systems leads to a change in business policy and strategy that weakens the human-human interaction valued by internal clients. The level of human focus in the business strategy influences the success of technology absorption and therefore it is important to control the level of human focus in the business strategy. It is further important that the information systems supporting the business should be fully aligned with the business objectives. An example of this is the integration of business plans and IT plans where user involvement and management involvement is important in linking system objectives to business objectives. In this causal relationship the level of overlap of systems objectives to business objectives determines the success of the business strategy definition.

7.4.4. Interrogation of the NM viability model through the Bond & Stewart-Smith Lens

This lens polarizes weaknesses around three key variables which are not adequately covered in the current NM model for viability and sustainability. These are:

- Firstly, leadership’s inability to fully conceptualize the demands and changes in the external and internal environment and then transform it into strategy.
- To a lesser extent, the inability of leadership to create an entrepreneurial environment where the human capital can execute the strategy.
Mainly due to the deficiencies above, the inability to efficiently mobilize the organisation to do the right things.

The first deficiency could either point to a leadership competency issue or a lack of information quality to enable this translator function.

Individuals, who are shaped by the level of individual pre disposition toward certain behaviour and the level of mindfulness populates the Human Resource pool of the organisation. Their behaviour is constantly shaped by a management team that has:

- a certain level of credibility and capacity to use or utilize new models,
- a level of ability to lead the way and level of ability to manage cultural diversity,
- a level of use of metaskills and
- a level of leadership toward organisational learning.

An increase in the level of employee benefit programs, training classes, coaching, mentoring and personal counseling will improve motivation leading to an increase in the level of employee commitment and level of core of stability in organisation.

Information quality measurement is an important component of information system success. In order to make empowered decisions, reliable and efficient information systems have to provide accurate and timeous information. Current information systems are dated or in cases still manually acquired and the confidence in some information is low. The identified failure is around the translation of internal and external information signals into business process changes. This firstly relates to the ability to adapt to external influences. The flexibility of mining operations to adapt to external influences is reducing as the mine reaches the end of its economic life. There is no urgent focus on translating the impact of external influences into a change in corporate strategy that meets all stakeholders’ needs. Secondly the quality and diversity of feedback information do not meet the requirements to adjust in time. In the absence of supporting management information, leadership have to take decisions on perceptions which could lead to sub-optimal or even incorrect decisions.
The performance monitoring sub-system is also deficient. Although there is a high level Balanced Score Card in place, it suffers from the lack of reliable information which could be drilled down to identify and correct underlying causes. Without this information the predictive capability of the decision and control sub-system is also seriously impaired. Value chain and lean thinking principals are not incorporated in the current structure. More work is required around the viability of information systems upgrades. Previous efforts focussed around the viability of implementation of expensive “one shoe fits all” ERP systems, but the focus should be on the data generating systems that feed the business decisions e.g. a vehicle monitoring system in operational control and all information that feeds into the resource model for mineral resource management. Small Wins are possible by creating intelligent work spaces around functional activities with integration of information towards a collective model instead of small silos.

The second and third deficiency points to weaknesses around Hoebeke’s process level 3 activities on the interface between the innovation and value added domains as discussed above.

7.5. Stage 4: Towards a Research Problem

There is a complex interrelationship between the external environmental and societal factors impacting on the organisation and the creation and management of viability and sustainability. The latter will be determined by the depth of the organisational normative roots and the speed at which effective communication can facilitate the application of resources to achieve the operational target and strategic objectives that meet the identified needs. Clustering the identified weaknesses in an Affinity Diagram, we find common themes emerging around the changing phenomenological properties of leadership styles, communication and organisational structure, brought about by the ever changing and increasing stakeholder demands.

The investigation into the practical problem has uncovered a deeper fundamental problem area around the identification and incorporation of divergent stakeholder perspectives and value propositions into the business model. This gives rise to the Research Question:
How can we effectively weave an increasing number of stakeholder perspectives and value propositions into the business model?

7.6. Summary and Conclusion

A lot of management fads have come and gone, some of which are too theoretical to be helpful in the everyday management of the business. The deeper underlying question that is asked here is: “Can a systems approach enhance a leader’s ability to cope with the complex “messes” in the organisational life?”

The underlying question is answered through the detailed description of the systems thinking process followed in deriving the answer provided in chapter six. The rationale described should clearly show the reader how the answer was obtained.

Part B of the dissertation, chapter 8 onwards, deals with the detail around the Research Question, covering the method of problem investigation and a proposed solution to the Research Question. Part B of the dissertation builds on the following intended outcome and action plan:

1) What Outcomes do I wish to achieve? (Intend)
I want to show how the incorporation of multiple perspectives from the various stakeholders of the business can influence structural design and business processes in order to increase the strategy application efficiency of the business. (Diversity of perspectives creates organisational strength).

2) What Actions do I think will achieve these Outcomes? (Intend)
I have to demonstrate the application of system ideas as a source of support and practical guidance for decision making, organisational design and problem management. This must be done through the demonstration of multiple perspectives on the problem.
Part B: Dealing with the Research Question

*Part A of the dissertation describes the formulation of a management theory for the creation of viability and sustainability in the organisation. It describes the situation and contextual elements of the concern as well as the emergence of the Research Question for Part B of this thesis.*

*Part B builds onto the findings in Part A and deals with the definition of the Research Problem and finding a Research Answer which could create Actionable Knowledge.*

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*Figure 18: Two part Research Process (adapted from Ryan)*

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*Ryan, T., 2004, Formulating the Practical Problem: EMBA5 handout, Cape Town*
Part A concluded with the finding that there is a complex interrelationship between the external environmental and societal factors impacting on the organisation and the creation and management of viability and sustainability. The latter will be determined by the depth of the organisational normative roots and the speed at which effective communication can facilitate the application of resources to achieve the operational target and strategic objectives that meet the identified needs.

The investigation into the practical problem has uncovered a deeper fundamental problem area around the identification and incorporation of divergent stakeholder perspectives and value propositions into the business model. This gave rise to the Research Question:

How can we effectively weave an increasing number of stakeholder perspectives and value propositions into the business model?
8. Methodology followed

As stated in section 2.7, this report follows a pragmatic approach which is anchored with multiple triangulations. The lenses developed in Part A of the dissertation were used to polarize data from a number of data sources.

8.1. Data collection

It must be noted that the data collection in itself is an intervention. Although an effort was made to filter information from standard organisational processes, as appose to artificial workshops with the specific purpose to capture data, the data collecting process triggered certain questions and processes which inadvertently influenced the outcome. (These interventions are therefore not of the designed intervention type.)

The mechanism at work is therefore closely related to the “ladder of inference”. In the process of data collection the mentioned filters are used to collect data which would build the understanding of the social impact of the business on its environment and vice versa. However, this is done during processes which are specifically focused on improving the efficiency of the organisational web. This focused data collection in turn leads to a better understanding of the variables at play which in turn influence specific data capturing, filtering peripheral data. Without adequate multiple perspective adjustment, this can easily lead to inadequate and inaccurate data collection. It also holds true with regard to vantage point and perspective selection i.e. source, literature and focus group selection. Particular focus was therefore given to sweep in as many loose ideas and views from active observers involved in the process, appreciating that they are polarized views.

A second point to note about the methodology is the close integration with an “appreciative enquiry” research methodology. From the research vantage point selected, the academic battery limits became blurry or even non existent. However, this is not seen as an obstacle to the validity of the methodology or the data collected. In line with the pragmatic approach, where the test of the proposition is in its practical use, the effect of an idea is of higher value than its source. Therefore, if through appreciative enquiry, interested and effective parties gain a better understanding of the variables at play and develop solutions or coping mechanisms to address current problems or concerns, it is the effect of these developed solutions that are of interest for this research. Due acknowledgement is therefore given to the impact of the
research’s close links to “appreciative enquiry”, but in the selected methodology, the focus will only be on the data collected from the final developed solution.

A third point of danger highlighted from the onset of data collection was the delicate balance between polarization / filtering of data and manipulation of data. The potential for manipulation of data exist through strong focus group interventions. This is closely linked to the power structures at work in a corporate organisation as well as dominant groups within the social environment the organisation operates in. An example of this can be seen in the dominant views the surrounding farming communities traditionally induced on the organisation, despite their small number in relation to the rest of the stakeholders.

Acknowledgement must further be given to the adaptive nature of the methodology followed. However, this is in line with the methodological approaches in the social sciences where living organisms are studied through a process of adaptive learning. It is closely linked to the view that data collection in itself is an intervention and that “appreciative enquiry” empower people with knowledge through a facilitative process which create the conditions empowering people to come up with their own solutions.

In summary, data collection involved the role of a participative observer in the process. As such, it was an adaptive process focusing on understanding human social behaviour in a changing and adaptive management environment. The accuracy and validity of data collected is therefore directly related to the sensitivity of observations about environmental condition changes.

8.2. Data sources used

Data for the research project was swept in from three main data groups over a period of two years. The first group of data originated from critical incidents as recorded in the Critical Incident Logs (CIL), Action Research Learning (ARL) reports and Position Papers compiled over the two year period of the EMBA programme. This data and generated information contains personal experiences and learning which, although triangulated, can still be seen as highly personal, subjective due to personal filters and to a degree inward focused to personal organisational experiences. The second group of data originates from the topical discussions in management and
society. Reputable business and industry magazines were scanned over the period to sweep in topical debates and prominent issues being address by society and the immediate external business environment which could impact on the business. These magazines include, but were not limited to the “Financial Mail”, “Mining Journal”, “Fortune Magazine”, ”The journal of the South African Institute of Mining and Metallurgy”, “Mining Mirror” and the “New Scientist”. These issues and concerns were compiled in the Portfolio of Work Done (PoWD) reports submitted. Relevant topical issues were categorized in Affinity Diagram groups in an effort to make sense of the main variables at play. The third group of data originated from multi disciplinary workshops (public participation workshop, environmental management plan workshops, social impact assessment and social and labour plan development workshops), unstructured personal discussions and interviews with various internal and external stakeholders and other participative observers in the system.

The CIL, ARL and position paper data provided data triangulation in the form of behaviour over time (telephoto lens), while the second data group provided the necessary multi perspectives at a higher level of recursion anchoring ideas in a wider context (wide-angle lens). The third data group serves as a reference point which despite its inward focus, is also anchored to the outside of the system, providing a more holistic perspective of the phenomenon, a form of within method triangulation.

As is the case with part A, the weaving of grounded theory, ethnographic and literature data provides further “between methods” triangulation.

8.3. Weaving the first strands – building an understanding of the Research Problem

Part B of the research report builds onto the findings in Part A. The theory developed in Part A highlighted the interaction between the level of normative management, the level of stakeholder involvement and the level of strategy application efficiency as the golden triangle which forms the foundation of business sustainability and viability.

Interrogation of the current business model through the SFM (section 7.4) indicated a couple of high leverage anchor points which require further investigation. Charter 9 engages the context of the Research Problem and identifies the key stakeholders.
Four different perspectives are used to investigate the research phenomena. Peter Checkland’s SSM is utilized to uncover some of the deeper rooted soft issues as discussed in chapter 10. In Chapter 11 use is made of Stafford Beer’s VSM to investigate the improvement of system viability from a functionalistic perspective. The VSM is seen as an important step in understanding the work system we are dealing with. Chapter 12 investigates the Research Problem from Hoebeke’s work system perspective while chapter 13 covers Stacey’s postmodernist viewpoint.

Unlike much of the natural sciences where natural phenomena are studied, business sciences study human made environments and products of purposeful action. Management theory is therefore about creating, designing and manipulating the natural world to achieve intended outcomes.

The final step in the research methodology, chapter 14, is to create actionable knowledge or context dependant theory. This actionable knowledge helps to answer the practical problem and the research loop (Part B) is closed.

The last chapter, chapter 15, covers an evaluation of the process followed. It addresses issues of relevance, utility, validity and ethics.

8.4. Summary and conclusion

This chapter introduced the reader to the data collection process used in the research. This process is described as an adaptive process, focusing on understanding human social behaviour in a changing and adaptive management environment. A brief description of the data sources and data types was given followed by an explanation of the methodology that will be used in the next chapters to investigate the research phenomena.
9. Research Problem definition

Namaqualand Mines forms part of De Beers Consolidated Mines. De Beers Consolidated Mines was formed in 1888 and was listed on the JSE in 1893, but went private after 113 years in June 2001. De Beers and its business partners constitute the largest diamond-mining group in the world and currently produce around 38% of world production by value. The group’s current strategy caters for partnerships with governments in the exploration and mining of diamonds. De Beer’s mining operation spans every category of diamond mining; open-pit, underground, alluvial, surfzone and deep-sea and all rough diamonds are sold through the DTC in London. In January 2005, De Beers Global Services was formed to focus on global exploration and group services. This organisational restructuring exercise left De Beers Consolidated Mines with the focus of exploring and mining of diamonds in South Africa.

Namaqualand Mines participate in the exploration and extraction phases of the De Beers Consolidated Mines diamond pipeline and a description of the Business Model can be found in section 3.2.

