

**Guiding principles in rational and intuitive strategic
decision making at a chemicals business**

Sonnette Biddulph

Student number: 14392497

A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Masters of Business Administration.

9 November 2015

ABSTRACT

In the current complex and volatile macroeconomic business environment it has become important to understand the relative value of and interaction between rational and intuitive decision-making processes and the principles applied by leaders in making strategic choices. This research explored the prevalent decision-making processing styles and guiding principles applied by C-suite executives and senior managers in strategic decision making.

The research was undertaken as a single, explanatory case study. Data was collected through semi-structured, face-to-face interviews at which the same set of three vignettes was discussed by utilising a standard set of semi-structured questions.

Key findings were that decision-making styles are primarily situation-based with the hybrid approach as prevalent decision-making style. Both rational and confirmation bias are however customary and a consequence of the business environment. As experience and knowledge escalate over time, the rational decision-making approach becomes more intuitive, allowing the decision-making process to become quicker and the possibility of lost opportunities less. The identified guiding principles are all interrelated and aligned with shared corporate values. The study contributes an integrated decision-making framework that may be used as a practical tool to evaluate strategic decision-making styles.

KEYWORDS

Decision making, guiding principles, rational, intuition

DECLARATION

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

Sonnette Biddulph

9 November 2015

TABLE OF CONTENTS

ABSTRACT	II
KEYWORDS	III
DECLARATION	IV
LIST OF FIGURES.....	VIII
LIST OF TABLES	IX
CHAPTER 1: RESEARCH PROBLEM AND PURPOSE	1
1.1 Introduction to the research problem and purpose	1
1.2 Research title	2
1.3 Definition of research problem and purpose	2
1.4 Research motivation	4
1.5 Definition of terms	5
1.6 Research objectives	6
CHAPTER 2: LITERATURE REVIEW	8
2.1 Introduction to theory and literature review	8
2.2 Decision making.....	9
2.2.1 Strategic decision making.....	9
2.2.2 Intuitive versus rational decision making	11
2.2.3 Decision-making models.....	15
2.3 Intuitive decision making	18
2.3.1 Intuitive expertise.....	21
2.3.2 Time constraints and complex environments	23
2.4 Rational decision making	24
2.5 Woiceshyn's strategic decision-making model	25
2.5.1 Integration by essentials	26
2.5.2 Guiding principles	27
2.5.3 Shared corporate values.....	29
2.6 Discussion and conclusion	29
CHAPTER 3: RESEARCH QUESTIONS.....	33
CHAPTER 4: RESEARCH METHODOLOGY AND DESIGN.....	35
4.1 Introduction	35
4.2 Research methodology and design	35
4.3 Population	37
4.4 Sample unit of analysis	38
4.5 Sampling method and sample size.....	38
4.6 Measurement instrument and data collection tool.....	38
4.7 Data gathering process and collection method.....	40
4.8 Data analysis approach.....	41
4.9 Strategies to ensure quality of data	43
4.10 Research ethics	43
4.11 Research limitations.....	44
CHAPTER 5: RESULTS	46
5.1 Sample description.....	46
5.2 Findings relating to the data analysis approach.....	48
5.2.1 Coding and primary documents.....	48
5.2.2 Code and super code families	49
5.2.3 Word-frequency count	49
5.3 Research Question 1 results: Preferred decision- making style	50
5.3.1 Rational decision-making approach.....	51
5.3.2 Consultative approach	53
5.3.3 Intuitive decision-making approach	53
5.3.4 Importance of experience	54

5.3.5	Time as a factor	55
5.3.6	Hybrid approach of integration by essentials.....	56
5.3.7	Perceived decision-making style at the selected company	57
5.3.8	Conclusion on results: preferred decision-making style	58
5.4	Research Question 2 results: Guiding principles	59
5.4.1	Values	59
5.4.2	People	61
5.4.3	Safety.....	62
5.4.4	Excellence and distinction	62
5.4.5	Value creation and business focus.....	63
5.4.6	Logical and systematic thinking	64
5.4.7	Responsibility and leadership	65
5.4.8	Stakeholder focus	66
5.4.9	Conclusion on results: guiding principles applied.....	68
5.5	Research Question 3 results: General principles applied by the oil company CEOs	69
5.5.1	Rationality	69
5.5.2	Value creation	70
5.5.3	Independence	70
5.5.4	Justice	71
5.5.5	Self-interest.....	71
5.5.6	Honesty.....	72
5.6	Research Question 4 results: Corporate values at the nominated company	72
5.7	Leadership at the selected company	73
5.8	Conclusion	74
	CHAPTER 6: DISCUSSION OF RESULTS	75
6.1	Introduction to the discussion of results.....	75
6.2	Research Question 1: Preferred decision-making style	75
6.2.1	Situation-based evidence of the preferred decision-making style	76
6.2.2	Hybrid approach evidence of the preferred decision-making style.....	77
6.2.3	Rational decision-making evidence of the preferred decision-making style.....	79
6.2.4	Experiential intuitive decision-making evidence	80
6.2.5	Evidence of applying both decision-making styles sequentially	82
6.2.6	Evidence of side effects of the different decision-making styles	83
6.2.7	Conclusion on the discussion of results: Preferred decision-making style.....	84
6.3	Research Question 2: Guiding principles.....	87
6.3.1	Significance of values as a guiding principle	87
6.3.2	Significance of people, safety and stakeholder focus as guiding principles.....	88
6.3.3	Significance of excellence and distinction, supported by logical and systematic thinking as guiding principles.....	89
6.3.4	Significance of value creation and business focus as a guiding principle	90
6.3.5	Significance of responsibility and leadership as a guiding principle.....	90
6.3.6	Conclusion on the discussion of results: Guiding principles applied	92
6.4	Research Question 3: General principles applied by the oil company CEOs	94
6.5	Research Question 4: Corporate values at the nominated company	99
6.6	Assumptions to the discussion of results.....	101
	CHAPTER 7: ASSUMPTIONS AND RECOMMENDATIONS	105
7.1	Introduction	105
7.2	Principal findings.....	105
7.2.1	Decision-making styles	105
7.2.2	Guiding principles	106
7.2.3	Integrated decision-making framework.....	107
7.3	Implications for management	108
7.4	Limitations of the research	110
7.5	Suggestions for future research	110
7.6	Concluding remarks	112
	REFERENCES.....	113
	APPENDICES.....	118
	Appendix 1: Integration by essentials diagram	118
	Appendix 2: Vignettes for semi-structured interviews	119

Appendix 3: Questions for semi-structured interviews	121
Appendix 4: Consistency matrix	122
Appendix 5: Network view of codes used, families and super-families.....	123
Appendix 6: Consent form	124
Appendix 7: List of respondents	125
Appendix 8: Ethical clearance letter	126
Appendix 9: Turnitin report	127

LIST OF FIGURES

Figure 1: Situations favouring analytical and intuitive decision making	11
Figure 2: System 1 and System 2 characteristics	13
Figure 3: The two-minds model	14
Figure 4: Decision star	16
Figure 5: Expert model	16
Figure 6: Model of dynamic decision making to manage strategic paradoxes.....	17
Figure 7: Intuition and expertise distinction and overlap constructs	22
Figure 8: Decision-making drivers	24
Figure 9: Theoretical underpinnings of guiding principles	28
Figure 10: Inductive data analysis approach.....	42
Figure 11: Code creation for each participant	48
Figure 12: Word-frequency count	50
Figure 13: First decision-making approach of respondents.....	51
Figure 14: Reference to decision-making style for each age group	58
Figure 15: Decision-making framework based on preferred decision-making style	86
Figure 16: Integrated decision-making framework	94
Figure 17: Interaction of reason and intuition in decision making.....	118

LIST OF TABLES

Table 1: Selected definitions of intuition	19
Table 2: Influences on the usage and efficiency of intuition	20
Table 3: Oil company CEOs' principles compared to guiding principles at the selected company	99
Table 4: Shared corporate values compared to evident guiding principles	101

CHAPTER 1: RESEARCH PROBLEM AND PURPOSE

1.1 Introduction to the research problem and purpose

Why do some decision makers make superb choices and achieve superior performance and others do not? What allows them to make quick and effective decisions, while this is not a general competency for all (Woiceshyn, 2009, 2011, 2015)?

A decision is classified as strategic or non-strategic depending on the influence of the degree of commitment or whether a decision is reversible; it is also subject to the scope of the organisation including the choice of products, services, activities and markets (Shivakumar, 2014). Shivakumar (2014) described effective strategic decision making as a dynamic process which is an outcome of careful analysis, planning and implementation, restricted by the decision makers' bounded rationality. Smith (2015) described decision-making as a dynamic process of strategic paradox management through differentiating and integrating leadership practices. Differentiating practices emphasise the unique characteristics of exploration and exploitation, whereas integrating practices focus on synergies and mutual reliance (Smith, 2015). A complex and volatile strategic decision-making environment requires highly strategic thinkers with an essential trait of strategic perspective (Keelin & Arnold, 2002).

From the literature review it became evident that scholars concluded that decision makers naturally combine both the thinking and decision-making styles of intuition and rational analysis in their decision-making processes (Agor, 1986; Dane & Pratt, 2007; Epstein, 2010; Langlely, 1995; Louis & Sutton, 1991; Simon, 1987; Woiceshyn, 2009; 2011; 2015). Woiceshyn (2015) argued that the quality of thinking and decision making for long-term business success lies in how decision makers allow interaction between their conscious (cognitive reasoning) and their sub-conscious (intuitive) mind. She described it as a logical conscious dispensation method where both rational analysis and intuition constantly interacts (Woiceshyn, 2015). Woiceshyn (2009; 2011; 2015) named this process: "integration by essentials" (p. 300; p. 312; p. 79 respectively).

The storing and retrieving of information is made more effective and efficient through the integration of knowledge by essentials and provides decision makers with critical

decision-making tools called “guiding principles” (Woiceshyn, 2009, p. 301; 2011, p. 314; 2015, p. 81). Locke (2002) defined a principle as a universal reality on which other realities depend and indicated that principles cannot be applied in a vacuum; principles should be coordinated towards achieving a goal. According to Smith (2015) and Walumbwa, Maidique and Atamanik (2014) principles are dynamic and enable individuals to make decisions fast, based on pertinent experiential knowledge without conceding to “analysis paralysis” (Langley, 1995, p. 63).