9.2. Concern – Painting a picture of the issues in the environment
Namaqualand Mines has through the past century seen many changes in the level of economic activity since Jack Carstens discovered the first diamonds along the Namaqualand coast at Oubeep in 1925. The surrounding environment has experienced the ebb and flow of the alluvial diamond mining operations. Mining operations was mothballed from 1931 to 1937 due to poor world economic conditions and the resulting crash in diamond market, and from 1938 to 1943 due to World War II. Another temporary suspension of operations followed at Koingnaas, Dreyerspan and Langhoogte in 1971; at the AK3 plant from 1982 to 1986; at Tweepad plant from 1992 to 1996 and at the Langhoogte plant from 2002. These suspensions were mainly due to slumps in the diamond market and resulting drops in revenue which has radical impacts on the size of the economically viable deposit. Due to the marginality of the mine its existence, measured in years of life-of-mine left, is highly sensitive to revenue changes and the availability of identified and quantified reserves. Although
the reduction of production cost is a variable that has a strong impact on the profitability of mineral resources, therefore impacting on life-of-mine, the former two variables need to be addressed if the life-of-mine needs are to be sustained or grown.

But why worry about sustainability of life-of-mine if mining is a business idea in an inherently unsustainable non-renewable resource industry? The issue of sustainable profitable growth at Namaqualand Mines is a well debated one. On the one hand there are the proponents of the argument that due to the nature of the mining operation of a non-renewable resource, sustainability implies the growth of the Mineral resource through the maximization of profit with efficiency improvements and cost reduction efforts in order to enable the mining of previously uneconomic blocks. This invariably implies the focus on core business activities and a focus on the reduction of expenditure of overhead costs like, exploration, bulk sampling and knowledge acquisition. On the other hand there are the proponents of the argument that sustainability implies the growth of the Mineral resource through the incremental addition of a combination of Bulk Sampled Reserves and Primary Exploration Programme delivered targets. In order to be growing its potential Mineral resource base by exploring the area in a systematic way, the Mine has to be the explorer of choice outside the current Mining Right area and therefore has to accept its social responsibility as the strongest player in the local economy. This approach invariably implies an increase in the expenditure on overhead cost, with the resulting impact on profitability and current Mineral resource.

The social issues in the surrounding environment where the mine conducts business are diverse and numerous. Unemployment is high in the surrounding villages and destitute families are desperate to obtain a job while commercial farmers are struggling to keep their heads above water in this arid environment. There is very little if any diversification in the economy and the local economic performance is therefore directly related to the woes of Namaqualand Mines. Despite various past attempts to enrich the diversity of economic activity in the surrounding environment, very little progress has been achieved to improve the level of diversity of economic activity in the surrounding community.
It appears that a lot of people have tried to identify “the solution” to solving the profitability and growth problems. These solutions varied in methodology, area of focus and resource application. However, the problem has many facets and is probably more complicated than could be solved with any one grand scheme.

9.3. The stakeholders

Stakeholders are dependant on the organisation for the realisation of their goals and objectives. They are usually in charge of key resources and have both the power and willingness to influence the organisations performance.

Changes in political pressure, global economic pressure, social and demographic changes, technology changes, environmental changes as well as legislative or regulative changes can change the composition of the stakeholder group.

Namaqualand Mines’ key stakeholders are:

National Authorities
- Department of Minerals and Energy
- Department of Water Affairs and Forestry
- Department of Agriculture and Land Reform
- Department of Land Affairs
- Department of Economic Affairs and Tourism (DEAT) - Marine & Coastal Management (MCM)
- Department of Social Development
- South African Heritage Resources Agency

Provincial Authorities (Northern Cape)
- Department of Health
- Department of Finance and Economic Development
- Various local municipalities
- Department of Housing and local Government
- Department of Tourism, Environment and Conservation

Interested and Affected parties
- Workers
- National Union of Mineworkers
• Farmers Associations
• Succulent Karoo Ecosystem Programme (SKEP)
• Fishing And Mariculture Development Association (FAMDA)
• Northern Cape Provincial Coastal Committee
• Various SMME’s
• Various suppliers
• Customers – diamond buying public
10. The Soft Systems Methodology (SSM)

In the previous chapter described the “pluralistic” environment of Namaqualand Mines. It highlighted the diversity of issues and concerns as well as the multiplicity of stakeholders involved in the value creation system. Jackson\(^{52}\) suggests that the interpretive systems approach is frequently used with success in a “pluralistic” environment where multiple perceptions of reality exist.

10.1. Theoretical background

From the perspective of Interpretive Systems thinkers, systems are creative constructs of people possessing a free will. People therefore need to be central in any process that attempts to change and improve the systems they have created. The aim of the interpretive systems methodology is therefore to build a better understanding of the system from multiple viewpoints in order to assist in the prediction and control of outcomes. For the purposes of this exercise Checkland’s SSM is used.

10.2. The SSM process

The SSM was used to investigate the various systems and system perspectives that make up the Namaqualand Mines system for the creation of viability and sustainability. The aim of this was to tease out a selection of different stakeholder perspectives that could provide a better insight on how these different stakeholders interact with the systems and how they individually perceive these systems. A number of key viewpoints and systems were identified from further investigation from those viewpoints.

A series of root definitions were constructed which describes the purpose and aim of each system from a specific perspective. This was followed by the construction of a theoretical model that contains the minimum essential activities to achieve the stated transformation in the environment. These root definitions and conceptual models can be found in Appendix IV.

\(^{52}\) Jackson, M. C., 2000, Systems Approaches to management, Kluwer, New York, pg211
10.3. Comparing the Conceptual Models to the Situation

In the next stage the theoretical models in the systems world are compared to the actual situation in real life. From this comparison it would seem that the importance to generate mineral resource data, which can be used as an input into the planning of a mine, is not present during the initial exploration phase. In this phase the exploration geologist focuses on proving mineralization and not on the requisite variety of data that is required to be assimilated into the collective knowledge base of the company.

It would also seem that the fear that threatens the survival and livelihood of the commercial farmers has not been taken into consideration nor fully comprehended. The comparison does however show that the system favours the holders of the Prospecting Rights as the government potentially stands to benefit from royalties and taxes. If an exploration area is successfully converted to a mine, the benefit will eventually reach the communities around the mine, but the positive impact will take time to trickle down.

Although our current technical analytical tools, which incorporate a linear program, can produce optimal production and financial plans, from a technical perspective, they lack variety. These tools provide a fairly accurate optimized solution for a set of predefined conditions. However, solutions produced by this process, fail to incorporate the views of the diversity of customers as they do not cater for the systemic relation these decisions have on the external business environment.

Closer to the operational side of the business changes in level of resistance from Non Governmental Organisations (NGO’s) and environmental lobby groups is also influencing the operational performance of the organisation. This has not only led to an increase in the level of customer awareness and demands for sustainable development (demands for ISO14001 accreditation), but has also led to policy reform in the form of South Africa’s new Minerals and Petroleum Resource Development Act\textsuperscript{53} which will impact on the environmental, social and economic demands from the organisation.

\textsuperscript{53} Act No. 28 of 2002
Diamonds compete in the luxury goods market for the free disposable income of customers. This market is highly sensitive to the customer’s perception of value. Any change in the customer’s perception of value can cause a short sharp knock in the diamond market. The roll of blood diamonds in the maintenance of conflicts on the African continent has been well publicized. De Beers accepted their social responsibility and stewardship position in the diamond market and was swift in reaction to initiate the Kimberley process to curb the supply of diamonds from these “dirty” sources. However, the supply of “clean” diamonds through IDT to crime syndicates (RD11) is a serious concern. This link holds phenomenal potential to explode, especially post 11 September 2001. The last two years has seen the financial regulation net closing in on terrorist groups and the transfer and laundering of money is becoming more difficult by the day. It is a serious concern that diamonds, with its high mobility due to its high value to weight ratio, could become the currency of choice for these groups. The impact of this could be fatal for the image of diamonds and therefore the future of De Beers.

10.4. Defined and implemented “Small Wins”

In order to enhance the variety of data that is required for the feasibility and mine design phase, an implemented “Small Win” is the involvement of personnel from the Mine Planning, Strategic Projects, Contiguous Exploration, Environmental as well as Survey departments in the establishment of a new Exploration database aimed at capturing the requisite variety of data during the exploration phase. Closer cooperation and communication is also assisting in moving closer to the ultimate goal of gathering the required ore dressing and mining parameter data during the initial exploration phase – in stead of re-doing the work or even worse working off a clean sheet.

In the domain of internal business processes or understanding and skills conversion, the next challenge will be to change the level of technology employed to reduce the need to drill boreholes (link with commercial farmer’s perspective RD3 and transformation process required by De Beers in RD5). This area holds the potential to reduce direct energy requirements and environmental impact as well as to increase employee Safety and Health. Alternatives to be considered include increased remote sensing and imaging technology coupled with geochemical techniques as well as
seismic survey alternatives. Projects, investigating alternative mining and exploration methods, are ongoing with the aim to address these concerns.

The fresh insight gained through the SSM process has placed a renewed interest on the importance of the reduced diamond breakage through Diamond Value Management initiatives.

10.5. **Defined feasible and desirable “Small Wins”**

Additional “Small Wins” that can be systematically worked at, some of which are already ongoing projects, are the responsible emission and by-product management, safe and efficient extraction and processing, superior exploration and resource characterization, low cost and efficient production, advanced products and due to the increased technological requirements, improved communication and education.

Increasing the level of application of new technology set enormous challenges in the mining industry. On the one hand, increasingly advanced technology like automation, satellite communication, remote sensing, robotics and autonomous mobile transportation has reduced wastage and environmental impact. On the other hand, this increase in technology has led to a change in the employment profile. This in turn gives rise to a corresponding responsibility to train new employees and involve business in additional job creation to correct the balance.

With a desire for sustainable development and in line with the requirements of the Mining Charter Scorecard issued under the Mineral and Petroleum Resources Development act, the mine should further purchase products, for example food and raw building materials, whenever possible from the host community. Opportunities exist to link local businesses established through the sustainable business development projects with the supply chain of the mine. Although there might be some “waste” created through reduced efficiency, the benefit and positive social impact on the community should out way these costs. A more regional-centric supply strategy is therefore recommended.

The WSSD played an important role in highlighting the need for better employment opportunities, greater corporate accountability and the role business play in the
implementation of the agreements. The increasing focus on partnerships\textsuperscript{54} is an important emerging theme from the conference. In line with this theme, the mining industry may well find public/private partnerships a useful mechanism to achieve a small win. Creative ways should therefore be found to implement partnerships between Governments, business and NGOs in the mining Industry. Opportunities still exist to weave these needs into a privatization exercise of non-core business activities. The drive and primary criteria for selecting privatization partners should therefore focus on local empowerment. Opportunities exist to anchor both the needs of the Mine and the local communities in a well-developed Local Economic Development (LED) plan.

Corporate responsibility in terms of good normative management does not stop at the compliance to current policy and a best practice. There is a responsibility on organisations/corporations to take the normative debate further. Organisations have to engage our society, and its policy makers – the government – in debate to set new normative standards. An example of this behavior can be seen in the Brenthurst Initiative\textsuperscript{55} where the Oppenheimer family tried to mobilize organize business leaders, government and society to engage in debate around the sensitive issue of transformation of the South African economy. The two primary focus areas of the debate are around the principle that incentives are a good idea and that business must embrace transformation\textsuperscript{56}.

\textbf{10.6. Summary and conclusion}

The SSM process assisted in building a better understanding of what is going on inside the people’s heads that make up the system. One can only start influencing how a person when you know how and what he thinks. Managing business stakeholder value therefore has a strong link to appreciative enquiry and the generation of shared values and beliefs through corporate culture re-engineering.

\textsuperscript{54} http://www.johannesburgsummit.org/html/sustainable_dev/sustainable_dev.html
\textsuperscript{55} http://thebrenthurstitiative.com/unique.php
\textsuperscript{56} Williams, D, A second Codesa?, Financial Mail, 8 Aug 2003, p.20, BDFM Publishers, Johannesburg
11. Stafford Beer’s Viable System Model perspective (VSM)

The perspective assumed in this chapter stand in contrast to that presented in the previous chapter. In this chapter the Namaqualand Mines business stakeholder value creation system is investigated from a functionalist point of view. From this perspective, a system appears to have an independent objective existence. Stafford Beer’s VSM is used to investigate potential improvements to the Namaqualand Mines business stakeholder value creation system based on cybernetic law.

11.1. Theoretical background - from variety and complexity to viability

An organisation is entangled in a symbiotic relationship with its environment. Its operations interact with the environment through various activities which build its identity. To be viable the organisation must direct and manage these activities in a coordinated fashion to ensure its survival.

Norbert Wiener defined the term cybernetics as the “science of communication and control in the animal and machine.” Cybernetics focuses on how complex systems control and regulate themselves through feedback processes that rely on information and communication. Systems become more complex as its variety increases, where the latter is defined as the number of states or behaviours, and managing complexity is therefore one of the fundamental problems from the cybernetic view. In this context, viability implies an information, communication and feedback structure between the environment, organisational activities and management.

Ashby defined the law of requisite variety which dictate that “only variety can destroy variety”. Therefore, system A has to poses the same or a higher level of variety than system B in order to manage it. Linking this to the operations, the environment and management poses a problem as the environment has much more variety than the operations, which in turn have much more variety than their management. Consequently variety needs to be engineered through reduction (attenuation) of high variety or amplification of low variety.

Stafford Beer developed the VSM comparing the organisation with the human nervous system. He devoted most of his life on applied cybernetics in organisations.
His analogy of the nervous system and the human body as a metaphor was published in the “Brain of the firm”. The VSM allows for system viability and adheres to the laws of cybernetics as defined by Ashby. It assists in the design of an organisational structure which allows for the amplification of the organisation’s variety to cope with environmental variety.

11.2. The concern expressed in VSM text

The Namaqualand Mines system is experiencing an increase in variety of environmental signals it has to manage in order to ensure its viability. In order to deal with this complexity, the organisation has to attenuate the variety consciously (through deliberate filtering) or unconsciously (through ignorance) as well as amplify management signals through amplification. The concern is that self-imposed organisational design constraints are preventing conscious attenuation, increasing unconscious attenuation and preventing the correct amplification.

In an attempt to deal with the complexity in the environment the indirect production activities (overhead costs) are on the increase. The behaviour over time of the non direct production costs as a percentage of total costs is the variable of concern. The high percentage non direct production costs are mainly associated with production enabling activities like coordination, control and strategic projects. Examples of these types of costs are exploration expenditure on the Contiguous Exploration Project (CEP), Primary Exploration Project (PEP), Strategic Projects Department (SPD) and coordination functions which provide services to the production departments as oppose to producing a product. On the one hand these activities are considered essential for the viability and sustainability (efficiency improving activities and depleting resource replenishing projects) of the business, but on the other hand, it is imperative for business survival to reduce the total cost of production. The danger is that organisational structural optimization can lead to anorexia. If the minimum critical level of organisational structural robustness is lost, the company loses its ability to react to environmental signals – it will become a Ferrari on a dirt road.

Therefore, the cost of making the wrong decision will be at best a reduced opportunity to capitalize on future extension potential but could potentially send the business on a rapid tailspin that could reduce the business’ ability to deal with ambiguity in the
environmental signals and lead to a sudden death. It is therefore important that activities for organisational viability are correctly identified and that a structure for optimal business viability is put in place.

11.3. **Phrasing the Research Question in VSM text**

How can cybernetics and the VSM particularly be utilized to incorporate divergent stakeholder views into the Namaqualand Mines’ value creation system? In order to answer this question the subordinate questions must be answered:

- Can the VSM be used to better understand how stakeholders interact within the Namaqualand Mines value creation system?
- Can the VSD be used to highlight potential areas of improvement in the stakeholder interaction of the Namaqualand Mines value creation system?
- How can I influence the system through a localized interaction? Which “Small Wins” can I identify and implement through which I can demonstrate an increase in the affectivity of the incorporation of stakeholder perspectives and value propositions in the Namaqualand Mines value creation system?

11.4. **The Answer**

The VSM is a rigorous and useful model that can be applied to understand the Namaqualand Mines’ value creation system better. (See Appendix V for the detailed application of the VSM for the creation of viability and sustainability at Namaqualand Mines). It is relatively easy to apply in the diagnostic phase and provides a handy tool for a practitioner to identify potential areas of improvement. The action research conducted on the real-world area of concern has also shown that “small wins” can be identified and implemented in order to positively influence the identified management problem area through a localized management intervention as demonstrated in the rationale below. Improved system viability was obtained by:

- making small changes to the S2 coordination functions,
- improving the S3* audit signal in the system,
- increasing communication and
- increasing the S4 intelligence functions through increased translation of external demands into business actions

These changes allows for greater coordination of functionality of the system as well as improving the effectiveness and efficiency of the overall system.
11.5. Implemented Small Wins and Take Home value

Small changes were made to the S2 coordination functions by changing the way the short-term planners of the BMC and KNC respectively interact with key players in the Mineral Resources department and Production department. This resulted in better communication and interaction through a process of interactive planning.

A small change to the internal daily production statistical report, indicating variances against promised revised forecasts, created the vehicle to signal major imbalances between the internal and external commitments. The S3* audit signal in the system was improved by creating a vehicle for quick intervention.

Communication with external stakeholders was increased through public participation workshops, discussions with the key stakeholders in the Government Department of Mineral and Energy affairs and community leaders from the labour sending areas. This resulted in more stakeholder signals entering the NM system.

Associated to the increase in signals from the environment was an increase in translation of external demands into business actions. Although small wins could be easily implemented on the Value Add domain, requirements for change on the other domains could only be signalled. Translating and intervention at the innovation and value system domains was found to be a time consuming activity which requires specialised skills and knowledge created through interaction. The conclusion, knowledge is co-produced with-in the system.
12. Hoebeke’s Work System perspective

12.1. Domains of work

Hoebeke’s work describes organisations as work systems which consist of processes which are coherently patterned. He defines a work system as “…a purposeful definition of the real world in which people spend effort in more or less coherent activities for mutually influencing each other and their environment.”

Each of the processes in the work system creates conditions for the lower level processes in the work system. Each of the processes in the work system again belongs to a domain of work.

<table>
<thead>
<tr>
<th>Process level</th>
<th>Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Spiritual</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Value System</td>
</tr>
<tr>
<td>5</td>
<td>Innovation</td>
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<td>4</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Value Add</td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Figure 19: Domains of Work

In a process of making sense, through a retrospective ethnographic study of the data observed over the past two year period, the following learning points were uncovered:

12.2. Retrospective ethnographic study

The ability of Namaqualand Mines to grow its current Reserve base is limited by the current economic climate as well as the quality and quantity of innovation turned into viable sustainable business ideas in the current value system. Relative high turnover, especially in senior management, over the last 18 months resulted in a loss of in-house knowledge. Some of the “intelligence / intellectual property” of the company vested in individuals and not in the workspace or intelligent work systems they partake in. The pressure on the mine’s ability to ensure a secure supply chain of diamonds increased as the available exposed reserves of diamondiferous material

reduced. Simultaneously, the mine’s exposure to grade volatility increased which resulted in quality (due to a change in footprint mix of diamond supply) and consistency issues with the customer. The learning capability of the mine was also severely hampered by insufficient and incongruent technical and production information.

Therefore, there is a need to understand the dynamics of collaboration in this traditional command and control environment where a lot of power games are at play.

In this context, one of the first insights gained was the understanding that incorporating stakeholder needs directly relate to the maturity of the listening skills, trust and openness present in the system. In Hoebeke’s words: “Try to look through what the hierarchy says to discover that also higher up there are normal people”

In the current structural configuration some managers are involved in more than one activity along the value chain and in more than one value chain. These managers find themselves faced with competing commitments. Examples of these can be seen where production personnel are responsible for production, contiguous exploration and even primary exploration targets which have to be produced via shared resources or means. However, not achieving these targets impact on different time scales and therefore the most pressing need, being production targets are more often than not given the higher priority. This creates conflicts, the effect of which often results in a very short-term operational decision. This behaviour and conflict in turn produces a rapidly emerging ethical dilemma and a power migration to the edges of the organisational network, which implies that individual managers had to start facing these ethical dilemmas more and more on their own, causing even more anxiety and tension.

In Hoebeke’s terms the input signals from stakeholders needs to be fed into the control information processes of the organisation in order to regulate the action by people contributing to transformation processes in the work system. This should all be done through a corrective feedback loop. The increase in facilitated stakeholder workshops, public participation workshops and interactive planning sessions held are examples of designed interventions which operate through this mechanism. However,

58 Hoebeke, L, 2004, EMBA 5 module 6 lecture: Personal comment, UCT, Cape Town
from this perspective, the effectiveness of these interventions can only be judged based on the effectiveness and efficiency induced by the localized intervention.

12.3. Stakeholder involvement and Domains of Work

In the ethnographic study it was found that stakeholder involvement is required in every Domain of Work. However, the stakeholder group composition and level of involvement vary depending on the work process. These differences, as well as differences in the throughput period associated with each domain of work, lead to different engagement strategy and communication requirements.

Interventions in the Value Add domain processes, like mining and treatment production processes, typically required the input from mainly internal stakeholders like employees, employee representative bodies, management and suppliers. Stakeholder interactions took place over a short period of time with high impact discussions and focussed debates around defined goals.

As a general rule it was found that as processes interventions move towards the higher process levels, the stakeholder group requirements spiral wider, requiring the involvement of more external stakeholders with more divergent views. These interactions also tend to take longer and tend to drift outside the original battery limits of the process. An example of a process level three activity can be sited where a change in the sampling Innovation Domain presented an opportunity to change the Large Diameter Auger drilling process from fresh water to seawater consumption. This change presented opportunities to reduce the cost per hole drilled as well as reduce the time to complete the drilling programme. In this instance stakeholder involvement had to include the employees, employee representative bodies, management, suppliers as well as local farmers and National Authorities (Department of Minerals and Energy and Department of Water Affairs and Forestry.) Process level four innovation domain activities were found to be even more demanding on time and active management of the stakeholder relationship. The wide stakeholder body required in finding innovative solutions to mine potential inter-tidal diamond reserves include previously listed stakeholders as well as National and Provincial Authorities and Non-Governmental Organisations (NGOs) governing marine and coastal development. This list includes the Succulent Karoo Ecosystem Programme (SKEP),
Fishing And Mariculture Development Association (FAMDA), the Department of Economic Affairs and Tourism (DEAT) - Marine & Coastal Management (MCM), Northern Cape Department of Tourism, Environment and Conservation, the Northern Cape Provincial Coastal Committee stakeholder representative committee.

Value System domain interventions, as required by the new Minerals and Petroleum Resources Development Act and the Mining Charter Scorecard issued under this act, were found to require the widest diversity of stakeholders and the highest level of active stakeholder management through lobbying and influencing. Strategic talks in the Value domain are time consuming and require a lot of interweaving of divergent ideas and interpretations. It took longer to establish trust relationships in the process level 5 activities due to the divergent initial viewpoints of the stakeholders.

12.4. **Take Home value**

Organisational process adjustments brought about by stakeholder interventions are not once off events which can be left unattended. Processes and work systems are owned and unless accountability is assigned to someone inside the work system, these processes will die. The system can only be influenced from within; the analogy of the human nerve system comes to mind.

In a highly hierarchical structure the perceptions of control drive the belief that higher order processes control lower order processes. These processes only create the necessary conditions for viability. Human beings partaking in the processes of the value add domain are the customers of the innovation domain, just as the latter are of the value system domain.

There needs to be processes in place linking the Value System domain and the Innovation domain. Process level 5 activities anchor innovation to the value systems required for work system viability. In a changing socio-political environment, the tension on these processes is ever increasing and the required resources need to be allocated to these activities. These processes should include people participating from both domains.
13. Stacey’s postmodernist perspective

13.1. Theories of complexity and Autopoiesis

Stacey\(^{59}\) distinguishes between two strands of thinking within the complexity field, the first an extension of the systems theory and the second based on the modelling of “phenomena on the assumption of non average variations in relations with the environment.” He terms the first strand: “Formative Teleology” while he refers to the second as “Transformative Teleology”. From this perspective the theory of autopoieses is consistent with Formative Teleology but the second strand of complexity thinking is completely different. To use an analogy: The first strand subscribes to the idea that, like a Russian doll, a phenomena unfolds and brings forth what is locked up in it (“conservation of identity”) while the second subscribes to an evolutionary idea of “continuous reproduction of continuity and potential transformation.” These two perspectives on complexity are not compatible. The “Transformative Teleology” view was selected in this report in order to create maximum contrast for triangulation of views.

From this perspective, individuals produce their identity through “\textit{communicative interaction}” and the \textbf{power relationships} between them. This can be best described through the example where two people communicate. The first person produces a gesture through speech, hand signals, body language or any other form of communication. This gesture is responded to by the second person based on the second person’s interpretation of the gesture. This interpretation of the gesture is a function of the environment, physical and temporal, in which the second person finds himself. Communication takes place at the level of people and their thoughts and there is no other level of communication. It is a process of evolution where every gesture influences the response it will receive. This perspective of complex responsive processes of communication differs fundamentally from Luhmann’s\(^{60}\) views that sees communication as something split from the human body (in contrast to thoughts, feelings and speech). The complex responsive perspective views language, thought and meaning as one.

\(^{60}\) Luhmann, N., 1984, Social Systems, CA: Stanford University press, Stanford
13.2. Incorporating Stakeholders perspectives and value propositions

From Stacey’s post modern perspective speaking a common language will improve the incorporation of stakeholders’ thoughts and value propositions. The question in need of answering is therefore: How do we improve the stakeholder language in an organisation?

In a process of making sense through a retrospective ethnographic study of the data observed over the past two year period, the following observations are filtered from the dataset:

- The behaviour over time graphs of the relationships with both internal and external stakeholders show a general improvement.
- An increase in the level of understanding of the issues at play by both the internal and external stakeholders.
- A constant shift in power relationships between internal stakeholder, internal and external stakeholders and amongst external stakeholders.
- The level of integration of activities increased over time
- The quality of communication interactions increased over time
- Increase in level of trust over time

13.3. Making sense of the observed behaviour

No singular activity triggered the first gesture. Arbitrarily an improvement of the environment in which communication takes place led to an increase in the number of communication interactions taking place. The higher the number of communication interactions the higher the likelihood of successful thought and meaning transfer between stakeholders. This process led to a clearer understanding which resulted in increased learning and clearer communication of requirements. Examples of these interactions are the public participation workshops held, individual communication sessions with the Departments of Mineral and Energy affairs office, facilitated internal stakeholder meetings, Ore reserve committee meetings, interactive planning sessions. The most important observed outcome was the creation of a clearer understanding among all stakeholders, which served as a building block for more effective interaction. Each of these interactions also served to build the trust relationship between the parties, slowly influencing power relationships and preconceived perceptions. When these observations are linked to Hoebeke’s process
levels and Domains of work, it is found that the higher the process level, the more complex the language and patterns of communication.

It must be noted that these relationships are based on non-average variations and could therefore be randomly non-linear. This should not be confused with causal relationships. No claim is made about the causal relationship of the interactions. It is claimed that these relationships are evolutionary and transformative in nature which implies that any one single event could have fathered the improvement / change observed.