Although both thinking and decision-making styles of intuition and rationality are generally applied by decision makers, insufficient attention has been allocated as yet to the research on the interaction between the two decision-making styles (Agor, 1986; Inamizu, 2015; Matzler, Uzelac & Bauer, 2014; Sadler-Smith & Burke-Smalley, 2015; Walumbwa et al., 2014; Woiceshyn, 2009). This, together with the view that guiding principles should be explored further (Oliver & Roos, 2005), is discussed in more detail in Section 1.4 as part of the motivation for the research study.

1.2 Research title

The research title is: Guiding principles in rational and intuitive strategic decision making at a chemicals business.

A detailed academic and business motivation as a need for the research study follows in Section 1.4.

1.3 Definition of research problem and purpose

Both thinking and decision-making styles of rational analysis and intuition are generally applied by individuals and managers in their decision-making processes; dependent on the criteria applicable in the given situation or scenario (Agor, 1986; Dane & Pratt, 2007; Epstein, 2010; Langley, 1995; Louis & Sutton, 1991; Simon, 1987; Woiceshyn, 2009; 2011; 2015). Woiceshyn (2009; 2015) stated that to determine integration by essentials (the cognitive interaction between intuition and rational analysis), one must first determine the meaning of these concepts. Definitions of critical terms are described in Section 1.5.

Different definitions exist to describe intuition (see section 2.3), but the implicit meaning of intuition is an inexplicable hunch or gut feel (Miller & Ireland, 2005) that indicates to people what to do. Dane and Pratt (2007) stated that rationality is frequently related to the head and intuition with the heart. However, Khatri and Ng (2000) found that intuition is only effective in unstable environments, when the use thereof can be positively associated with organisational performance. Therefore to ensure sustainable business success one decision-making style cannot be realistically applied with the intention of it being superior to the other.

Experience is seen as a critical element of the intuitive decision-making process (Barnard, 1938, cited in Sadler-Smith, 2015; Kahneman & Klein, 2009, cited in Sadler-Smith, 2015; Simon, 1987). Salas, Rosen and DiazGranados (2010) argued that expertise and intuition are undeniably different, but that intuition is entrenched in expertise. This statement was supported by Glöckner and Witteman (2010) who argued that intuition is centred in spontaneous processes that rely on facts and knowledge structures attained through repetition and learning. Epstein (2010) found that a significant benefit of the experiential/intuitive system is that the rational system can be influenced by it without the rational system even recognising this condition. Experiential intuition is described by Sadler-Smith and Burke-Smalley (2015) as sophisticated “pattern matching” (p. 12) originated from experience, practice and feedback. Research studies therefore agree that experience is an underlying and critical element in the intuitive decision-making process.

Aziza (2013) argued that key to effective decision making is the emphasis of important data, which is possible when both experience and knowledge are incorporated into principles and concepts. With the help of principles, managers are able to effectively identify critical data and base their decisions on only those data. Woiceshyn (2009; 2011; 2015) supported this by arguing that the critical part of effective decision making is the organisation of knowledge, including experience into principles and concepts, based on the idea of integration by essentials. Woiceshyn (2011) described principles as simplifications from past experience or present interpretations. Concepts and principles are then logically organised and stored in the sub-conscious memory, available for retrieval as needed to speed up the decision-making process.

Drawn from the above research studies and arguments, the overall research question can therefore be defined as the following:

- What is the prevalent decision-making processing style and guiding principles applied by C-suite executives and senior managers in strategic decision making at the nominated chemicals business?

A detailed discussion on the research questions follows in Chapter 3.

1.4 Research motivation

From an academic perspective the motivation for the research is that different scholars (Inamizu, 2015; Matzler et al., 2014; Walumbwa et al., 2014) believe that decision-making styles have been inadequately analysed and that the term guiding principles should be explored further (Oliver & Roos, 2005). Woiceshyn (2009) indicated that insufficient study has been conducted regarding how rational analysis and intuition interacts in the decision-making process. Sadler-Smith and Burke-Smalley (2015) argued that research on intuition has come a long way since Agor (1986), who stated that intuition is the most frequently used decision-making style, but that only the research foundation was laid and that the journey still had to begin. In Sadler-Smith's (2015) own words: "intuition research is still very much in its infancy" (p. 17).

Trends like globalisation and technology development, the current volatile, complex, uncertain and fast-moving business environment; all have an enormous impact on strategic decision making in organisations today (Sadler-Smith, 2015), including at the nominated chemicals business. Additional South African-related criteria that complicate the business environment even more include inequality, unemployment and work ambiguity. These circumstances imply that managers have more responsibility in terms of creating shareholder value while mitigating risk and therefore managers should be more adaptable to extremes. In volatile and uncertain environments it might mean that decisions must be taken more rapidly and effectively (Mason, 2015). A leader should also understand what their personal decision-making attributes are and continuously challenge the validity and relevance of those principles in a constantly changing environment (Walumbwa et al., 2014).

The nominated company is an integrated chemicals business that leverages talent and expertise of more than 30 000 employees working in more than 30 countries worldwide. In 2012 at the height of uncertainty in the macroeconomic environment, the nominated company identified the necessity for change and decided to reposition itself

through a group-wide change programme to, amongst others, simplify governance and adapt business structures according to an integrated value chain approach.

The nominated company's profitability and market share are related to the internationally traded commodity market and the recent macroeconomic dynamics impacted the company's market share negatively by nearly 30% in less than a year. The impact of this dramatic mega-trend led the company to further identify synergies and optimisation possibilities and introduced a further change intervention plan to conserve cash. These strategic decisions at the nominated company in early 2015 were complex and were classified under the umbrella of a total uncertain and ambiguous global economic environment. Strategic decisions on "what next" had to be taken with agility and under enormous time pressure.

A prominent question arose: On what basis should leadership of internationally commodity exposed businesses make strategic decisions in a crisis situation, such as this volatile and dynamic macroeconomic environment, and what decision-making style would be most appropriate and effective to ensure sustainable shareholder growth? What guiding principles should exist and if need be, what other principles should be adopted? These represent some of the important questions asked by industry analysts; applicable also to many other businesses locally and internationally.

1.5 Definition of terms

To ensure clarity on critical concepts and terms in the research document, the researcher provided definitions as indicated below:

- **Strategic decision making** resolute from the influence of the degree of commitment or whether a decision is reversible, and the scope of the organisation including the choice of products, services, activities and markets (Shivakumar, 2014). According to Smith (2015) the decision-making process is a dynamic process of managing strategic paradoxes through differentiating and integrating practices.
- **Intuition** is commonly described as an inexplicable hunch or gut feel (Miller & Ireland, 2005) indicating to people what to do. Sadler-Smith (2015) defined intuition as non-conscious, uninvited and instantaneous. It has an affective

(feeling) tone and is based on holistic associations to allow for patterns or scripts stored in long term memory; also equal to judgement.

- **Experiential intuition** is described by Sadler-Smith and Burke-Smalley (2015) as sophisticated "pattern matching" (p. 12) originated from experience, practice and feedback. According to Salas et al. (2010) the outcome of experiential intuition is the "knowing without knowing" (p. 944) effect.
- **Rationality** is described by Mason (2015) as evidence-based or fact-based decision making which is about data-driven decisions that support continuous improvement and learning for which specific decision-making drivers of speed, strategy and leadership are needed.
- **Integration by essentials** is the natural combination of both the thinking and decision-making styles of intuition and rational analysis in the decision-making process. Woiceshyn (2009; 2011; 2015) described integration by essentials as the interaction of a decision maker's conscious (cognitive reasoning) and sub-conscious (intuitive) mind.
- **Principles** are simplifications from past experiences, or present interpretations and Woiceshyn (2009; 2011; 2015) described it as mental space savers in the sub-conscious for quick and informal retrieval of knowledge; as an individual has only limited capacity to retain knowledge in the conscious mind.
- **Spiralling** to decisions is described by Woiceshyn (2009; 2011; 2015) as a filtering process of iterative loops where the decision maker spirals between new facts and the integrated knowledge stored in their sub-conscious mind in the form of concepts or principles.

1.6 Research objectives

The purpose of the research was to identify the prevalent decision-making processing style at the nominated chemicals company, but also to identify the relevant guiding principles applied during the data gathering interview process that enable business leaders to identify essential data.

The objectives of the research study therefore were:

- To interrogate what preferred decision-making style (rational analyses, intuitive/experiential or a hybrid approach of integration) exists in strategic decision making amongst the members of the managerial sample group at the nominated chemicals business;

- To interrogate the existence of guiding principles during decision-making processes and define the exhibited guiding principles accordingly;
- To interrogate similarities or differences between the sample managers' decision-making guiding principles and the general principles as described by Woiceshyn (2009; 2011); and
- To compare the sample managers' decision-making principles with the shared corporate values of the nominated chemicals business.

Due to the single case study methodology, only managers of the one nominated company were interviewed, which means that the conclusions reached might not be applicable to the typical South African organisation. Nevertheless, the research study might add valuable inputs for future research as the environment for research is conducive. The purposive sample group consisted of experienced top professional C-suite executives and senior managers and the researcher experienced enthusiasm from the identified sample group. Members of the sample group are known to the researcher in a professional manner and reasonable access to diaries was experienced as the nominated company is also the researcher's employer. In Chapter 4 that describes the research methodology and design process, the possibility of researcher bias is addressed in Section 4.2 and credibility of the research project is discussed in Section 4.9.

The nominated chemicals company is particularly technologically orientated with a high emphasis on research and technology and holds extensive large capital investments. In terms of risk mitigation it is therefore expected that the typically applied decision-making style at the nominated company is rational analysis. Strategic decision making at the nominated company takes place within the interviewed layers of executive and senior management where intuitive decision making, together with the rational analysis approach, are part of the daily decision-making routine. Agor (1986) suggested that intuition is a critical differentiating factor for successful top executives and functional boards. This was supported by Hayashi (2001) who argued that the top positions in a company need to have sound business instincts, and that this is also where the "aha" (p. 61) moments happen. The selected purposive sample methodology for the research study enabled the targeting of specific high level executives and senior management for the interview process.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction to theory and literature review

“Nothing tells you more about an organisation than the way it makes a decision” (Bakke, cited in Walumbwa et al., 2014, p. 284).

How are strategic business decisions made today and what principles are applied? What decision-making concepts are applied to gain and maintain strategic and competitive advantage? Modern organisations operate in rapid changing economic, social and business environments, impacting the complexity and uncertainty in decision making. Decision makers have to operate under extreme time pressure and are normally unable to carry out time consuming analyses (Dane & Pratt, 2007). What are the most appropriate thinking and decision-making styles and how do these compare to the prevalent decision-making style and principles at the nominated chemicals business under review?