An important observation was that as the level of communication and the level of trust increased, the instances of deep routed knowledge building also increased. However, threshold inertia first had to be overcome to mobilise this process. As soon as this threshold level of trust and communication was built, stakeholders slowly started to contribute individual ideas. This water was first tested with small ideas on a confidential individual basis. In these cases ideas and the trust relationship was first tested before incorporation and in many cases actions jumped the official hierarchical structures. These interactions later expanded to bolder statements and contributions. As an active observer, the best plausible explanation could be linked to the emancipatory information power relationships that started to develop.

[I am sure the postmodernist will allow me a little room for systemic artistic freedom when I note that a causal loop developed where: An increase in the level of trust led to an increase in the level of free and open communication, directly increasing the level of learning. The latter increased the level of insight into the issues facing the organisation, creating bigger buy-in into the actions agreed to and empowering people to influence their own future through an intervention into the organisation’s future.]

With regard to the quality of communication the increase in depth of discussion must be noted. As the number of communication interactions increased, the curse of passive meetings initially increased. However, as soon as the first inertia was overcome the number of real communicative interactions increased. Again, a non-average relationship is observed. Associated with the reduction in the number of talk-shops was an increase in the number of active workshops where active ideas were
exchanged. This is closely linked to the level of understanding created and the reduction in power structure relationships.

13.4. Take Home value

An increasing number of stakeholder perspectives, and value propositions can be effectively weaved into the business model through a focus on:

• an increase in focus on communication interactions.
• action and not just passive thoughts or talk shops.
• reductions in the hierarchical power structures (In Namaqualand Mines case, the sooner the Patterson system is dismantled the better.)
• improved data and information sharing vehicles like databases and info systems which empower stakeholders and enable increased knowledge creation
• increased education of all stakeholders.
14. The Research Answer – Creating Actionable Knowledge

In the previous four chapters the Namaqualand Mines business stakeholder value creation system was investigated from an Interpretive System Approach, a Functionalist System Approach, a Work System perspective and a Postmodern System Approach. These different perspectives each highlighted specific aspects of the Namaqualand Mines business stakeholder value creation system. This chapter weave these lessons together in a theory of anchor points and interactions based on the “spider-web” metaphor. This theory provides the answer to the research question posed.

14.1. …towards theory construction

The Research Question asked in chapter 7 is:

“How can we effectively weave an increasing number of stakeholder perspectives and value propositions into the business model?”

In the previous four chapters the Interpretive System Approach, Functionalist System Approach, Work System perspective and a Postmodern System Approach were used to investigate aspects of the Namaqualand Mines business stakeholder value creation system with the aim to change and enhance this system. Take home value lessons were created from each of these vantage points. When these lessons are categorized, in an AD process, some common themes emerge. The most prominent of these is communication which has a close link to appreciative enquiry and hermeneutic listening to the stakeholder demands and deeper rooted concerns. These concerns also anchor, on a business and an individual level, to the deepest point of the manager as an individual, his soul. Personal development of the required skill sets and emotional and spiritual requirements falls in this domain, as without these there can be no business ethical behavioural maturity. Strong internal anchors can outlive harsh climatic conditions, influencing and changing power structures, while creating more effective nerve systems which link the correct environmental signals to the required action.
Based on the observations that emerged from the research it is also believed that the model is not necessarily causal although some variables have a strong causal relationship. The final model is developed is based on the Transformative Teleology.

14.2. …and the spider returns

The “spider-web” metaphor is used to develop a model for the management of business stakeholder value creation. The model is based on the fact that a number of anchors and interactions exist that forms an effective web which weave in the increasing number of stakeholder perspectives

…the little spider climbs up the sprout, what will it do next?

The main anchor points to start the web are selected. In the case of Namaqualand Mines, these anchor points emerge as:

- Communication
- Power relationship management
- Leadership traits and skills
- Appreciative enquiry and hermeneutic listening
- Internal anchors
- Interaction
There are also some links between these anchor points that emerges. These links are depicted in figure 20.

![Diagram of some essential business stakeholder anchor points](image)

**Figure 20: Some essential business stakeholder anchor points**

Appreciative enquiry and hermeneutic listening are interrelated to communication. As the level of appreciative enquiry and hermeneutic listening in stakeholder interactions improve, the quality of communication improves which in turn supports appreciative enquiry and hermeneutic listening. **Power relationships** are ever present in stakeholder interactions. Therefore it is important that the human beings that partake in these interactions have well anchored **ethical and normative personal anchors** (measured by the depth of ethical debates that take place).

Stakeholder interactions need management through the application of **leadership traits**. The efficiency of the application of these traits influences the level of action and **interaction** that takes place during these stakeholder engagements. The perceived level of interaction efficiency will again influence the application of **leadership traits** during the next iteration.

On the next pass the interlinking needs to take place.

The efficiency of communication can be improved through an increase in the management of anxiety levels. This can be done through anchors to greater interaction and involvement (node 4 to 5 in figure 21) and the management of underlying power structures (node 4 to 2). This can be done through emancipatory interactions where work system participants are empowered with better information systems and
communication channels; without the blocks. When the first inertia has been overcome, the success stories fuel the change which in turn leads to improved personal development (node 5 to 1).

**Figure 21: The first round of links**

Personal development coupled with co-development of knowledge of the system’s behaviour fuels co-ownership of the system. It is this ownership that is required for real deep rooted appreciative enquiry and hermeneutic listening (node 1 to 3) which in turn leads to the development of the required leadership traits and skills which emerges from the systems’ needs (node 3 to 6). Power relationships needs to be anchored to effective leadership (node 2 to 6) in figure 21. This ensures a focus on trade-offs and compromises between different stakeholder needs in the different Domains of work. It also highlights the need for a stakeholder management programme which prioritizes stakeholders’ needs. In order to do this, an understanding need to be build of how each stakeholder interact with the company.

Organisational learning (which includes formulation of quality information) forms a key link in the continuation of the relationship. To this extent information systems and knowledge management plays a crucial role.
14.3. …the ground rules

There shouldn’t be too many ground rules. They will emerge as the process develops but...

The increasing number of stakeholder perspectives and value propositions can only be effectively weaved into the tapestry of the business model if it is done on a localized level from with-in the work system. This implies that stakeholder involvement is required in the value added domain, the innovation domain and the value system domain. Additional research work is required to test the validity of the claim in the spiritual domain as the scope of work for this research was contained to three of Hoebeke’s Domains of work.

The model is not prescriptive on the number or nature of the anchor points. However, it suggests that the higher the number of anchor points is, the more robust the business stakeholder value creation model will be.

14.4. …the conclusion

…it starts spinning and weaving. A beautiful, effective and unique web will soon emerge! Each one different and flexible with its own level of robustness!

This concludes the theory development section of this report. In this chapter the “spider-web” metaphor is used to develop a model for the management of business stakeholder value creation. The model is based on the fact that a number of anchors and interactions exist that forms an effective web which weave in the increasing number of stakeholder perspectives. The model is not prescriptive on the number or nature of the anchor points. However, it suggests that the higher the number of anchor points is, the more robust the business stakeholder value creation model will be. In the case of Namaqualand Mines, these anchor points were found to be: communication, power relationship management, leadership traits and skills, appreciative enquiry and hermeneutic listening, internal anchors and interaction. The last chapter, chapter 15, covers an evaluation of the process followed. It addresses issues of relevance, utility, validity and ethics.
15. Evaluation

This chapter covers an evaluation of the process followed. It addresses issues of relevance, utility, validity and ethics.

15.1. Arguments for relevance

The purpose of establishing relevance is to answer the question: “Are the concerns that were investigated really relevant in the context of the situation described in the paper?”

Global changes in the political, social and legal environment are continually changing the customer value, shareholder and stakeholder concepts. On the one hand these changes impose a stricter regulatory environment which could impede on production management efficiency whilst on the other hand creating special customer needs for additional value adding through quality assurance. Examples of this type of customer value addition can be seen through the provision of secure on-line shopping solutions in the information service industry and the provision of “societal acceptable and quality assured” diamond trade through the Kimberley process of certification in the diamond industry.

On focussing this concern on the Namaqualand Mines’ system for the creation and management of viability, value and sustainability, the impact of the external environmental and societal changes are highlighted. The diamond market business plan is built on differentiation driving the distinctive competency mix. Strong customer demands for a product with an unblemished reputation place an ever increasing demand on the delivery from the production system. As customers become more enlightened on environmental and social issues, the level of demands for sustainable development on environmental and social fronts increases. Adherence to quality assurance programmes like ISO 14001 becomes an integral part of the total product/service delivery of a mining company. As social societal conscious develop, these demands and customer value attributes will migrate and develop. This has already led to policy reform in the form of the new Minerals and Petroleum Resource

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61 Ryan T, 2004, EMBA5 module 6 class notes, UCT, Cape Town
development act\textsuperscript{62} which will impact on the environmental, social and economic demands on the organisation. A critical component of value creation is therefore business’ ability to deal with this change. Not only does change erode the distinctive competencies of the business, but it also converts the broad social need into a moving target.

Namaqualand Mines is confronted with a problem situation with a multitude of interconnected variables which constantly change due to the perceived unpredictable interactions between the variables. The resulting anxiety and confusion caused by the sense of powerlessness to make any meaningful intervention can lead to erratic management behaviour.

In summary: I am writing about the viability and sustainability of Namaqualand Mines because I am trying to demonstrate to the reader that the inability to react to the changes in internal and external environmental signals may cause the extinction of the mine, causing job losses, local industry impacts, tax losses, diamond supply losses and shareholder profit opportunity losses to name a few.

15.2. Argument for utility

The purpose of establishing utility is to show that the answer provided does in fact address the concerns raised.

Diamonds compete in the highly competitive and perception sensitive luxury goods market. Lessons learnt from the collapse of the fur market, should not be forgotten. Staying in touch with a changing environment in a perception sensitive market is therefore crucial in managing and creating shareholder value.

Improving the NM system for viability and sustainability through the suggested model will ensure that normative management principles will steer management behaviour towards the integration of stakeholder needs. It is management’s responsibility to allocate resources in a sustainable way in order to meet the customer’s needs and create a profit that provides the investor with an acceptable rate of return at the given level of risk in an acceptable way to all stakeholders. The

\textsuperscript{62} Act No. 28 of 2002
suggested answer will impact on the structure of the business as well as personal development of individuals interacting in the processes in the work system. As indicated through the implementation of “small wins”, the relationship between external stakeholders and players in work system processes have improved over time. I am therefore claiming that co-creating knowledge about the system behaviour has already started addressing some of the concerns.

15.3. Argument for Validity

The purpose of establishing validity is to ensure that a valid answer is produced by the rationale and methodology followed. Validity includes criteria for dependability, credibility, confirmability and transferability.

Dependability: The use of multiple perspectives and generally acceptable processes like the VSM and SSM has ensured the required level of dependability. The choice of methodology has ensured that multiple angles are covered. The use of the VSM has ensured coverage of the functional paradigm while the SSM swept in the divergent perspectives of the stakeholders. Hoebeke’s perspective covered more complex interactions were multiple stakeholders interact in a work system while Stacey’s perspective covered the more chaotic complex perspective of post-modern thinking. The use of multiple methods has also ensured method triangulation which enhanced the dependability. The VSM and SSM processes were rigorously followed and results were triangulated to other processes.

Credibility: The data and evidence were gathered through credible methods as described. Evidence of this was presented in the submitted CIL, ARL, Position Papers and Portfolios of work done during the course of the EMBA programme. Triangulation between data, theories and method has also increased the credibility of the answer. However, as a participative observer immersed in the process, it is difficult not to be biased in the data collection.

Confirm ability: An audit trail of the data used was presented in the CIL, ARL, Position Papers and Portfolios of work done. Additional evidence is also included in the Appendix I of this dissertation while methodologies and processes followed were described in the report. In retrospect it could be argued that additional confirm ability
could have been obtained by including work summaries in the Appendix of the dissertation. This is noted as an area of potential improvement.

Transferability: Take Home value was distilled from the various perspectives. I am claiming that this could be applied to other mines that are in a similar social situation in South Africa. The unique blend of socio-political issues experienced at Namaqualand Mines has provided a rich and diverse background for this study. Although not tested and therefore not claimed by this report, the theory developed should be applicable to other industries finding themselves in a similar socio-political environment.

15.4. Ethics

Williams has suggested a framework for the establishment of the ethics of a situation. He proposes the evaluation of three criteria namely: utilitarian, rights and fairness of justice. If all three criteria are met the proposed action is ethical. However, if one or two criteria are not met, the question should be asked if any overwhelming factors exist. This involves three subordinate questions:

- Is one criterion far more important?
- Are there any incapacitating factors? and
- Is the double effect test passed?

Utilitarian: The model suggested in Part A advocates that viability and sustainability is driven by the level of normative management practiced in the company as well as the level of integration of stakeholder views. The level of ethical behavioral maturity in the organisation will not only determine the level of ethical activity (corporate culture) but also the level of organisational self regulation and sanction as well as the interpretation and translation of societal change of the business strategy. The proposed Normative Business focus ensures a balanced view which sweeps in the divergent views of all stakeholders in an attempt to provide a utilitarian solution which respects the rights of all concerned and uphold the fairness of justice.

Part B further suggested that the increasing number of stakeholder perspectives and value propositions can only be effectively weaved into the tapestry of the business
model if it is done on a localized level from within the work system. This implies that stakeholder involvement is required in the value added domain, the innovation domain and the value system domain. Additional research work is required to test the validity of the claim in the spiritual domain as the scope of work for this research was contained to three of Hoebeke’s Domains of work. The proposed model therefore caters for ethical actions which provide the greatest balance of good over evil.