Decisions can be based on factual evidence for more informed and systematic results, but decision makers can also apply intuition or gut feel in the decision-making process. Would a hybrid approach of integration be more effective in decision making (Mason, 2015; Woiceshyn, 2009; 2011; 2015)?

Woiceshyn (2009; 2011; 2015) argued that dependent on the specific circumstances, decision makers apply both intuition and rational analysis in the decision-making process by spiralling back and forth between the two processing styles. Spiralling to decisions was described by Woiceshyn (2009; 2011; 2015) as a filtering process of iterative loops where the decision maker spirals between new facts and the integrated knowledge stored in their sub-conscious mind in the form of concepts or principles. Franklin (2013) supported this argument of spiralling to decisions by saying that in order to produce superior arguments, the decision-making process must have the characteristics of being: 1) systemic, 2) iterative, 3) adaptive 4) self-correcting, and 5) active. The integration of knowledge and experience makes the decision-making process and retrieval of information much quicker and more accurate, but also results in essential guiding principles (Woiceshyn, 2009; 2011; 2015).

The aim of the research was to identify what thinking and decision-making style is prevalent at the nominated chemicals company, but also to identify relevant guiding principles which enable the sampled business leaders and managers to identify essential data in support of their decision-making processes. The process followed in the research literature review was firstly to discuss the necessities of strategic decision making; consider different scholars' definitions of intuitive and rational decision making and describe different decision-making models. Within the intuitive decision-making framework the importance of experience was acknowledged, as well as the impact of time constraints and the complexity of the situation. Rational decision making was researched extensively, followed by a detailed analysis of Woiceshyn's (2009; 2011; 2015) strategic decision-making model consisting of the elements of integration by essentials, guiding principles and spiralling. Chapter 2 concludes with a discussion of pertinent information garnered during the literature review.

2.2 Decision making

Decisions are complex and ambiguous and are concerned with making choices through compromising without the concern of the absolute situation of right or wrong. To make the right decisions, decision makers should have the ability to handle complexity and apply rigorous judgement and knowledge from past experiences, but also have the confidence to take the necessary action (Kourdi, 2003).

2.2.1 Strategic decision making

The influence of the degree of commitment or whether a decision is reversible, and the scope of the organisation, including the choice of products, services, activities and markets determines whether a decision is classified as strategic or non-strategic (Shivakumar, 2014). Shivakumar (2014) described effective strategic decision making as a dynamic process which is an outcome of careful analysis, planning and implementation, restricted by the decision makers' bounded rationality. Many internal and external players in an organisation act both independently and collaboratively to analyse and implement decisions and strategy (Shivakumar, 2014). A complex and volatile strategic decision-making environment requires highly strategic thinkers with an essential trait of strategic perspective (Keelin & Arnold, 2002). Supported by Kourdi (2003), Keelin and Arnold (2002) further stated that strategic perspective can also be described as the ability of a leader to see the bigger picture and to simplify complex

and randomly disconnected detail, normally prevalent in an unstable decision-making environment.

According to Smith (2015) the decision-making process is a dynamic process of managing strategic paradoxes through differentiating and integrating practices, whereas differentiating practices focus on the unique characteristics of exploration and exploitation, while integrating practices on the other hand focus on synergies and mutual reliance. Smith (2015) described the differentiating practices' pattern of moving between the areas of exploration and exploitation as "consistently inconsistent" (p. 79) and stated that these two areas are inconsistent with one another, yet they are both very important for long-term sustainable success.

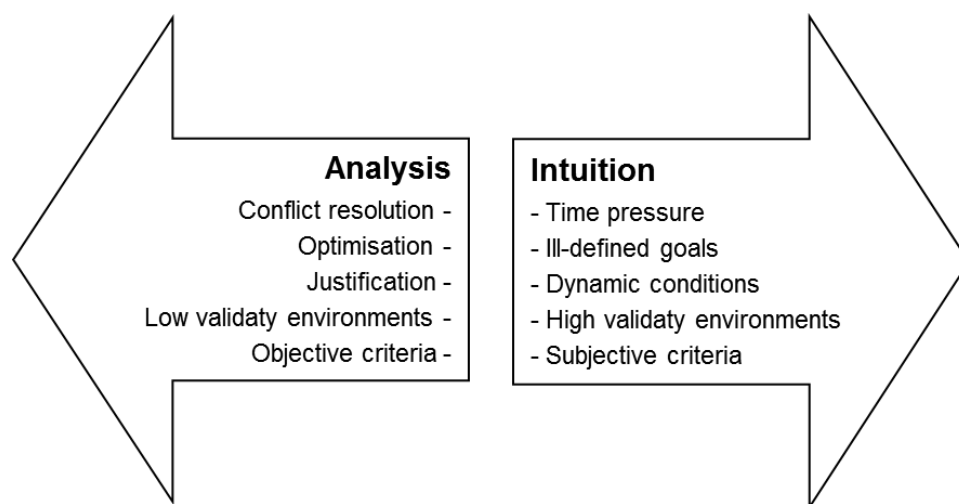
Miller and Ireland (2005) argued that for future sustainability, innovation is an important aspect of a company's competitive advantage in creating value for customers and intuition is normally perceived as a crucial component for effectiveness in the process of strategic decision making. Miller and Ireland (2005) substantiated this by arguing that the value of ambidexterity in strategic decision making is the fact that managers are able to 1) explore new technologies and markets; and 2) further exploit existing assets, technologies and markets. Miller and Ireland (2005) argued further that intuition can be valuable for exploration (searching for new ways of doing things), while pre-set and automated expertise and knowledge can be valuable in exploitation activities. Failure and learning is part of the exploration process. Intuition can fast track the process of decision making, which might be critical in a complex and dynamic environment. Exploitation of existing technologies and markets are applicable in relatively stable industries, but intuition appears to work against exploiting current proficiencies (Miller & Ireland, 2005). Matzler et al. (2014) agreed that exploration is strongly related to intuitive decision making, but conversely stated that exploitation draws on both intuitive and deliberate decision making.

O'Reilly and Tushman (2011) described strategic decision making as a dynamic capability; where ambidexterity includes actions, behaviours and design choices made by senior executives to simultaneously explore and exploit technologies and markets. Dynamic capabilities also emphasise the role of strategic leadership in altering, integrating and reinstating structural expertise and resources; permitting changing environments (O'Reilly & Tushman, 2011). Strategic decision making can also be addressed by distinguishing between high and low validity decision-making environments as described by Kahneman (2002, as cited in Sadler-Smith & Burke-

Smalley, 2015). High validity environments such as medicine and firefighting (Kahneman & Klein, 2009, cited in Sadler-Smith, 2015) have stable relationships between cues and the subsequent outcome of possible actions (conducive to the use of intuition), whereas low validity environments such as the prediction of future values of individual stocks by financial analysts have no stable relationships (hostile to the use of intuition).

The use of intuitive decision making was found by Khatri and Ng (2000) to be positively linked specifically in unstable decision-making environments and according to Franklin (2013) decision-making styles are determined by the variety and complexity of management decisions. The decision-making style depends on the existence of uncertainty, risk taking, monetary objectives, as well as team or individual decisions. Based on his research, Sadler-Smith (2015) provided a summary of possible conditions favouring analytical or intuitive decision making as presented in Figure 1 below.

Figure 1: Situations favouring analytical and intuitive decision making



Source: Dane & Pratt, 2007; Kahneman & Klein, 2009; Klein, 2003, cited in Sadler-Smith, 2015, p. 13

2.2.2 Intuitive versus rational decision making

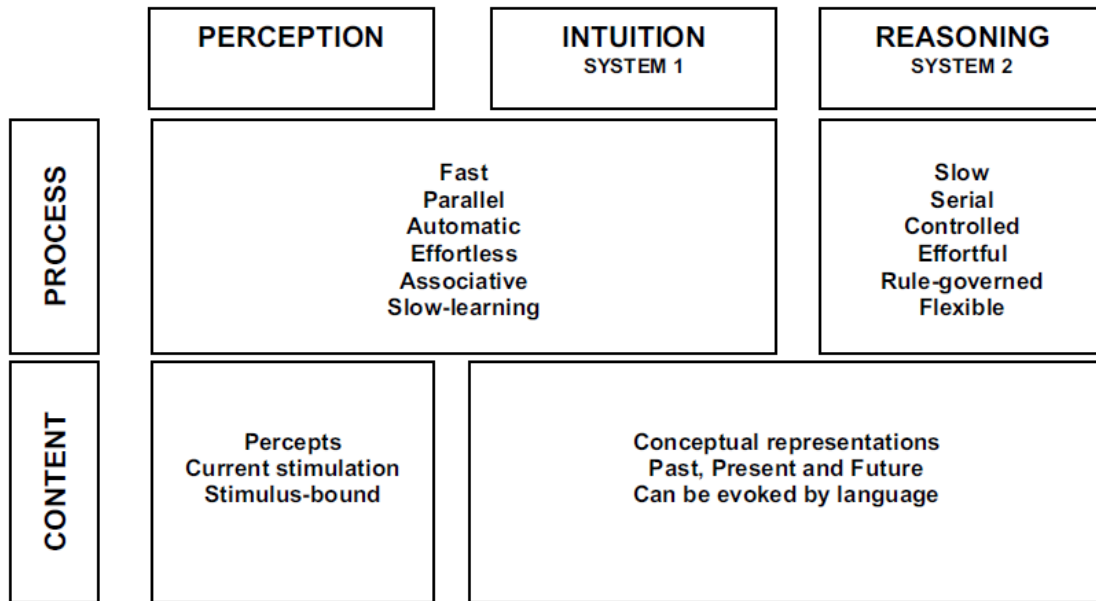
Lui (2015) described decision making as a cognitive process resulting in a choice between scenarios, where each process produces a final selection. Literature indicated that many forms of thought existed over the last few decades regarding analysing and describing decision-making styles. Albert Einstein claimed “the intuitive mind is the sacred gift and the rational mind is a faithful servant” (Einstein, cited in Sadler-Smith & Burke-Smalley, 2015, p. 10). This however does not imply that the rational analyses

approach in decision making should be seen as secondary to and less valuable than intuitive thinking approaches; it would rather suggest that the one decision-making style will not be entirely effective without also applying the other.

Barnard (1938, as cited in Simon, 1987) was the first twenty-first century researcher who acknowledged the use of logical and non-logical practices in decision making. Agor (1986) identified (through his interviews with over 2000 managers in the United States) that every manager was consciously aware of a procedure or structure in their decision-making process. However he found that the most effective decision-making process method was not to adopt an inflexible approach or step-by-step routine and identified intuition as the most frequently used decision-making style applied by executive managers. However, he also argued that many managers apply intuition after the process of rational analysis (Agor, 1986, cited in Dane & Pratt, 2007).