Rights: Immanuel Kant and other philosophers of the 18th century argued that people’s ability to choose freely what they want to do with their lives is fundamental moral rights which must be respected. According to this criterion, the degree to which individual moral rights are violated determines the degree to which an action is wrongful. In Part B it is concluded that the improvement of stakeholder relationships must have a strong internal anchor to the deepest point of the manager as an individual. Personal development of the required skill sets and emotional and spiritual requirements falls in this domain. The model suggests that the impact of individual action should undergo internal sanction, which should filter any immoral action. However, the result of this filtering is a function of the moral values of the individual manager. Just as business systems have to be change from within, so must human beings. External influences can at best induce change. It is therefore claimed that sufficient attention is given to the rights issue in the proposed answer.

Justice: The fairness of justice principal has its roots in ancient Greek philosophy which dictated that both favouritism and discrimination is unjust. The proposed answer rest on the principal of incorporation as oppose to exclusion and specifically focussed on ways to incorporate an increasing amount of stakeholders.

The proposed model promotes actions which should meet all three criteria of Williams’ test and therefore the proposed answer is considered ethical.

*May we all have the required internal emotional and spiritual strength to provide the anchor point that is required to uphold this claim!*

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63 Williams, O, 2005, EMBA 5 module 1: Ethics course notes, UCT, Cape Town
Appendix I: Social development issues tracked under the Mining Charter Scorecard

The South African Mining Charter Scorecard was issues in February 2003 as an addition to the October 2002 mining charter on black economic empowerment (BEE). It provides guidelines for mining companies operating in SA on how to measure their progress in meeting the requirements of the mining charter.

The scorecard is designed to track mining companies’ performance against both the five year and ten year goals of the seven pillars of the charter. These activities are tracked under nine headings:

1. Human resource development: Has the company offered every employee the opportunity to become functionally literate and numerate by 2005? Has the company developed systems through which empowerment groups can be mentored?

2. Employment equity: Has the company established a plan to achieve a target for historically disadvantaged South African (HDSA) participation in management of 40% within five years? Has the company established a plan to achieve the target for women participation in mining of 10% within five years?

3. Migrant labour: Has the company subscribed to government and industry agreements to ensure non-discrimination against foreign migrant labour?

4. Mine community and rural development: Has the company co-operated on its own and with the government in formulating development plans for communities where mining takes place and for major labour-sending areas? Companies will have to provide a plan and show financial expenditure.

5. Housing and living conditions: Has the mine, in consultation with stakeholders, established measures for improving the standard of housing, including the upgrading of hostels, conversion of hostels to family units and promoted home ownership options for mine employees? Companies will need to show a progress plan? Similarly a plan needs to be shown for improving the nutrition of mining employees.

6. Procurement: Has the mining company given HDSAs preferred supplier status? Has the company shown a commitment to progression of procurement from HDSA companies over a 3-5 year time frame for capital goods, consumables and services and to what extent has the commitment been implemented?
7. Ownership and joint ventures: Has the company achieved HDSA participation in terms of ownership for equity or attributable units of production of 15% in HDSA hands within five years and 26% within 10 years?

8. Beneficiation: Has the company identified its current level of beneficiation? The key issue here is to capture the actual beneficiation activities of a company and to convert that to the same unit of measurement of ownership, such as attributable units of production. The attributable ounces that are beneficiated above the base state may be offset against HDSA ownership targets. Ongoing discussions on the base state for each mineral (of which 59 are mined in SA) are ongoing.

9. Reporting: Has the company reported on an annual basis its progress towards achieving its commitments in its annual report?
Appendix II: Historic overview of shareholder value creation (Adapted from Kennedy)\textsuperscript{64}

A century ago business was mainly started by family members pooling their own resources (financial and skills) to start a new business or to expand a current business. The main aim of business engagement was generally to preserve or grow family wealth and assets for generations to come. In order to achieve this purpose, the business owner tended to take a long view with regard to value creation. Business was build on a high relationship orientation (close family ties) and trust. Family members worked hard and loyal work was rewarded with job security in the form of life-long employment. Business success was therefore tied directly to their success.

As business grew, it required more and more resources which had to be sourced from outside the family structure. Expansion and new business got funded with other people’s money and the skills of running the business also had to be sourced from outside this tight knit structure. The nature of the employment contract started changing as professional managers and firm financial systems and controls that met the information requirements of the owners, who now have to account for other people’s money, entered the scene.

By around the time of World War II, business has evolved to a state where business was mainly founded and expanded by technocrats who build business on their functional skills e.g. scientists building up the pharmaceutical industry, engineers expanding the manufacturing industry and retail experts growing the retail and marketing sector. These functional experts tended to surround themselves with other experts, moving away from the nepotism of the past. As these companies grew and developed, many modern management ideas and principles like decentralization and strategic planning developed to keep the company functioning towards a central purpose. This purpose was still built around the founder’s dream of growing an idea through the application of skills into a commercial success and creating a lot of personal wealth was a by-product and not the main purpose. Business was still build on a relationship orientation and professional managers and employees’ hard and

\textsuperscript{64} Kennedy, A, 2000, The end of Shareholder Value, Perseus Publishing
loyal work, to achieve the company goal, was traded for job security. Business success was tied through the application of management tools to their success.

A change in business theory around the 1970s, with a swing towards shareholder value being a guiding ethic for business, resulted in major changes in the nature of business. Executives and senior managers, who now had their compensation packages and job security tied to the performance of share prices, started acting as though a higher share price was the only legitimate objective of management. In addition, new companies were founded by entrepreneurs and venture capitalist with the purpose of making money for the founder and early investors on rising share prices and mostly profitless growth. Making as much money as fast as possible has now become the goal.
Appendix III: Discussion of the model for the creation of viability and sustainability at Namaqualand Mines

The level of normative management involves behavioural variables like the level of management ethical judgment and integrity, the level of business management skills, the level of incorporation of accountability structures, level of sensitivity to worldview variances, the level of transparency in account practices, the level of regulations and sanctions to control corrupt practices and misadministration as well as the level of regard for law and human life. The self-regulation process covers data management processes where the level of competency in the management application and interpretation of statistical data is of utmost importance as well as human relations aspects where the level of influence of unconscious system on conscience behaviour and the level of use of psychoanalytical/dynamic process are important feedback variables. The entrenchment of ethical standards through ethics training programs aimed at all levels of the organisation is equally important. In addition, it is also important to have the necessary protection in place to protect and safeguards whistle blowers. The level of normative management covers an entire suite of action but the observed variables could be classed in broad action groups. The first class involves the level of enactment of moral values (walking the talk, ethical value sharing in the organisation and integration of ethics into the strategic planning process) which has as base the level of responsibility in the execution of power (responsibility and accountability for actions – including environmental damage). The second group involves the level of ethical self regulatory behaviour in the financial markets (balancing the economic imperatives and sound economic decisions making with ethical conduct to achieve the aggregate social good). The third group involves the level of corporate social performance (addressing historic inequalities through empowerment, which in turn create social stability and investor confidence, leading to growth and job creation as well as commitment of revenue to community quality of life improvement spending).

An increase in level of normative management in the organisational will lead to an increase in the level of operational process efficiency. Normative management practices, expressed through self regulation, direct the company’s efforts to the activities that add value. Once these value chain activities are identified lean thinking
principles can be applied. Lean thinking focuses company efforts on the reduction of waste. In refining the production strategy, the value chain has to be focussed on the speed to market, inventory levels and redistribution costs. These inefficiencies are also classified as waste. Reducing waste through a management programme focuses on the Lean Thinking principle of producing more with less. In order to achieve the above, the company needs to focus on flow and customer pull. In this context, it is important to note that the organisational structure have to be reviewed in order to increase efficiency. The level of success in implementing flow strategies is therefore directly related to the success in structuring the organisation. Customer pull principles must not stop at the company gates. The supply chain feeding into the company’s value chain is just as critical as the relationship with suppliers as they directly influence efficiency and value. Supplier Relationship Management is therefore an important programme which determines production success. A good example can be seen in the mining industry where some mines and equipment suppliers have moved beyond Repair and Maintenance contracts to profit and risk sharing partnerships. In this relationship the level of integration and partnership in the business chain influences the level of production efficiency. The quality and efficiency of IT support systems in place to support the activities of the people and processes in the organisation will increase the level of operational process efficiency as these employees will be more productive and efficient. Ownership and responsibility are important factors in determining production management success. To this extend project sponsors, persons who take ownership and responsibility of a project, and product owners, who has to take ownership of the product as the project manager will move on, play an important role. Integrating a project to achieve its full business application potential is part of the refinement of the production strategy.

Customer satisfaction can only be achieved if their needs are met. Therefore, customer defined values should drive the operations through a well structured business model. Customer loyalty should not be taken for granted or worst, damaged. Loyalty can be actively managed as the ability of the business model to deal with customer defined values and will determine customer needs satisfaction. Customer relationships need management\textsuperscript{65}. The customer portfolio needs to be constantly managed. This management includes actions like the reward for good behaviour, re-

\textsuperscript{65} Gordon, I., 1998, Relationship Management, John Wiley & Sons Inc, p 42-46
investment, and management of the key performance indicators and discipline which might even require the customer to be fired. The customer’s current and future profitability will influence the customer relationship management action requirement.

The set of skills, strategies and sales processes should match the customer value perception. Customer value types can be broadly categorized based into those requiring transactional selling, consultative selling or enterprise selling. For each customer value type there is a set of skills, strategies and processes that would maximise their needs. The company’s internally focused business processes should be in balance with customer needs and wants. It is therefore important that an effective nerve system like information system link the internal business processes with the signals from the customer value management system. These nerve system signals should trigger internal business process redesigns, the optimization of multi enterprise value chains, IT infrastructure improvements in order to meet the desired customer’s “must have” requirements. In this regard the level of customer value drives the level of cost you should incur servicing the customer.

The measurement of customer satisfaction and value added are important. Customer satisfaction measurements should have both soft and hard measurements. Examples of these are the perceived value of goods or services, price versus that of the nearest competitor as well as customer satisfaction index (CSI) and customer value index (CVI). The quality of these customer satisfaction measurements ultimately influences customer satisfaction. It is proposed by some that the measurement of customer value could be done through the life time value (LTV) of customer concept. This measurement of customer value should include lag and lead indicators. LTV of customers focus on attributes like customer profitability, size and share of business, growth and potential growth, stability, satisfaction, loyalty and purchase levels, organisational learning capabilities and image. Through the application of the LTV of customer concept it can be demonstrated that the depth and breath of customer value measuring tools influence the profitability of the company. The quality of customer

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satisfaction assessment tools is therefore an important management control variable in establishing customer value. Service quality measurement tools are important to manage customer value addition as reliable customer feedback of their service experience is vital to customer satisfaction. Examples of these measurements are trade-off analysis, quality interviews, indicators, delays on deliveries and customer satisfaction surveys. It is important to note that the customer perception of service experience influences customer satisfaction and is an important customer satisfaction measurement.

“The biggest difference between the old work and the new is the sharply accelerating pressure to do it all better, faster, and cheaper.” 70 In addition the level of viability of the organisation is determined by the level of normative management in the organisation. A market survey of the Financial Mail indicated that investors are willing to pay a premium of up to 33% for well-governed emerging market organisations, compared to similar financial performing, but less honest and transparent organisations71. Although there are substantial rewards for high normative standards, there are also severe penalties for not complying with the required normative management standards. This is not only exemplified by the international Enron, Tyco and WorldCom scandals, but also by the LeisureNet, Regal Treasury Bank and Monex examples in South Africa where organisations have paid the price for inferior normative management standards.

Return on Investment (ROI) of research and development (R&D) is measured through market share in the form of retention or growth. Examples of R&D costs are the expenditure and time invested in testing of impacts and effects of products. R&D activities of marketing will influence market share and is therefore integral to viability management.

The level of overall sustainability (Economic, Social & Environmental) of an organisation is determined against a triple bottom line. The level of financial value addition (level of efficiency of business), level of production value addition (the level

71 Financial Mail, 22 March 2002, p. 22
of productivity in company) and the level of customer value addition determine the level of achievement of market and economic objectives.

The purpose of business is to create and retain customers. In order to be sustainable, the business therefore has to focus on reproducible value adding service provision to the customer. Integral to this concept is the life time value (LTV) of customer and customer loyalty. Customer loyalty and LTV of customer drives the sustainability of business.

In phase 2 the human element of the model is enriched ....

As the company’s level of normative management and level of sustainability increases its chances to attract and retain skilled employees will increase. An increase in the level of diversity in the skilled employee pool will result in an increase in the level of diversity of the mind, culture and behaviour. This gives rise to an increase in the level of creativity and innovation to deal with new situations. Diversity ventures in the region of a person’s deepest held beliefs about civil rights, human rights, religious beliefs as well as general social conditioning. The level of diversity in an organisation determines the styles, perspectives, values and beliefs embraced within the group/organisation. Human value addition through an increase in the level of diversity not only leads to better insight into the market place, creativity, innovation in problem solving and enhanced systems but it also creates a positive work environment that attracts new resources and skills which in turn leads to greater economic contribution.

The level of human value addition, as measured through the performance management system, will determine the level of operational efficiency. It is therefore important that the customer satisfaction strategy link the performance management and reward systems with customer service rendered. The effectiveness of the link between the performance management and reward system of an organisation and customer services rendered will impact on the customer service rendered and customer value added.