Two categories of cognitive processes were described by Stanovich and West (2000, cited in Kahneman, 2002) as System 1 and System 2, where System 1 is quick, involuntary, easy to use, associative and difficult to govern and adjust. System 2 is slower, sequential, effortful and consciously controlled. The operations of System 2 are fairly flexible and possibly rule-based and are performed for instance in situations where calculations are done. System 1 creates impressions of the qualities of observations and thoughts, which are not intentionally, nor verbally obvious. System 2 is involved in all judgements and is applied to observe the value of both cognitive systems (Gilbert, 2002; Stanovich & West, 2000, cited in Kahneman, 2002), however in the study of students it was surprising to note how little System 1 was monitored by System 2 and how easily people make a decision when a thought appears in their minds. Figure 2 below indicates the characteristics of the two systems.

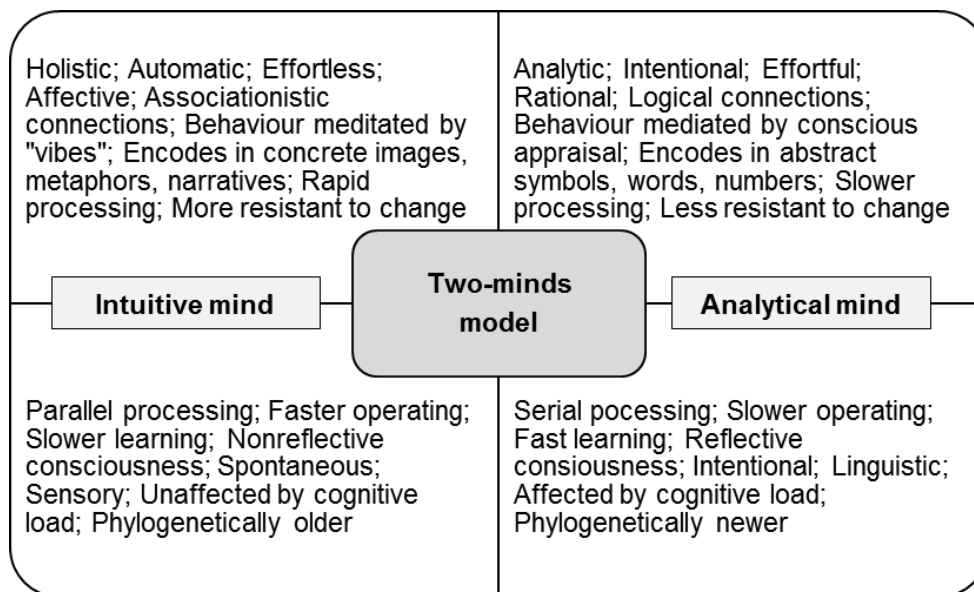
Figure 2: System 1 and System 2 characteristics



Source: Kahneman, 2002, p. 451

From the literature reviewed it became evident that scholars acknowledge the existence of both information processing systems. Other thoughts on decision-making styles include *inter alia* concepts of logical versus non-logical (Barnard, 1938, cited in Sadler-Smith, 2015), left versus right brain (Mintzberg, 1976, cited in Sadler-Smith & Burke-Smalley, 2015), intuitive versus rational (Simon, 1987), conscious versus sub-conscious (Khatri & Ng, 2000), tacit versus deliberate (Hogarth, 2010), common versus un-common sense (Dinur, 2011), routine versus non-routine; recurring versus non-recurring (Franklin, 2013) and fact-based versus abstract (Mason, 2015). Dane and Pratt (2007) supported this dual thinking by claiming that rational decision making involves systematic processes to make a conscious decision, whereas the experiential system applied in intuition is 1) non-conscious, 2) integrated, 3) associative, and 4) quicker. Dane and Pratt (2007) further argued that rationality is normally related with the head whereas intuition is related with the heart. Epstein (2010) described the existence of the two decision-making systems as a pragmatic system (automatic and associative learning) and a verbal reasoning system (rational/analytic system), while Sadler-Smith (2015) is of the opinion that the complementary systems (intuitive and analytical minds) of information processing can be understood and explained in terms of the dual-processing theory or the “two-minds” (p. 14) model as depicted in Figure 3.

Figure 3: The two-minds model



Source: Epstein, 1994; Lieberman, 2007, cited in Sadler-Smith, 2015, p. 14

Over decades scholars supported the fact that the two decision-making styles should, dependent on the criteria of the specific situation, rather be applied concurrently. Simon (1987), based on his concept of bounded rationality, argued that effective managers do not choose between rational analysis and intuition. Knowledge and expertise have led effective managers to automatically use both decision-making styles. Langley (1995) supported this by claiming that managers need to apply a fine line and balance between “extinction by instinct” (p. 63) (intuition) and “paralysis by analysis” (p. 63) (rationality).

Franklin (2013) claimed that the decision-making approach between experts and novices differs remarkably. A novice depends largely on rational analysis, while an expert uses his knowledge and expertise gained in similar previous experiences and surroundings. He claimed that an expert’s decision-making process is supported by an advanced decision framework and is not the result of only the rational analysis process.

It is important to recognise that decision making, either individual or for business purposes, has an extensive daily impact on every person. Visser (2013) indicated that within a business context, all decisions directly impact an organisation’s triple bottom line (social, environmental and financial) and cause some people to base their judgements on facts rather than instinct or gut feel. But the question remains: What is the best decision-making approach in today’s complex, volatile and uncertain business environment? Already early on Drucker (1977, as cited in Liu, 2015) argued that it does

not matter what decision making process is followed. The decision maker should, at reaching the final decision, be comfortable about the final choice made, which he called the “mirror test” (p. 283).

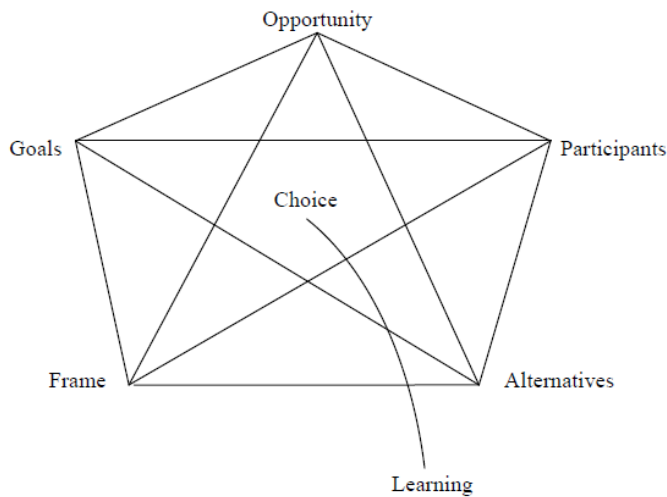
2.2.3 Decision-making models

Scientific research over time, including Klein's (1991) recognition-primed decision model and Cohen, March and Olsen's (1972, as cited in Inamizu, 2015) garbage can model for decision making under ambiguity, indicated the existence and use of several different decision-making models. However, the application of each model entirely depends on the prevailing environment (stable or unstable), as well as the explicit conditions (also see Figure 1 in Section 2.2.1). Models are founded on whether the intended decision-making process is intuitive or abstract, rational or evidence-based, or it could also be a hybrid approach of applying both decision-making styles towards effective decision making.

Woiceshyn's (2009; 2011; 2015) study of 19 oil company CEOs; led to her proposal of a strategic decision-making model that involves three elements: 1) integration by essentials, 2) principles, and 3) spiralling. This model suggested the usage of both decision-making styles (rational analysis and intuition) reliant on the prevailing conditions, which is possible through spiralling between new facts and the integrated knowledge stored in the sub-conscious mind in the form of concepts or principles. The aspects of integration by essentials and guiding principles are addressed further in Sections 2.5.1 and 2.5.2 respectively. Spiralling to decisions is described by Woiceshyn (2009; 2011; 2015) as a filtering process of iterative loops between new facts and the integrated knowledge.

According to Franklin (2013) a systematic approach is required in effective decision making, depicted as the “decision star” (p. 25) in Figure 4. The decision star is used to develop a rational model for the decision condition and is actually the beginning of Franklin's (2013) expert model as presented in Figure 5. The decision star entails seven characteristics: 1) appreciation of the decision opportunity, 2) framing of essential decision goals, 3) distinguishing and involvement of desirable sponsors for decision making, 4) correct framing of the decision, 5) generating alternatives, 6) final choice between alternatives, and (7) leading to learning.

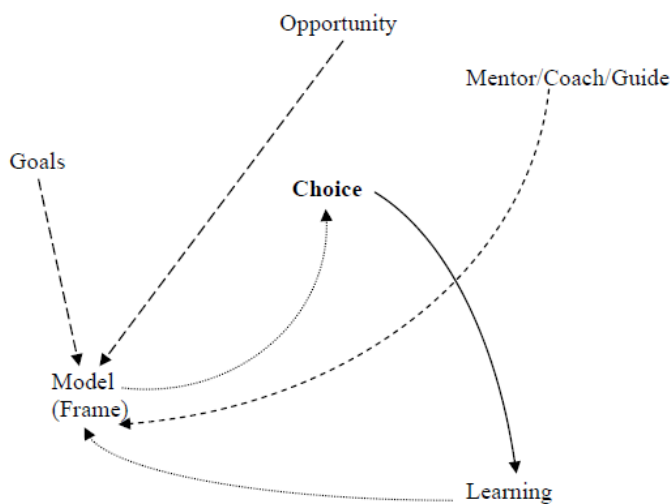
Figure 4: Decision star



Source: Franklin, 2013, p. 25

After several iterations of applying the decision star, a process very similar to Woiceshyn's (2009; 2011; 2015) spiralling process, the learning expert developed his or her own decision-making model and the expert model (Figure 5) can therefore be seen as an abridged version of the decision star (Figure 4).

Figure 5: Expert model



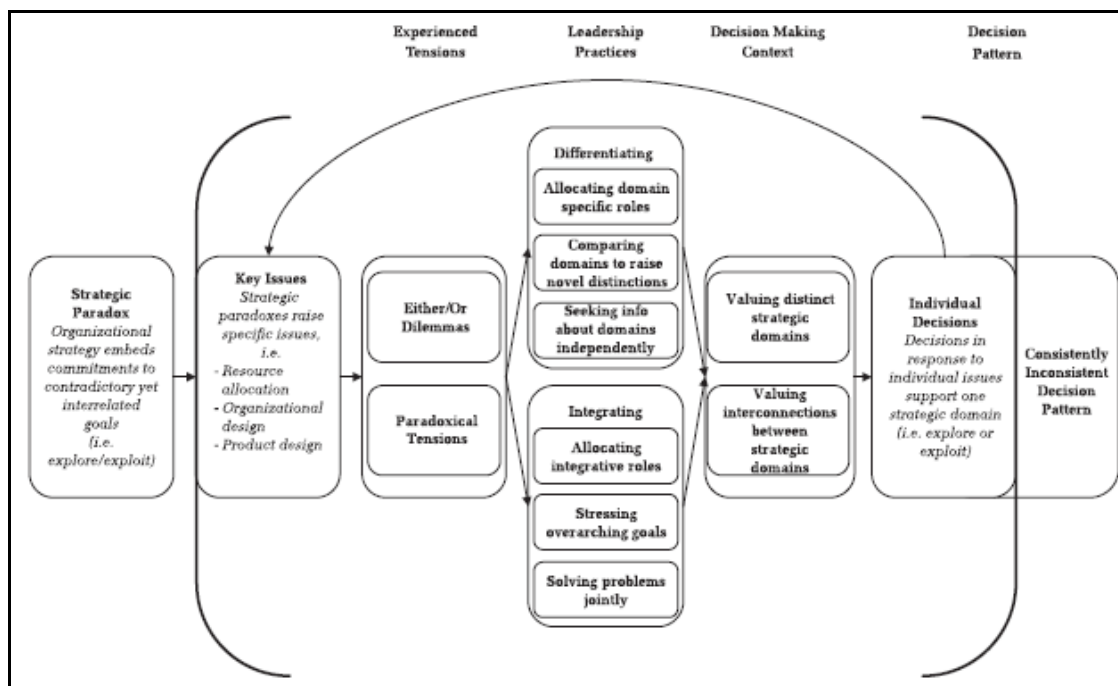
Source: Franklin, 2013, p. 33

Walumbwa et al. (2014) argued that dealing with crises can be a make-or-break situation for a company. Walumbwa et al. claimed that each manager has a set of tools, based on knowledge gained during previous years of experience, gathered together in the form of an adaptive toolbox with specific experiential rules of thumb. Walumbwa et al. (2014) suggested that each leader should understand his or her

individual toolbox set and continuously challenge and adapt those tools according to the current and prevalent situation and environment.

Smith (2015) argued that the exploring and exploiting elements in strategic decision making are unpredictable in terms of the other, but are both critical elements for long-term success. Exploitation and exploration define each other and should be used concurrently. Integrative thinking involves the fostering of synergies through previous practice and it is therefore critical to apply both differentiating (allocation of specific field roles) and integrating (allocation of integrative roles and emphasising central goals) principles to dynamic decision making. Smith's (2015) study delineated the need for practices to manage paradoxes and found that managers should over time rather focus on the pattern of decisions taken and embrace the reality of inconsistencies. A detailed model enabling the management of strategic paradoxes is depicted in Figure 6.

Figure 6: Model of dynamic decision making to manage strategic paradoxes



Source: Smith, 2015, p. 72

A variety of decision-making models exist and from the literature it became clear that the application of these models is explicitly dependent on the conditions and the prevalent environmental criteria. However, it is important to note that one decision-making model might be a perfect fit for a specific situation, but could be completely inappropriate for another (Smith, 2015).

2.3 Intuitive decision making

Simon (1987) defined through his theory of bounded rationality, intuition as “analyses frozen into habit” (p. 63) and posited that intuition is the ability for quick and fast response through association. Hayashi (2001) referred to intuitive feelings as gut feelings that guide the conscious mind towards making choices in the decision-making process. This is supported by Miller and Ireland (2005) who described intuition as the holistic hunch in exploring and further exploiting of technologies and markets. Intuition can speed up the decision-making process, especially in a complex and changing environment. Klein (2003, as cited in Woiceshyn, 2009) described intuitive decision making as pattern recognition or an action script process where, based on prior experiences, gestures about the situation cause a decision maker to identify a familiar pattern. Dane and Pratt (2007) defined intuition as judgements made through quick, non-conscious and holistic connotations, while Hogarth (2010) described intuition as the feeling of knowing. Additionally Dinur (2011), through his studies of common and un-common sense in managerial decision making, suggested that in low task certainty environments, decision making might be based more on the un-common (intuitive) decision-making style.

After applying attributes from his earlier research, Sadler-Smith (2015) defined intuition (depicted in Table 1 below) as follows: 1) uninformed and instantaneous, 2) has an affective (feeling) tone, 3) based on holistic connotations to allow for long-term memory patterns or scripts, 4) non-conscious, and 5) equal to judgements. Sadler-Smith (2010, as cited in Sadler-Smith, 2015) stated that intuitions as judgements cannot be seen as right or wrong, but should rather be seen as hypotheses for exploitation. Even wrong decisions or judgements should be positively seen as a learning curve towards an increase in experience and knowledge.

Table 1: Selected definitions of intuition

Definition:	Citation:
“This feeling ‘in our marrow’ is probably an outcome of previous experience that has not yet emerged into articulate thought.”	Barnard, 1938, cited in Sadler-Smith, 2015, p. 7
“... simply analyses frozen into habit and into the capacity for rapid response through recognition.”	Simon, 1987, p. 63
“Intuition is knowledge gained without rational thought. It comes from stratum of awareness just below the conscious level and is slippery and elusive. Intuition comes with a feeling of ‘almost, but not quite knowing’.”	Rowan, 1989, cited in Sadler-Smith, 2015, p. 7
“A feeling of knowing with certitude on the basis of inadequate information and without conscious awareness of rational thinking.”	Shirley & Langan-Fox, 1996, cited in Sadler-Smith, 2015, p. 7
“Intuition is a capacity for attaining direct knowledge or understanding without the apparent intrusion of rational thought or logical inference.”	Sadler-Smith & Shefy, 2004, cited in Sadler-Smith, 2015, p. 7
“A non-sequential information processing mode, which encompasses both cognitive and affective elements and results in direct knowing without any use of conscious reasoning.”	Sinclair & Ashkanasy, 2005, cited in Sadler-Smith, 2015, p. 7
“Affectively charged judgements that arise through rapid, non-conscious and holistic associations.”	Dane & Pratt, 2007, p. 33

Epstein (2010) was of the view that intuition is a fuzzy construct and, other than the fact that intuition operates unconsciously, he was more interested in specific facets of intuition, including its purpose, operating principles and processing attributes. He addressed this study through cognitive-experiential self-theory and identified that the two systems of experiential/intuitive and rational/analytical interact simultaneously and concurrently. He stated that intuition is supported by automatic learning from experience (not only awareness) and that both systems are adaptive and has their own strengths and weaknesses or limitations.

Sadler-Smith and Burke-Smalley (2015) identified four types of intuition that includes expert, social, moral and creative intuition. Both researchers described intuition as a non-rational process, which is neither irrational nor rational and warned that researchers and managers should escape the need of making intuition more rational.

According to Salas et al. (2010) intuition in decision making is not always accurate and several factors might influence the usage and effectiveness of intuition as a decision-making style. Salas et al. (2010) argued that the efficacy of intuitive decision making is impacted by the decision maker him- or herself, the decision task, but also the decision environment as depicted in Table 2. In as far as the decision maker is concerned; effectiveness may be enabled or hampered by expertise (including knowledge base) and the individual's predisposition to rely either on intuition or deliberation (processing styles). In terms of the decision task, effectiveness might be influenced by the occurrence of judgemental tasks (task structure) and the development of both implicit and explicit memory for learning (availability of feedback). The modern decision-making environment is impacted by the complex and compelled business environment resulting in time constraints where managers rely more excessively on the intuitive decision-making style (Salas et al., 2010).

Table 2: Influences on the usage and efficiency of intuition

Decision	Factors influencing use / effectiveness of intuition	Description	Citation
Maker	Expertise	Extensive experience within a domain can produce automaticity and a large and well-organised knowledge base, affording intuitive pattern recognition capacities	Dane & Pratt (2007); Klein (1993, 2003, cited in Salas et al., 2010, p. 948)
	Processing styles	People are predisposed to rely more on either intuition or deliberation	Stanowich & West (2000, cited in Salas et al., 2010, p. 948)
Task	Task structure	Intuition is more likely to be effective in judgemental tasks with large sets of cues to integrate	Hammond (1996, cited in Salas et al., 2010, p. 948); Khatri & Ng (2000); Dane & Pratt (2007)
	Ability of feedback	Both implicit and explicit memory development is facilitated by feedback	Hogarth (2001); Ericsson, Krampe & Tesch-Romer (1993, cited in Salas et al., 2010, p. 948)
Environment	Time pressure	Increasing levels of time pressure are associated with more reliance on intuition as deliberative processing is a more time consuming mode of cognition	Lipshitz, Klein, Orasanu & Salas (2001, cited in Salas et al., 2010, p. 948)

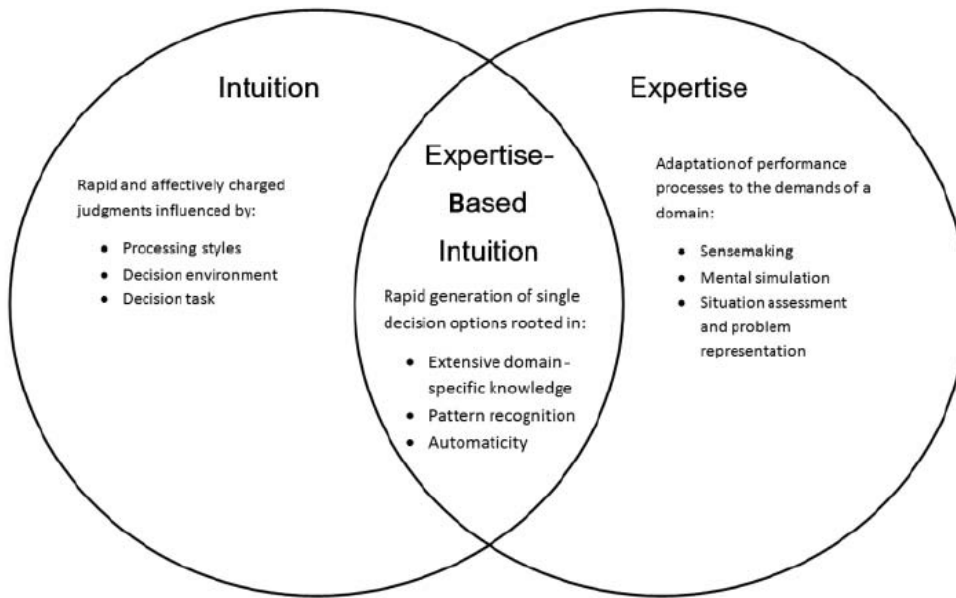
Intuition has an enormous role to play in decision making and Sadler-Smith (2015) described the benefits as useful to managers and summarised these as 1) easy sensing of potential problems, 2) allowing for quick application of experiential learning patterns, 3) useful when expectations are not met, 4) seeing the bigger picture, and 5) checking the results of rational analysis.