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In phase 3 the role of strategy is highlighted ....

Business models drive internal business processes that inform the processes that convert resources into business rewards. The level of understanding of these models and skills applied in this conversion process plays an important part in the management process. The availability of resources drives these internal business processes while normative management and organisational self-regulation shaped them. The mobilization of people in pursuit of desired aims and objects can be measured by the level of definition of values and clarity of organisational direction (Purpose, Vision, Mission & Values), the level of appropriateness of systems of shared meaning, the level of value adding (distinctive competency and broad social need overlap) and the level of management success. It is important to note that the level of communication skills effectiveness plays an important linking role between the model and the actual mobilization and the level of awareness of images and assumptions that are shaping our current thinking.

As strategy impact directly on operational efficiency, customer value entrenchment in the business model is a good measure for the success of business strategy definition. In order to be successful, the business strategy should align core customer outcome measures with targeted customers and market segments. The customer’s perspective of the balanced scorecard translates an organisation’s mission and strategy into specific objectives for targeted customers and market segments. Attributes perceived integral to this concept are satisfaction, loyalty, retention, acquisition, and profitability. In this causal relationship the level of alignment of the balanced scorecard with targeted customers and market segments will influence core customer outcome measures.

Phase 4 focuses on the importance of stakeholders.......  

The level of stakeholder involvement is driven by the level of normative management which incorporate aspects like the level of understanding of external influence on the system, the level of system integrity, the level of capacity to adapt and responsibility to react to multiple demands of an increasingly turbulent world (level of variety incorporated in the business processes). The level of stakeholder involvement in turn influences the level of organisational self-regulation as well as strategy application efficiency with the incorporation of additional models and worldviews. This could
lead to an empowering spiral or a deadly tailspin! On the one hand, organisations that incorporate the multiple views of their stakeholders tend to reap the “rewards” of their actions drawing on experience whilst attracting and retaining the required skills and incorporating society’s feedback in the process to convert resources into business rewards. On the other hand, organisations that are facing sustainability problems tend to take short cuts and cut out demanding stakeholder views to “improve” the bottom-line. In the process, they loose much-required skilled employees and increase the resistance levels in society – their ultimate marketplace. It is therefore just a matter of time before the tailspin ends in a crash-landing.

Phase 5 highlights the systems interface with societal change……..

Changes in the external environment influences societal behaviour and customer value perception. External influences like terrorism, war and crime impact on customer value perception. These changes in perceptions drive changes in societal behaviour evident in increases in environmental & social lobby group activities as well as customer, supplier, shareholder, government and other group behaviour (activism). Societal behavioural changes cause an impact on company performance by imposing extra demands on business and preventing certain actions. Societal behaviour and environmental change are therefore important management variables that impact on the achievement of customer value creation.

The level of resistance from society is radically reduced when an organisation assumes the responsibility to apply self regulation to internal mechanisms of organisational behaviour. If the required level of self control or regulation is not imposed, our society will react. An example of this can be seen in the South African situation where the King II corporate governance code of practice is now affecting all publicly listed companies on the JSE. Failure to adhere to the guidelines set out in this code of practice could lead to suspension from trading on the JSE Securities exchange. King II deals with the important issues of stakeholder involvement, incorporation of the triple bottom line approach, which embraces economic, environmental, and social performance measurements and set clear self-regulatory requirements in terms of power dispersant at board level. The American legislators have however, gone a step further with the legislation of policy to dictate certain
normative management standards. Any company listed on the NYE or that has international affiliates that are listed have to comply.
Appendix IV: Soft System Methodology

Key systems selected for further investigation:

- The Diamond Exploration System
- The Resource to Mine System
- The Diamond Mining System
- The Illicit Diamond Trafficking System
- The Commercial Farming System
- The Societal System

The following key stakeholder views were selected for potential further investigation:

- Exploration Geologist
- Mine Planning / Feasibility Study Project Team
- Production Personnel
- Illicit diamond trafficker
- Namaqualand Mines employee
- A commercial farmer
- The policymaker (Government /Department of Mineral and Energy)
- The owners – De Beers

A series of root definitions were constructed which describes what each system is from a specific perspective and what it aims to achieve in the set environment. In the construction of the root definitions the Mnemonic CATWOE is used to ensure that all essential components are present in the construction:

C - Client or customer of the system
A – Actor who carry out the activities within the system
T – Transformation or change in the system
W - Worldview or assumptions made about the system
O - Owner of the system who could stop the system
E - Environment or surrounding influences which the system has no control over
The following system-perspective combinations were identified for further system improvement potential:

- The Diamond Exploration System, from the viewpoint of the Exploration Geologist.
- The Diamond Exploration System, from the viewpoint of the Mine Planning / Feasibility Study Project Team.
- The Diamond Exploration System, from the viewpoint of the Commercial Farmer.
- The Diamond Exploration System, from the viewpoint of the policymaker (Government /Department of Mineral and Energy).
- The Diamond Exploration System, from the viewpoint of the owners – De Beers.
- The Resource to Mine System from the viewpoint of the Mine Planning / Feasibility Study Project Team.
- The Diamond Mining System, from the viewpoint of the Production Personnel.
- The Diamond Mining System, from the viewpoint of the illicit diamond trafficker.
- The Diamond Mining System, from the viewpoint of the policymaker (Government /Department of Mineral and Energy).
- The Diamond Mining System, from the viewpoint of the owners – De Beers.
- The Illicit Diamond Trafficking System, from the viewpoint of the owners – De Beers.
The Diamond Exploration System, from the viewpoint of the Exploration Geologist

![Diagram showing the transformation process]

**Figure 22: Transformation – Exploration from view of Exploration Geologist**

<table>
<thead>
<tr>
<th>C</th>
<th>Customers</th>
<th>Owners of land, commercial farmers, Mine Planning / Feasibility Study Project Team, Government, illicit diamond traffickers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Actors</td>
<td>Exploration geologists, illicit diamond traffickers, government.</td>
</tr>
<tr>
<td>T</td>
<td>Transformation</td>
<td>The system is a process that takes land with no confirmed diamond potential and converts it to land with confirmed diamond potential.</td>
</tr>
<tr>
<td>W</td>
<td>Worldview</td>
<td>The Exploration geologist has a responsibility to define the Ore body to the best of his ability within the bounds of the prospecting permit and available funds.</td>
</tr>
<tr>
<td>O</td>
<td>Owner</td>
<td>Prospecting License holder.</td>
</tr>
<tr>
<td>E</td>
<td>Environment</td>
<td>Diamond mineralization.</td>
</tr>
</tbody>
</table>

**Root Definition: RD1**

Exploration is a system owned by the Prospecting License holder (De Beers), operated by an exploration geologist, the commercial farmers, illicit diamond traffickers and the government to convert land with no confirmed diamond potential to land with confirmed diamond potential for the owners of the land, commercial farmers, Mine Planning / Feasibility Study Project Team, government, illicit diamond traffickers influenced by diamond mineralization.
The next step in the process involves the construction of a theoretical model that contains the minimum essential activities to achieve the stated transformation in the environment. This Conceptual Model is contained in figure 23 below.

Figure 23: Conceptual model – Exploration from view of Exploration Geologist
The Diamond Exploration System, from the viewpoint of the Mine Planning / Feasibility Study Project Team

![Diagram](image)

**Figure 24: Transformation – Exploration from view of Mine Planning / Feasibility Study Project Team**

<table>
<thead>
<tr>
<th>C</th>
<th>Customers</th>
<th>Owners of the land, commercial farmers, Mine Planning / Feasibility Study Project Team, Government, illicit diamond traffickers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Actors</td>
<td>Exploration geologists, illicit diamond traffickers, government.</td>
</tr>
<tr>
<td>T</td>
<td>Transformation</td>
<td>The system is a process that generates Mineral Resource data that can be used as an input into the planning of a mine.</td>
</tr>
<tr>
<td>W</td>
<td>Worldview</td>
<td>The Exploration geologist has a responsibility to define the Ore body <strong>and its major characteristics</strong> to the best of his ability within the bounds of the prospecting permit and available funds.</td>
</tr>
<tr>
<td>O</td>
<td>Owner</td>
<td>Prospecting License holder.</td>
</tr>
<tr>
<td>E</td>
<td>Environment</td>
<td>Diamond mineralization.</td>
</tr>
</tbody>
</table>

**Root Definition: RD2**

Exploration is a system owned by the Prospecting License holder, operated by an exploration geologist, the commercial farmers, illicit diamond traffickers and the government to convert land with no confirmed Mineral Resource data to land with confirmed Mineral Resource data for the owners of the land, commercial farmers, Mine Planning / Feasibility Study Project Team, government, illicit diamond traffickers influenced by diamond mineralization.
The next step in the process involves the construction of a theoretical model that contains the minimum essential activities to achieve the stated transformation in the environment. This Conceptual Model is contained in figure 25 below.

Figure 25: Conceptual model – Exploration from view of Mine Planning / Feasibility Study Project Team
The Diamond Exploration System, from the viewpoint of the Commercial Farmer

![Diagram](image)

**Figure 26: Transformation – Exploration from view of the Commercial Farmer**

<table>
<thead>
<tr>
<th>C</th>
<th>Customers</th>
<th>Owners of land, commercial farmers, Mine Planning / Feasibility Study Project Team, Government, illicit diamond traffickers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Actors</td>
<td>Exploration geologists, illicit diamond traffickers, government.</td>
</tr>
<tr>
<td>T</td>
<td>Transformation</td>
<td>The system is a process that impacts severely on the farming use of the land and then finally converts it to De Beers land.</td>
</tr>
<tr>
<td>W</td>
<td>Worldview</td>
<td>De Beers uses prospecting licenses to strong handedly to legalize the strong handed tactics it uses to acquire more land. It is a process that takes land away from the small man and re-allocates it to the rich and powerful.</td>
</tr>
<tr>
<td>O</td>
<td>Owner</td>
<td>Prospecting License holder.</td>
</tr>
<tr>
<td>E</td>
<td>Environment</td>
<td>Diamond mineralization.</td>
</tr>
</tbody>
</table>

**Root Definition: RD3**

Exploration is a system owned by the Prospecting License holder (De Beers), operated by an exploration geologist, the commercial farmers, illicit diamond traffickers and the government to first severely impact on farming operations and later convert land from farm land to De Beers land for the owners of the land, commercial farmers, Mine Planning / Feasibility Study Project Team, government, illicit diamond traffickers influenced by diamond mineralization.
The next step in the process involves the construction of a theoretical model that contains the minimum essential activities to achieve the stated transformation in the environment. This Conceptual Model is contained in figure 27 below.

Figure 27: Conceptual model – Exploration from view of the Commercial Farmer
The Diamond Exploration System, from the viewpoint of the Policymaker (Government /Department of Mineral and Energy)

*A Figure 28: Transformation – Exploration from view of the DME*

<table>
<thead>
<tr>
<th>C</th>
<th>Customers</th>
<th>Owners of land, commercial farmers, Mine Planning / Feasibility Study Project Team, government, illicit diamond traffickers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Actors</td>
<td>Exploration geologists, illicit diamond traffickers, government.</td>
</tr>
<tr>
<td>T</td>
<td>Transformation</td>
<td>The system is a process that takes land with no confirmed diamond potential and converts it to a potential mine.</td>
</tr>
<tr>
<td>W</td>
<td>Worldview</td>
<td>De Beers has an obligation and responsibility to define the Ore body to the best of their ability within the bounds of the prospecting permit for the potential benefit of the country.</td>
</tr>
<tr>
<td>O</td>
<td>Owner</td>
<td>Prospecting License holder.</td>
</tr>
<tr>
<td>E</td>
<td>Environment</td>
<td>Diamond mineralization.</td>
</tr>
</tbody>
</table>

**Root Definition: RD4**

Exploration is a system owned by the Prospecting License holder (De Beers), operated by an exploration geologist, the commercial farmers, illicit diamond traffickers and the government to convert land with no confirmed diamond
potential to land with confirmed diamond potential for the owners of the land, commercial farmers, Mine Planning / Feasibility Study Project Team, government, illicit diamond traffickers influenced by diamond mineralization.

The next step in the process involves the construction of a theoretical model that contains the minimum essential activities to achieve the stated transformation in the environment. This Conceptual Model is contained in figure 29 below.

![Conceptual model – Exploration from view of the DME](image)

*Figure 29: Conceptual model – Exploration from view of the DME*
The Diamond Exploration System, from the viewpoint of the Owners – De Beers

Figure 30: Transformation – Exploration from view of De Beers

<table>
<thead>
<tr>
<th>C</th>
<th>Customers</th>
<th>Owners of land, commercial farmers, Mine Planning / Feasibility Study Project Team, Government, illicit diamond traffickers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Actors</td>
<td>Exploration geologists, illicit diamond traffickers, government.</td>
</tr>
<tr>
<td>T</td>
<td>Transformation</td>
<td>The system is a process that takes land with unknown mining potential and converts it to land with mining potential.</td>
</tr>
<tr>
<td>W</td>
<td>Worldview</td>
<td>The Exploration geologist has a responsibility to define the Ore body to the best of his ability and within the bounds of the prospecting permit for potential conversion into a source of diamonds and profit.</td>
</tr>
<tr>
<td>O</td>
<td>Owner</td>
<td>Prospecting License holder.</td>
</tr>
<tr>
<td>E</td>
<td>Environment</td>
<td>Diamond mineralization.</td>
</tr>
</tbody>
</table>

**Root Definition: RD5**

Exploration is a system owned by the Prospecting License holder (De Beers), operated by an exploration geologist, the commercial farmers, illicit diamond traffickers and the government to convert land with no confirmed mining potential to land with mining potential for the owners of the land, commercial
farmers, Mine Planning / Feasibility Study Project Team, Government, illicit diamond traffickers and influenced by diamond mineralization.