2.3.1 Intuitive expertise

Over decades, the importance of experience in intuitive decision making was pertinently acknowledged by researchers, however this has been articulated differently. Barnard (1938, as cited in Sadler-Smith, 2015) used the words, “outcome of previous experience” (p. 7); Simon (1987) addressed it as, “frozen into habit” (p. 63); Kahneman and Klein (2009, as cited in Sadler-Smith, 2015) spoke about, “rooted in specific experiences” (p. 10); while Epstein (2010) referred to “automatic learning” (p. 296). Epstein (2010) claimed that intuitive expertise can influence rational thinking, even though the rational thinking system does not even realise that it is being influenced. Experiential intuition is described by Sadler-Smith and Burke-Smalley (2015) as sophisticated “pattern matching” (p. 12) originated from experience, practice and feedback.

According to Salas et al. (2010) and Hogarth (2010) the outcome of experiential intuition is the knowing effect. These authors argued that the decision maker developed his knowledge through far-reaching experience and one cannot assume that intuition and expertise are identical; however intuition is entrenched in expertise. The overlap between intuition and experience is illustrated in Figure 7 as experience-based intuition.

Figure 7: Intuition and expertise distinction and overlap constructs



Source: Salas et al., 2010, p. 945

Dane and Pratt (2007) however argued that a person with expert intuition in one specific area may not be successful in another. Managers should be careful to consistently apply intuitive decision making in a business environment, especially with the entrance of novices to the industry, who have not yet been equipped with the necessary knowledge and experience. Kahneman and Klein (2009) argued that two conditions should exist for intuitive expertise to develop, namely a high validity environment (stable relationship between indications and outcomes) and sufficient opportunity to practice the expertise. As illustration of intuitive expertise, Sadler-Smith (2015) argued that Apple's Steve Jobs had the capability, in the absence of clear guidelines, to convert information into knowledge, while Tim Cook conversely has less intuitive abilities to translate data.

Hogarth (2010) further argued that based on the fact that intuitive responses are enhanced from past experiences, future orientated intuitive decision making will only be effective if the future resembles the past. This implies that intuitive decision making in a dynamic world is difficult and Hogarth used a metaphor of decision making across one's life cycle likened to wandering across a minefield in the mist. In this situation, intuitive expertise might not be useful, as the environment is not familiar. Hogarth's thinking supported Dane and Pratt's (2007) argument that intuition applied in one situation might not be successful in another.

2.3.2 Time constraints and complex environments

Dane and Pratt (2007) indicated that accuracy of decision choices are often inversely related to the speed at which decisions are taken. However complex decision making under time pressure seems to be much easier and more natural for some managers than others.

In follow up studies by Agor (1986, as cited in Sadler-Smith & Burke-Smalley, 2015) of the top ten percentage points of executive managers interviewed (2000 managers in the United States), he argued that intuition was mostly applied in situations where important decisions were made, in situations with high levels of uncertainty, where limited facts were available to support the decision-making process and decisions were required to be made under time constraints. This is supported by Klein (2003, as cited in Woiceshyn, 2009; 2015) who argued that applying intuition in decision-making processes leads to more effective, faster and accurate decision making. Miller and Ireland (2005) reinforced this argument by stating that intuition may be the best decision-making option when resources like managerial time and funding for decision sustenance are limited. Khatri and Ng (2000) also advocated that the application of intuitive decision making may be especially pertinent in unstable and volatile business environments.

Woiceshyn (2009; 2011; 2015) indicated that during complex decision-making processes, rational analysis as the only decision-making style is insufficient to effectively encompass complexity. In the research study of 19 oil company CEOs, the conclusion was that experienced decision makers normally rely on intuition to complement decision making, but in complex situations, intuition may completely substitute the rational analysis decision-making style. However, Woiceshyn (2009; 2011; 2015) argued conditionally by saying that the sub-conscious or intuitive storing and retrieval of knowledge will be quick and precise, but only if essentials are identified and knowledge integrated into principles and concepts, as discussed in Sections 2.5.1 and 2.5.2.

In summary it can be said that the literature research indicated that managers typically apply the intuitive decision-making style in complex situations and when under time pressure. Intuition is also naturally applied in strategic decision making; including exploring new technologies and markets. Examples of such strategic decisions include

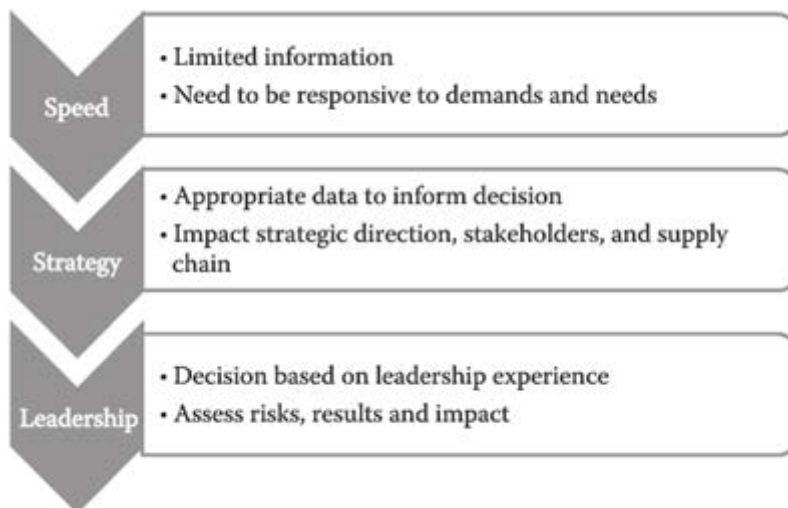
capital investments in a new project, or collaborating with a competitor for sustainable market and business growth.

2.4 Rational decision making

As cited by Dane and Pratt (2007) different descriptive wording exists for rational thinking including rational (Epstein et al., 1996; Epstein, 2002; Pacini & Epstein, 1999), intentional (Bargh & Chartrand, 1999), deliberate (Hogarth, 2001), extensional (Tversky & Kahneman, 1983), rule-based (Sloman, 1996) and System 2 (Stanovich & West, 2000; Kahneman, 2002). “Paralysis by analysis” is Langley’s (1995, p. 63) narrative for the rational decision-making style, but she indicated that managers need to carefully navigate between and balance the two decision-making extremes of “extinction by instinct” (p. 63) (intuitive) and “paralysis by analysis” (p. 63) (rational).

Evidence-based or fact-based are the descriptive wording for rational decision making given by Mason (2015). She indicated that fact-based decision making is about data-driven decisions that support continuous improvement and learning for which specific decision-making drivers of speed, strategy and leadership are needed, as indicated in Figure 8.

Figure 8: Decision-making drivers



Source: Mason, 2015, p. 281

Both Franklin (2013) and Mason (2015) identified almost similar specific steps to be followed in the rational decision-making process, however they both said it should not be a static process but a dynamic progression to the final decision. Franklin (2013)

described it as more than merely being rational and where the decision-making process has characteristics of being 1) systemic, 2) iterative, 3) adaptive, 4) self-correcting, and 5) active.

Rational analyses techniques include *inter alia* brainstorming and funnelling. Funnelling is a systematic process of upfront collecting of as much data and information as possible and through a process of prioritising and elimination, only the critical issues stay behind to support decision making (Kourdi, 2003). Kourdi (2003) argued that intuition is a tacit and implicit form of knowledge from past experiences and the two decision-making styles of rational analyses and intuition should complement rather than undermine each other. For decision making to be successful, the two decision-making styles should be kept in balance as difficulties like over-confidence might lead to irrational and flawed decision making.

Negative comments against the use of rational decision making also appeared in literature. For instance Epstein (2010) said that rational thinking is too much of an effort and too slow for efficient application on a daily basis, and Sadler-Smith and Burke-Smalley (2015) indicated that too much analytical thinking can overwhelm innovation and creativity. Managers should therefore aim to have an equilibrium between analytical thinking (exploits existing knowledge) and intuitive thinking (explores to create new knowledge).

On the contrary, Aziza (2013) said that analytics are at the centre of decision making as it filters the noise and allows focus on critical substance.

2.5 Woiceshyn's strategic decision-making model

Woiceshyn's (2009; 2011; 2015) strategic decision-making model as described in Section 2.2.3 is critical for understanding the research as one of the research objectives listed in Section 1.6 of Chapter 1 and stated as Research Question 3 in Chapter 3 is to interrogate similarities or differences between the sample managers' decision-making guiding principles and the general principles of the 19 oil company CEOs.

2.5.1 Integration by essentials

Woiceshyn (2009; 2011; 2015) argued that both decision-making styles (rational analysis and intuition) are fundamentals that constantly interact in all thinking and decision-making processes. As discussed in Section 2.2.3 regarding the variety of existing decision-making models, Woiceshyn (2009; 2011; 2015) proposed a strategic decision-making model comprising of three elements: 1) integration by essentials, 2) principles, and 3) spiralling. This decision-making model suggested that reliant on the specific situation criteria, both decision-making styles should be used concurrently which she named as integration by essentials. As depicted in Appendix 1, Figure 17, it consists of the interaction between the conscious (reasoning) and sub-conscious (intuitive) minds and integration by essentials is possible through spiralling between new facts and the integrated knowledge stowed in the sub-conscious mind in the form of concepts and principles.

Integration by essentials as a concept has been supported by different researchers over the decades, even though these admonitions have been articulated differently. Agor (1986, as cited in Dane & Pratt, 2007) argued that many decision makers make use of intuition as a next step after information is synthesised through rational analyses. Simon (1987) claimed that effective managers and leaders do not have the comfort of selecting between the two decision-making approaches of rational and intuitive thinking and they should actually apply both decision-making styles concurrently. Louis and Sutton (1991) referred to the concept of integration as switching cognitive gears and argued that the ability to alter between the behaviours of mind to dynamic thinking is a critical ability in a volatile and complex business environment. Epstein (2010) also claimed that in terms of the cognitive-experiential self-theory, the two systems of intuitive/experiential and analytical/rational interact simultaneously.

If integration of knowledge by essentials is applied, the retrieval of information will be quicker and more accurate, but it will also provide decision makers with a dynamic instrument of guiding principles (Woiceshyn, 2009; 2011; 2015) or mental generalisations (Woiceshyn, 2015). When faced with familiar problems successfully dealt with in the past, principles should assist decision makers in making the final choice. But what are guiding principles and why are they so critical in the modern business environment of today?

2.5.2 Guiding principles

Principles allow effective managers to make decisions fast, based on pertinent experiential knowledge and prevent managers to concede to “analysis paralysis” (Langley, 1995, p. 63).

Aziza (2013) argued that the key to effective decision making is to emphasise vital information, which is only possible when experience and knowledge are properly incorporated into principles and concepts. With the help of principles, managers are able to effectively identify important data and then base their decisions only on the critical data identified.

Every manager based on their years’ experience, comes with a unique set of tools in their adaptive toolbox (Walumbwa et al., 2014), to be utilised to make better decisions in the future. These experiential rules of thumb are principles derived from previous experience to provide for behavioural guidance in decision making. Walumbwa et al. (2014) argued that principles should be dynamic and in perfect alignment with the leader’s core values, which drive their moral compass in strategic decision making. According to Walumbwa et al. (2014) principles of social rationality include transparency (understandable), fairness (no violation of expectations), and accountability (justifiable decisions).

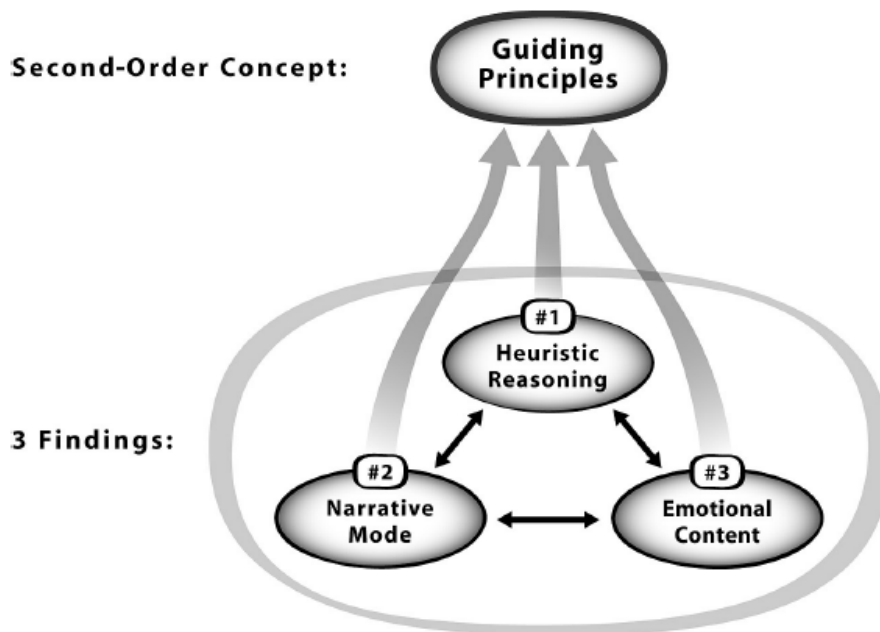
Woiceshyn (2009; 2011; 2015) described principles as mental space savers or generalisations created in the sub-conscious from past experiences or present interpretations. As an individual has limited capacity to retain knowledge in the conscious mind, concepts and principles are logically organised and stored in the sub-conscious memory, available for retrieval to speed up the decision-making process. Woiceshyn (2009) stated that principles recognise cause and effect relationships and act as decision guides. She identified the following principles during the interviews with the 19 oil company CEOs: value creation, rationality, independence, justice, self-interest, and honesty, and she gave an example of a principle by saying that a CEO’s intent to creating value for the company also includes the responsibility of balancing risk and return (risk mitigation) (Woiceshyn, 2009).

Locke (2002) defined a principle as a universal reality on which other realities depend and indicated that principles cannot be applied in a vacuum; they should be coordinated towards achieving one goal. Locke gave the example of General Electric’s

corporate principles, which include *inter alia* integrity, being open to new ideas, high quality, and global focus.

Oliver and Roos (2005) also referred to the concept of rules of thumb and as depicted in Figure 9, found that guiding principles in organisations in a high velocity environment are integrated through three concepts: 1) organisations using heuristic/experiential reasoning in their decision-making process, 2) the experiential reasoning is based on organisational narratives, and 3) the narratives are emotionally grounded. Heuristic reasoning provides simplifications in the decision-making process and allows rapid choices through the application of cognitive short cuts based on knowledge structures from past experiences that give form or meaning. Organisational narratives are possible through storytelling to assist in consolidating previous experiences and form a knowledge base for the future. Narratives are grounded both emotionally and rationally and the integration of these three concepts suggests the second order concept of guiding principles.

Figure 9: Theoretical underpinnings of guiding principles



Source: Oliver & Roos, 2005, p. 898

In summary, the literature indicated that principles are derived from previous experiences which allow strategic leaders to make faster and more effective decisions. Over the years, principles and concepts have been addressed according to different names including rules of thumb (Oliver & Roos, 2005; Walumbwa et al., 2014), mental

space savers (Woiceshyn, 2009; 2011; 2015) and general truths (Locke, 2002), but all with the same basic underlying concept.

2.5.3 Shared corporate values

Walumbwa et al. (2014) argued that principles should be dynamic and in perfect alignment with the leader's core values. A leader's values should also be aligned with the organisation's corporate values and culture. Oliver and Roos (2005) supported this by stating that one's values influence decision making which should be in line with group norms.

Shared corporate values define what the nominated company stands for as an organisation and these direct actions and behaviours within the business environment. Shared corporate values are furthermore used to interpret and respond to business opportunities and challenges and establish the expectation of interacting behaviours with all stakeholders. Shared corporate values are the foundation of a high performance culture and align decisions and activities to deliver sustainable results. The nominated company's shared values include (Annual Integrated Report, 2014):

- Safety: Zero harm in a safe, secure, productive and rewarding work environment;
- People: A caring, engaged and enabled work environment that recognise contributions in pursuit of high performance;
- Integrity: Act consistently on a set of values, ethical standards and principles;
- Accountability: Ownership of behaviour and responsibility to perform;
- Stakeholder focus: Serve stakeholders through quality products, service solutions and value creation; and
- Excellence: Deliver what was promised and add value beyond expectations.

2.6 Discussion and conclusion

As questioned in the introduction of Chapter 1: Why do certain decision makers make superb choices, achieve superior performance and are able to proceed quickly and effectively, while others make sub-standard decisions (Woiceshyn, 2009, 2011, 2015)? What decision-making concepts are applied to gain and maintain strategic and competitive advantage in business? Modern organisations operate in dynamic

economic, social and business environments, impacting the complexity and uncertainty in decision making. So what are the most appropriate thinking and decision-making style applied and how do these compare to the prevalent decision-making style and principles at the nominated chemicals business under review?

Bakke claimed (as cited in Walumbwa et al., 2014) that “nothing tells you more about an organisation than the way it makes a decision” (p. 284). Is this true?

The aim of the literature review was firstly to identify what strategic decision making is and then to investigate different views concerning decision-making styles and how these have been described by scholars over the past decades. Shivakumar (2014) stated that to assess when a decision is strategic or non-strategic, evaluate how it is influenced by the degree of commitment or whether a decision is reversible, and whether it is subjected to the scope of the organisation.

Every person is impacted by decision making on a daily basis, either by the individual personally or through his or her company. Within a business context all decisions directly impact the organisation's triple bottom line (social, environmental and financial) and cause some people to base their judgements on facts, rather than instinct or gut feel. The two main decision-making styles identified and discussed over the years are intuitive (sub-conscious) and rational (conscious) decision making. Different views and thoughts on decision-making styles and approaches were reviewed (albeit only limited), starting with Barnard (1938) and continuing through to Sadler-Smith and Burke-Smalley (2015); Mason (2015); Sadler-Smith (2015) and Woiceshyn (2009; 2011; 2015). Many researchers however believe that managers and leaders have a prominent hybrid approach towards decision making where both decision-making styles of intuition and rational analyses are being applied concurrently for effective decision making. Drucker (1977, as cited in Liu, 2015) argued that it does not matter what decision-making process is followed, the decision maker should at reaching the final decision be comfortable about the final choice made. Drucker called this the “mirror test” (p. 283).

Different definitions of intuition (hunch or gut feel) were discussed and experience is seen as a critical element of intuition in the decision-making process (Barnard, 1938, cited in Sadler-Smith, 2015; Kahneman & Klein, 2009, cited in Sadler-Smith, 2015; Simon, 1987). Salas et al. (2010) argued that the decision maker developed his knowledge through far-reaching experience and one cannot assume that expertise and

intuition are identical; however intuition is entrenched in expertise. Epstein (2010) reasoned that the rational system can be influenced by the experiential/intuitive system without the rational system even recognising this fact. But most important is that intuition in decision making, according to Salas et al. (2010), is not always accurate and several factors might influence the use and effectiveness thereof. Different factors might influence both the tendency and accuracy of decision making and include characteristics of the decision maker, the decision task and the decision environment.

Several different decision-making models exist. Klein's (1991) recognition-primed decision model; Cohen et al.'s (1972, as cited in Inamizu, 2015) garbage can model; Franklin's (2013) decision star and expert model; Walumbwa et al.'s (2014) adaptive toolbox and Smith's (2015) model to manage strategic paradoxes, but it is clear from the literature review that the application of these models depends solely only on the prevailing conditions and environment. An important decision-making model for this research was Woiceshyn's (2009; 2011; 2015) strategic decision-making model that consists of three elements including: 1) integration by essentials, 2) principles, and 3) spiralling. The most critical part of the model refers to integration by essentials that are actually the concurrent and sequential usage of both rational analysis and intuition as decision-making styles. The process of spiralling (refining process of iterative loops) between new facts and the integrated knowledge stored in the sub-conscious mind in the form of principles enables the element of integration by essentials. This thinking is similar to Simon's (1987), who claimed that effective managers do not have the comfort of choosing between the two decision-making approaches of rational and intuitive thinking and that both decision-making styles should actually be applied in parallel with each other.

Principles allow effective managers to make quick decisions based on experiential knowledge, without getting into a mode of "analysis paralysis" (Langley, 1995, p. 63). Aziza (2013) argued that principles allow managers to effectively identify important information and then base their decisions only on those critical data identified. Walumbwa et al. (2014) argued that principles should be dynamic and in perfect alignment with the leader's core values. A leader's core values should also be aligned with the organisation's corporate values and culture.