The next step in the process involves the construction of a theoretical model that contains the minimum essential activities to achieve the stated transformation in the environment. This Conceptual Model is contained in figure 31 below.

Figure 31: Conceptual model – Exploration from view of De Beers
The Resource to Mine System from the viewpoint of the Mine Planning / Feasibility Study Project Team

Figure 32: Transformation – Planning & Construction from view of the Mine Planning / Feasibility Study Project Team

<table>
<thead>
<tr>
<th>C</th>
<th>Customers</th>
<th>Owners and servitude holders of land, commercial farmers, government, employees, De Beers, contractors.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Actors</td>
<td>Mine planning / feasibility study project team, government, servitude holders, De Beers</td>
</tr>
<tr>
<td>T</td>
<td>Transformation</td>
<td>The system is a process that takes land with Ore Resource data and convert it to a feasible mine.</td>
</tr>
<tr>
<td>W</td>
<td>Worldview</td>
<td>De Beers has an obligation and responsibility to convert land with diamondiferous potential to feasible mines.</td>
</tr>
<tr>
<td>O</td>
<td>Owner</td>
<td>De Beers &amp; government</td>
</tr>
<tr>
<td>E</td>
<td>Environment</td>
<td>Diamond mineralization, servitudes, surface rights &amp; legislation.</td>
</tr>
</tbody>
</table>

**Root Definition: RD6**

Planning & construction is a system owned by De Beers and the government, operated by a project team, government, servitude holders and De Beers to convert takes land with Ore Resource data and convert it to a feasible mine for the owners and servitude holders of land, commercial farmers, government, employees, De Beers and contractors influenced by diamond mineralization, servitudes, surface rights & legislation.
The next step in the process involves the construction of a theoretical model that contains the minimum essential activities to achieve the stated transformation in the environment. This Conceptual Model is contained in figure 33 below.

**Figure 33: Conceptual model – Mine Planning & Feasibility Study from view of the Exploration Geologist**
The Diamond Mining System, from the viewpoint of the Production Personnel

**Figure 34: Transformation – Diamond Mining System, from the viewpoint of the Production Personnel**

<table>
<thead>
<tr>
<th>C</th>
<th>Customers</th>
<th>De Beers, government, employees, contractors, community and illicit diamond traffickers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Actors</td>
<td>Production personnel,</td>
</tr>
<tr>
<td>T</td>
<td>Transformation</td>
<td>The system is processes that extracts diamondiferous material from the earth and convert it to unpolished diamonds.</td>
</tr>
<tr>
<td>W</td>
<td>Worldview</td>
<td>As De Beers employees they have to extract economically recoverable diamonds cost-effectively in a responsible fashion for the benefit of De Beers.</td>
</tr>
<tr>
<td>O</td>
<td>Owner</td>
<td>De Beers &amp; government</td>
</tr>
<tr>
<td>E</td>
<td>Environment</td>
<td>Diamond mineralization, community social structure, surface rights &amp; legislation.</td>
</tr>
</tbody>
</table>

**Root Definition: RD7**

The Diamond mining system is owned by De Beers and the government operated by production personnel to extracts diamondiferous material from the earth and convert it to unpolished diamonds for De Beers, government, employees, contractors, community and illicit diamond traffickers influenced by diamond mineralization, community social structure, surface rights & legislation.
The next step in the process involves the construction of a theoretical model that contains the minimum essential activities to achieve the stated transformation in the environment. This Conceptual Model is contained in figure 35 below.

*Figure 35: Conceptual model – Diamond Mining System, from the viewpoint of the Production Personnel*
The Diamond Mining System, from the viewpoint of the illicit diamond trafficker (IDT)

Figure 36: Transformation – Diamond Mining System, from the viewpoint of the illicit diamond trafficker

<table>
<thead>
<tr>
<th>C</th>
<th>Customers</th>
<th>De Beers, government, employees, contractors, community and illicit diamond traffickers / criminal network.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Actors</td>
<td>Production personnel, illicit diamond traffickers</td>
</tr>
<tr>
<td>T</td>
<td>Transformation</td>
<td>The system is processes that convert in situ diamonds into IDT diamonds.</td>
</tr>
<tr>
<td>W</td>
<td>Worldview</td>
<td>De Beers do not own the diamonds. Diamonds are natural resources and therefore belong to everybody. Just as De Beers are enriching themselves they are enriching themselves.</td>
</tr>
<tr>
<td>O</td>
<td>Owner</td>
<td>De Beers &amp; government</td>
</tr>
<tr>
<td>E</td>
<td>Environment</td>
<td>Diamond mineralization, community social structure, surface rights &amp; legislation.</td>
</tr>
</tbody>
</table>

**Root Definition: RD8**

The Diamond mining system is owned by De Beers and the government operated by production personnel and illicit diamond traffickers to convert in situ diamonds into IDT diamonds. for De Beers, government, employees, contractors, community and illicit diamond traffickers/ criminal network influenced by diamond mineralization, community social structure, surface rights & legislation.
The next step in the process involves the construction of a theoretical model that contains the minimum essential activities to achieve the stated transformation in the environment. This Conceptual Model is contained in figure 37 below.

Figure 37: Conceptual model – Diamond Mining System, from the viewpoint of the illicit diamond trafficker
The Diamond Mining System, from the viewpoint of the policymaker  
(Government / Department of Mineral and Energy)

![Diagram of the Diamond Mining System]

Figure 38: Transformation – Diamond Mining System, from the viewpoint of the DME

<table>
<thead>
<tr>
<th>C</th>
<th>Customers</th>
<th>De Beers, government, employees, contractors, community, national treasury and illicit diamond traffickers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Actors</td>
<td>Production personnel, DME, illicit diamond traffickers</td>
</tr>
<tr>
<td>T</td>
<td>Transformation</td>
<td>The system is processes that convert a diamondiferous national asset under license into De Beers’ diamonds and government’s taxes.</td>
</tr>
<tr>
<td>W</td>
<td>Worldview</td>
<td>De Beers can extract diamonds under a Mining licence as long as they adhere to the laws of the land and generate taxes and work opportunities.</td>
</tr>
<tr>
<td>O</td>
<td>Owner</td>
<td>De Beers &amp; government</td>
</tr>
<tr>
<td>E</td>
<td>Environment</td>
<td>Diamond mineralization, community social structure, surface rights &amp; legislation.</td>
</tr>
</tbody>
</table>

**Root Definition: RD9**

The Diamond mining system is owned by De Beers and the government operated by production personnel, DME and illicit diamond traffickers to convert a diamondiferous national asset under license into De Beers’ diamonds and government’s taxes for De Beers, government, employees, contractors, community, national treasury and illicit diamond traffickers influenced by diamond mineralization, community social structure, surface rights & legislation.
The next step in the process involves the construction of a theoretical model that contains the minimum essential activities to achieve the stated transformation in the environment. This Conceptual Model is contained in figure 39 below.

*Figure 39: Conceptual model – Diamond Mining System, from the viewpoint of the DME*
The Diamond Mining System, from the viewpoint of the owners – De Beers

Figure 40: Transformation – Diamond Mining System, from the viewpoint of De Beers

<table>
<thead>
<tr>
<th>C</th>
<th>Customers</th>
<th>De Beers, government, employees, contractors, community, national treasury and illicit diamond traffickers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Actors</td>
<td>Production personnel, DME, illicit diamond traffickers.</td>
</tr>
<tr>
<td>T</td>
<td>Transformation</td>
<td>The system is processes that convert diamonds in a diamondiferous deposit into the DTC’s supply of diamonds.</td>
</tr>
<tr>
<td>W</td>
<td>Worldview</td>
<td>De Beers can extract diamonds under a Mining licence as long as they adhere to the laws of the land and generate taxes and work opportunities.</td>
</tr>
<tr>
<td>O</td>
<td>Owner</td>
<td>De Beers &amp; government</td>
</tr>
<tr>
<td>E</td>
<td>Environment</td>
<td>Diamond mineralization, community social structure, surface rights &amp; legislation.</td>
</tr>
</tbody>
</table>

Root Definition: RD10

The Diamond mining system is owned by De Beers and the government operated by production personnel, DME and illicit diamond traffickers to convert a diamondiferous national asset under license into De Beers’ diamonds and government’s taxes for De Beers, government, employees, contractors, community, national treasury and illicit diamond traffickers influenced by diamond mineralization, community social structure, surface rights & legislation.
The next step in the process involves the construction of a theoretical model that contains the minimum essential activities to achieve the stated transformation in the environment. This Conceptual Model is contained in figure 41 below.

Figure 41: Conceptual model – Diamond Mining System, from the viewpoint of De Beers
The Illicit Diamond Trafficking System, from the viewpoint of the De Beers

**Figure 42: Transformation – IDT System, from the viewpoint of De Beers**

<table>
<thead>
<tr>
<th>C</th>
<th>Customers</th>
<th>De Beers, government, employees, contractors, community, national treasury and illicit diamond traffickers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Actors</td>
<td>Production personnel, police, illicit diamond traffickers, security personnel</td>
</tr>
<tr>
<td>T</td>
<td>Transformation</td>
<td>The system consists of processes that convert De Beers’ diamonds into an IDT supply of diamonds.</td>
</tr>
<tr>
<td>W</td>
<td>Worldview</td>
<td>IDT not only rob De Beers of profit due to revenue losses and additional cost but it also erodes the revenue which reduces the potential Ore Reserve and reduces life-of-mine. In addition it robs workers from work opportunity and the government of taxes, but worse it <strong>funds other criminal activity</strong> that leads to social decay and extra government spending.</td>
</tr>
<tr>
<td>O</td>
<td>Owner</td>
<td>Crime syndicates</td>
</tr>
<tr>
<td>E</td>
<td>Environment</td>
<td>Diamond mineralization, community social structure, surface rights &amp; legislation.</td>
</tr>
</tbody>
</table>

**Root Definition: RD11**

The IDT system is owned by crime syndicates operated by production personnel, police, illicit diamond traffickers and security personnel to convert De Beers’ diamonds into an IDT supply of diamonds for De Beers, government,
employees, contractors, community, national treasury and illicit diamond traffickers influenced by diamond mineralization, community social structure, surface rights & legislation.

The next step in the process involves the construction of a theoretical model that contains the minimum essential activities to achieve the stated transformation in the environment. This Conceptual Model is contained in figure 43 below.

Figure 43: Conceptual model – IDT System, from the viewpoint of De Beers
Appendix V: The VSM

16. The VSM
In his VSM, Stafford Beer proposes a general model with five system levels which are based on the way human beings are organised as viable systems.

16.1. Systems

16.1.1. System 1
The muscles and organs that are responsible for the operations of the human body form System 1. Examples of system 1’s are the heart, kidneys, liver, arms and legs as semi autonomous systems that form part of the human system. These systems are responsible for the production or transformation of a product. If any one of the System 1 activities fails, the entire system’s viability is at risk i.e. when the heart, kidneys, liver, arms or legs stop to function properly the survival of the human system is at risk. Each System 1 part is autonomous and must therefore exhibit all the features of a viable system i.e. system 1 to 5. Each part also connects to its local environment and absorbs environmental variety.

16.1.2. System 2
The sympathetic nervous system which monitors the muscles and organs forms System 2. The function of these activities is to coordinate System 1 activities in order to dampen uncontrolled oscillations between the parts.

16.1.3. System 3
The base brain optimizes and controls the internal environment of the body. The function of the System 3 activities is to control the system in such a way that internal stability is maintained. It is also responsible for the interpretation of policy decisions of higher management, the allocation of resources to the parts of System 1, effective implementation of policy and auditing using the System 3* auditing channel.

16.1.4. System 4
The mid brain is connected to the outside world through the senses. System 4 is intelligence / reporting function that absorbs relevant information from the system’s
environment, provide a model for the organisation’s environment and distributes environmental information vertically through the organisation according to its degree of importance. It is also responsible for the compilation of internal and external information in an operations room which creates an environment for decisions and to rapidly transmit urgent information from systems 1, 2 and 3 to System 5 through the algedonic signal.

16.1.5. System 5

The higher brain, System 5, is responsible for policy creation and reaction to significant signals passed from Systems 1 to 4 through the various filters. It also has to prioritise contradictory signals from System 3 (internal environment) and System 4 (external environment) based on a best balanced choice. System 5 also represents the essential qualities of the “whole” system within the Meta-system that it forms part of.

16.2. System Identification and Recursion level of the system-in-focus

Organisational functions occur at different levels of recursion. Stafford Beer refers to the triple recursion level in which our system-in-focus is embedded at level 1. The system-in-focus forms part of a larger system at the next recursion level (level 0) and consist of sub-systems at level 2. At level 1 the purpose of the system-in-focus becomes meaningful while still maintaining an identity at level 0.

The stated vision of Namaqualand Mines is: “To thrive in 2028 and beyond”. For the purposes of this exercise the current [consensus] myopic focus on diamond mining narrow the purpose to be pursued down to: “To produce diamonds sustainable in 2028 and beyond”. The current consensus interpretation of the purpose is that it implies continuous sustainability between now and Namaqualand Mines’ centenary year.

As indicated in figure 23 below, the system-in-focus (level 1) is Namaqualand Mines. De Beers Consolidated Mines forms recursion level 0 and the recursion level 2 systems that comprise Namaqualand Mines are: the BMC Production system, the KNC system, the New Capability Construction system and the Mineral Resource Development system.
16.3. **Namaqualand Mines’ Viable Systems Diagnoses**

16.3.1. **System 1**

The systems responsible for the production or transformation of products at Namaqualand Mines are:

16.3.1.1. **BMC production system**

The two phased extraction transformation process starts with the mining operations which involve the annual stripping and back dumping of approximately 20 million tonnes of overburden with Dragline and conventional stripping operations to expose the diamondiferous gravels. This is followed by the excavation and, in some instances, screening of ore before for hauling to one of two treatment plants. Manual or mechanical sweeping operations, depending on the bedrock condition, follow the mass excavation process. Rehabilitation of the waste dumps (product) concludes the mining operations. A 70 ton per swing capacity Dragline and a large earthmoving
fleet comprising of 40 ton capacity Articulated Dump Trucks (ADTs), 35 ton capacity rigid frame haul trucks, excavators, front-end loaders, dozers and support equipment are maintained and supported through the earthmoving maintenance department to meet the mining production needs. Run-of-mine bulk sampling of trenches, to confirm production grades, forms part of the mining process.

Diamond production from the land based mining operations is augmented with production from the surfzone contractors. These contractors mine material from the inter-tidal zone with small scale diver assisted suction equipment. Their equipment mainly consists of a tractor modified to drive a rotary classifier and pump, to which the suction hose is attached. Concentration is done with a mobile jigging plant operated on site. Surfzone contractor mining contribute less than 1% of the diamond production.

Infrastructure resources in the form of two treatment plants exist at the AK3 and Tweepad plant areas. Material from the treatment plants is transported to the Recovery plant where final diamond (product) recovery takes place. A common Recovery plant treats diamondiferous concentrate from the BMC and KNC treatment plants. A Bulk sample plant is utilised for the treatment of Bulk Samples.

### 16.3.1.2. KNC diamond production system

The two phased extraction transformation process starts with the mining operations which involve the annual stripping and back dumping of approximately 20 million tonnes of overburden through conventional stripping operations to expose the diamondiferous gravels. This is followed by the excavation and, in some instances, screening of ore before for hauling to one of two treatment plants. Manual sweeping operations follow the mass excavation process. Rehabilitation of the waste dumps (product) concludes the mining operations. A large earthmoving fleet comprising of 40 ton capacity ADTs, excavators, front-end loaders, dozers and support equipment are maintained and supported through the earthmoving maintenance department to meet the mining production needs. Run-of-mine bulk sampling of trenches, to confirm production grades, forms part of the mining process.
Diamond production from the land based mining operations is augmented with production from the surfzone contractors. These contractors mine material from the inter-tidal zone with small scale diver assisted suction equipment. Their equipment mainly consists of a tractor modified to drive a rotary classifier and pump, to which the suction hose is attached. Concentration is done with a mobile jigging plant operated on site. Surfzone contractor mining contribute less than 1% of the diamond production.

Infrastructure resources in the form of two treatment plants exist at Koingnaas and Mitchells Bay. Material from the treatment plants is transported to the Recovery plant in the BMC where final diamond (product) recovery takes place. A Bulk sample plant is utilised for the treatment of Bulk Samples.

16.3.1.3. Ore Reserve development system

The exploration transformation process was transformed with the introduction of Airborne Electro-Magnetic technology (AEM). This enabling technology allows the surveying of large areas for the presence of marine or fluvial secondary deposits. The AEM survey results are used to identify targets for the large diameter auger-drilling programme. The resulting data from the drilling programme is transformed through geo-statistical analysis into a geological model referred to as the Resource model. Reserve estimation, a process involving the selection of a subset of economically exploitable resource blocks, follows. The resulting Reserve is used in the Mine Planning process that focuses on the scheduling of mining and treatment activities over the life-of-mine.

Exploration resource capacity comprises of a fleet of Reverse Circulation (RC) probe drills as well as two Large Diameter Augers (LDA’s). Two Prospecting plants are utilised for the treatment of prospecting samples.

This resource development process is also augmented through the bulk sampling of new areas within the mining right areas with the BMC & KNC bulk sampling resources.
All exploration data is subjected to a rigorous process of data interpretation, geological modelling and evaluation in order to produce a mineral Resource. This Resource forms the subject of further financial and technical evaluation and planning in pre-feasibility and feasibility studies to produce a Reserve extension which is potentially economically extractable.

16.3.1.4. Construction systems
The construction system comprises of the typical engineering construction capacity to construct new capacity. These skill levels fluctuate as requirements change and are sourced from external contractors. This system delivers discrete units of new capability like the recovery plant treatment capacity and efficiency upgrade, the optical sorting plant which produces additional treatment capacity and the Buffels Project treatment plant. The construction capacity only exists for the duration of the project where after it dissolves and regroups, if required, in the new project.

16.3.2. System 2

16.3.2.1. Production planning system
The production planning system consists of a short-term planner/foreman at the BMC and the KNC, interacting with the short-term planning capacity in the Mine planning department. It focuses on production planning and bulk sampling activities of each of the production complexes. The system aims to damp oscillation in the system through the combined planning of production requirements for the mine.

16.3.2.2. Earthmoving equipment planning system
This systems links closely to the production planning system and is responsible for the production of a combined earthmoving equipment forecast for the mine. This forecast highlights additional and replacement vehicle requirements for the mine (KNC combined with BMC and any new areas). Due to the historic structuring and funding of the Primary Exploration Project, exploration requirements are not included in these forecasts.
16.3.2.3. Capital planning system

The capital planning system is fed with information from the production planning systems, the Earthmoving equipment planning system, and operational requirements from all four system 1 processes. It aims to dampen oscillation in the capital equipment requirements by holistically reviewing all the mines’ capital requirements. Project capital requirements are voted and monitored by the Board on a quarterly basis whilst smaller amounts of exceptional capital requirements can be authorized through the chairman of the Board. (S3 control activity).

16.3.2.4. Finance and Administration system

Working cost cash-flow is planned through an annual budget process and managed by each of the S1 processes. The finance and admin system provides an oscillation dampening function by regular monitoring total cash-flow and influencing actual expenditure. This system also facilitates updated forecasts and interventions in cash-flow expenditure on a regular basis. In addition to the cost management service they also provide a central payroll service, manage debtors and creditors and produce the financial reports.

16.3.2.5. Human Resources system

The Human Resource system is responsible for the provision of the required skills at the right time and the right place. This activity includes training as required. Oscillation is damped through the balancing of labour and skills requirements over the various S1 processes.

16.3.2.6. Information system

The centralized Information system provides the required infrastructure and platform that enables the four S1 processes. It forms the backbone for communication with-in the business. Standardisation of software and the implementation of group systems like centralized payrolls and the SAP HR components have contributed to oscillation dampening between S1 systems.
16.3.2.7. Stores system

The centralized stores system ties in closely with the earthmoving equipment planning system, the capital planning system and the operational requirements from all four system 1 processes. It provides a centralised facility which caters for the required material of the four S1 processes.

16.3.3. System 3

System 3 activities focus on optimising the internal environment. The focus is on the distribution of resources among the S1 activities. Closely related to these systems are the System 3* audit functions which monitor the relationship between the S1 and S3 activities.

16.3.3.1. Performance measurement and Balanced Score Card system

Mining performance measurement information mainly consists of tons stripped, tons transported and area swept information gathered through a rudimentary mining operations control room and various ad hoc systems relying on manual input. This information is supplemented and audited through weekly bedrock Survey measurements and a monthly survey of depletions. Treatment performance is measured by tons treated (mostly weight meter readings) and diamonds recovered. The efficiency of the work system is measured by the diamonds recovered vs. expected depletion expressed as a volumetric diamond recovery Mine Call Factor.

A systematic treatment process audit system is used to check the efficiency of various components of the treatment process. In this process spiked diamonds are fed into the system to test for recovery in the process.

Production performance information is absorbed through the Production Statistics System into the required level of Management Reports (daily, weekly and monthly). Performance is monitored through weekly production meetings, a monthly Balanced Scorecard process and a quarterly Ore Reserve Management meeting.
Prospecting drilling performance is measured by metres drilled and tons treated through the Bulk Sample Plant. Financial performance measurement of expenditure against budget and cash flow against targets is done at a monthly meeting.

Due to the nature of the measurements, metres drilled, actual expenditure and diamonds produced can be measured accurately. All other performance measurements contain inherent flaws due to the high variability of the Ore Reserve and the quality of the measurement systems. Higher accuracy information can be obtained through the exponential increase in measurement cost.

16.3.3.2. Production Management system

Production management is done based on the production measurement data obtained through rudimentary payload systems, weekly bedrock measurements and monthly ore reserve depletion measurements. Production control involves hands-on decisions on operational alternatives given the environmental and resource constraints which exist at a specific point in time.

16.3.3.3. Financial Management system

The financial management system ties in closely with the Finance and Administration system. The control function is conducted through monthly feedback and control meetings and quarterly high level group review.

16.3.3.4. Project Management system

Projects are controlled through the respective steering committee meetings as well as quarterly project meetings which tie in closely with the capital planning system.

16.3.3.5. Security system

This system is responsible for the setting and enforcement of standards that provide diamond security at source as well as incoming and outgoing material movement and access control.

16.3.3.6. Safety, Health, Hygiene and Environmental (SHHE) system

The SHHE system assists in the compliance to the set SHHE standards. Although this department fulfil a S3 measure and enforces of standards function, they also conduct
some S2 coordination functions which focus on creating an enabling environment and setting standards.

16.3.3.7. Executive Committee (EXCO) weekly meeting and safety walkabout system

The EXCO weekly meeting system ensures compliance to set targets. It also decides on the implementation of strategy and issues which impacts on all four S1 activities. The safety walkabout system assists in the compliance to the set SHHE standards.

16.3.3.8. Internal & External Audit system

The audit system provides a feedback system which indicates if the controls put in place by S3 are effective. Although corrective management actions could be taken to address non-compliance, the main purpose of this system is a feedback and not a control system.

16.3.3.9. Mineral Resource Management system

Due to the high level of geological variability in an alluvial diamond deposit the geological confidence in grade and ore quantity estimates are low in relation to kimberlitic deposits. As a result, high variability is experienced on diamond footprint per production series and customer diamond footprint variations per series are not met. The system aims to monitor and control deviations from the mine plan and explain some of the variances experienced in the diamond footprint, diamond value, recovery efficiency and resource related deviations. It also ratifies recommendations on ore Reserve amendments and recommends management decisions on the way forward for the remaining production for the year to minimize annual variations.

16.3.4. System 4

System 4 is the intelligence function which connects the internal environment to the external environment through the senses. It focuses on projections and forecasts of the future.
16.3.4.1. **Strategy Workshop system**
This system aims to relate the set group strategy into a relevant strategy for Namaqualand Mines. The system consists of EXCO and some members of the senior management team, interacting on facilitated strategy sessions.

16.3.4.2. **Strategic Business Planning (SBP)**
The mine planning department is responsible for the facilitation of the SBP process and the compilation of the SBP document. The system consists of off-mine requirement formulating workshops and on-mine workshops with relevant production departments, financial department and management team members.

16.3.4.3. **Strategic Projects Department (SPD)**
This system focuses on the fast-tracking of projects highlighted as of strategic importance and requiring special technical focus. It also provides a link to the external environment through international visits to other operations and suppliers in order to gain technical experience.

16.3.5. **System 5**
System 5 monitors and controls the balance between system 3 (internal environment) and the system 4 (external environment). This balance continuously fluctuates over time.

16.3.5.1. **General Manager and EXCO meeting system**
Any urgent market and environmental signal requiring rapid management response is translated through this system. It consists of business directives issued by the DBCM Head of Operations to the General Manager who then translate these requirements into Namaqualand Mines specific directives through the EXCO team.

16.3.5.2. **CHQ Technical Assurance system**
This system consists of a series of Project Technical Reviews and Quarterly Reviews of on-mine activities and processes by off-mine discipline heads and technical consultants. New Project proposals are tabled by the mine for ratification by this system that has direct recommendation and feedback links with the board. Any change in market and environmental requirements are also translated into business directives by this system.
16.3.5.3. **Code of Practice (COP) system**
A number of COPs were compiled as per legal requirements. These COPs set the operational and safety standards for certain activities as required by law. It also dictates the due processes that need to be followed to conduct these activities.

16.3.5.4. **Policy and Procedure system**
Group policies and procedures set the operational requirements for certain actions and activities. On-mine policies are formulated within these battery limits through workgroups. These policies and procedures are subjected to peer review and EXCO ratification before implementation.

16.3.5.5. **The KPI system**
Performance management targets forms a vital steer and influences the focus in the business. This system should align the business requirements with the performance management targets. Although the performance management system is a system 3 activity, the setting of the correct Key Performance Indicators (KPIs) is a crucial S5 activity.
Appendix VI: Declaration

DECLARATION

1. I know that plagiarism is wrong. Plagiarism is to use another’s work and pretend that it is one’s own.

2. I have used a recognized convention for citation and referencing. Each significant contribution and quotation from the work of other people has been attributed, cited and referenced.

3. I certify that this submission is all my own work.

4. I have not allowed and will not allow anyone to copy this essay with the intention of passing it off as his or her own work.

SIGNATURE: __________________ STUDENT NUMBER:

BTHJOH018
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The end