To criticise Woiceshyn's (2009; 2011; 2015) study, she never discussed the impact of corporate culture (including low uncertainty avoidance and willingness to take unknown risks), values, gender, personality styles and so forth in her research, which might have

had a vast implication on the conclusions made regarding the decision-making styles and guiding principles identified through her interviews with the oil company CEOs.

CHAPTER 3: RESEARCH QUESTIONS

An aspect of decision making that interest the researcher is why some decision makers make superb choices and achieve superior performance and others do not? What allows them to make quick and effective decisions, while this is not a general competency for all? (Woiceshyn, 2009, 2011, 2015). Although both thinking and decision-making styles of intuition and rational thinking are generally applied by decision makers, insufficient attention has been allocated to the research on the interaction between the two decision-making styles (Agor, 1986; Matzler et al., 2014; Sadler-Smith & Burke-Smalley, 2015; Walumbwa et al., 2014; Woiceshyn, 2009). Conversely, Oliver and Roos (2005) were of the view that guiding principles should be explored further. The motivation for the research study is discussed in Section 1.4 of Chapter 1.

In an attempt to address the research problem, with the literature review functioning as background and the research limitations in mind (Chapter 4, section 4.11), the following research questions were addressed in the research study:

1. What preferred decision-making style (rational analyses, intuitive/experiential or a hybrid approach of integration) exists among the members of the managerial sample group in strategic decision making at the nominated chemicals business?

It is evident from the literature review that decisions can be based on factual evidence for more informed and systematic results (rational analyses), but decisions can also be made by applying intuition or gut feel, or by applying a hybrid approach of integration by essentials (Mason, 2015; Sadler-Smith, 2015; Woiceshyn, 2009; 2011; 2015).

2. What guiding principles are found to be prominent in decision making during the interview process?

Principles are derived from previous experiences which allow strategic leaders to make faster and more effective decisions (Langley, 1995). Over the years,

principles and concepts have been addressed under different terms, including rules of thumb (Oliver & Roos, 2005; Walumbwa et al., 2014), mental space savers (Woiceshyn, 2009; 2011; 2015) and general truths (Locke, 2002), but all these terms denote the same basic underlying concept.

3. How do the sample managers' decision-making guiding principles compare with the general principles as described by Woiceshyn (2009; 2011)?

Woiceshyn (2009; 2011) identified the following principles during the interviews with 19 oil company CEOs: rationality, value creation and independence as general principles and justice, self-interest and honesty as other or additional principles. The sample managers' exhibited decision-making guiding principles were compared against the principles of the effective CEOs.

4. How do the sample managers' decision-making principles compare with the shared corporate values of the nominated chemicals business?

Walumbwa et al. (2014) argued that principles should be dynamic and in perfect alignment with the leaders' core values, which drive their moral compass in strategic decision making. The nominated company's shared values include safety (zero harm), people (caring work environment), integrity (consistent set of values and standards), accountability (ownership and responsibility), stakeholder focus (value creation) and excellence (value add beyond expectations) (Annual Integrated Report, 2014). The sample managers' exhibited decision-making guiding principles were compared against these shared corporate values.

CHAPTER 4: RESEARCH METHODOLOGY AND DESIGN

4.1 Introduction

This chapter depicts the research methodology and design process that was followed to determine what prevalent decision-making processing style and guiding principles are applied by managers in strategic decision making at the nominated chemicals business. The guiding principles were furthermore compared to general guiding principles identified by Woiceshyn (2009; 2011) from her interviews with 19 oil company CEOs, as well as the nominated chemicals company's own shared corporate values. The research methodology and design process commenced with the justification of the qualitative research design approach and the selection of the research methodology applied. The chapter further emphasises the specific sample parameters, research instruments, data gathering and analysis approach. Strategies to ensure the quality of data are discussed, as well as research limitations.

The research philosophy consisted of important assumptions in the development of the research approach (Saunders & Lewis, 2012) and underpinned the research strategy and data collection methods for the research. The research design provided the researcher with a framework for the on-going construction of understanding (meaning making) and interpretation of people's experiences in a particular setting or context. To ensure research trustworthiness and credibility it was not only important to properly plan the research process, but also to appropriately defend the logic of decisions taken and conclusions reached.

4.2 Research methodology and design

To answer the research questions and give sustenance to the research objective, the research study was based on a **qualitative** research design which was concerned with exploring social issues, understanding phenomena and thematically analysing and making sense of unstructured data captured from respondents in the strategic decision-making sample group (Saunders & Lewis, 2012).

An **interpretivist** research philosophy was applied where human interest was an integrated part of the study (Saunders & Lewis, 2012). The research focused on meaning making and built on the philosophical principles of ontology (assumptions of social reality) and epistemology (how it should be studied). Woiceshyn (2009) stated that principles are generalisations or truths, gained from previous experiences and which form the basis for future chains of reasoning in decision making. All individuals' past experiences and observations are different and definitely also so for the respondents interviewed in the strategic decision making sample group. Respondents integrated their knowledge and experiences differently and responded differently to questions posed to them regarding decision-making styles and guiding principles in their specific decision-making environments. Because of these definite differences in the feedback received, the research needed exhaustive interpretation and analysis to determine and correctly reflect the sample group's individual preferences, perspectives and subjective motivations.

To link the research with theory, an **inductive** research approach was followed which suggested a bottom up approach to theory development (Saunders & Lewis, 2012). The inductive research approach consisted of a process of developing theory after data was analysed. Induction involves the construct of analytical tools or models that reflect intimate familiarity between the researcher and the situation being researched. In this research, interviewees commented on their prevalent decision-making style and specific guiding principles as they viewed these applicable to the decision-making environment and vignette discussions added to the data gathering process. Gathered interview data from the sample group was analysed and interpreted results were used in answering the research questions regarding decision-making styles and guiding principles.

The purpose of the research was **exploratory** which is normally conducted when a problem is not clearly defined and the researcher seeks to understand more about the observed situation (Saunders & Lewis, 2012). The aim of the research was to firstly evaluate the prevalent decision-making style and then to assess guiding principles applied by senior managers in making strategic decisions at the chemicals business under review. Woiceshyn (2009; 2011) in her study of 19 oil company CEOs identified six principles applied in scenario decision making and also found that effective CEOs were mindful of their own decision-making approaches. It was interesting to compare

guiding principles and to assess whether the same or other principles were applied in strategic decision making at the nominated company.

It is important to have an upfront clear conceptual framework about the research topic and objectives as it directs the kind of data needed; where to gather it; how it should be gathered and how it guides the data analysis. In fact, the conceptual framework represents the keystone of the qualitative research's trustworthiness, including credibility and integrity to allow for minimal bias, which could impact the analysis and interpretation of the data.

There was no fixed recipe for the researcher to follow in the research study approach and therefore it is important to realise the fact that the design and execution of a qualitative research study is a dynamic process. Each action and reflection taken during each interview by the researcher was different and based on the assumption of how the research question could be answered in the most truthful way. The researcher therefore had to take cognisance of the possibility of her own biases and to ensure credibility of the research project; the "reverse test" was applied by questioning the validity of theory and conclusions (Saunders & Lewis, 2012, p. 125).

4.3 Population

The managerial population and sample frame of executives and senior managers at the integrated chemicals business consists of more than 200 members in the Group Executive Committee (GEC) layers, including the Chief Executive Officer, Executive Vice Presidents, Senior Vice Presidents and Vice Presidents. All managers within the GEC layers of management are professional graduated people, ranging from engineers and scientists to chartered accountants, commercial and human resource specialists and so forth. During the interview process the manager's average age, total number of years working experience and number of years' managerial working experience at the nominated company, as well as external managerial working experience were determined. The hypothesis was that the average working experience of the sample frame managers at the nominated chemicals company was at least 15 years and with probably at least 20 years of total average working experience. However, the total average years of working experience of the sample managers was 17 years as described in Section 5.1.

4.4 Sample unit of analysis

The sample unit of analysis comprised of the sample managerial group collectively, which means that all evaluations from interview data gathered on the preferred decision-making styles and guiding principle were done for the group as a unit and not for each individual manager or member within the sample.

4.5 Sampling method and sample size

To be able to answer the research questions and meet the research objectives, it was important to ensure that the appropriate data collection method was applied. Uncertainty concerning the diary availability of critical and more experienced executive leaders within the GEC layers of management at the nominated company, resulted in the research process following a purposive sampling method, where the researcher applied judgement in selecting the sample members within a specific management layer; based on experience and diversity as the most beneficial reasons and premises in the circumstances at the time (Saunders & Lewis, 2012). It is however important to note that purposive sampling, in support of the more typical cases, should only be applied in the extreme case and careful consideration should be given to the process of selecting the sample members purposively so that the credibility and trustworthiness of the research outcomes are not negatively impacted.

Fourteen respondents were interviewed from the number of executive and senior managers and leaders at the nominated chemicals company. They were selected through the non-probability sampling technique of purposive sampling. The identification of members in the sample group was firstly done in terms of extensive managerial experience, but also in terms of diversity including age, race and gender. Other leadership traits under consideration included honesty, openness, decisiveness and contentiousness.

4.6 Measurement instrument and data collection tool

The research was a systematic and organised process whereby the same set of three vignettes (Appendix 2) were provided and a standard set of semi-structured questions (Appendix 3) were posed to the identified sample executives and senior managers or interviewees. The aim of the vignettes was to test decision-making styles and principles

applied in different circumstances. The first vignette (safeguarding of assets) tested managerial decision making in a difficult or crisis situation; the second vignette (crude oil renaissance) tested decision making with a long-term focus in mind where rational decision making was more prominent and in the third vignette (industry rivalry), decision making had a long-term and short-term focus where both decision-making styles or even a hybrid approach was possible. A summary of the data collection tools can be found in the consistency matrix (Appendix 4).

Data was collected through semi-structured, face-to-face interviews (Saunders & Lewis, 2012), where each manager was asked to think out loud when answering the questions. A semi-structured interview is a framework of themes to be explored and is a more open process than a structured interview. The reason for the semi-structured interviews was that it is flexible and enabled the researcher to interrogate answers which allowed her the opportunity to further explore the managers' thinking processes during the interview sessions and to allow for the possibility of new ideas being mentioned and included in the research.

During the semi-structured think-out-loud-answering interviews, the researcher was mindful of the usage of specific words indicating intuitive or rational thinking as the preferred decision-making style. As an example, words like "during analysis", or "after comparing factual data", or "widely gathered" were expected to indicate a rational decision-making style; while words like "it just felt right", or "*ad hoc*", or "inherently believe" indicated an intuitive decision-making style. If the researcher was still unclear about whether a rational or intuitive thinking process was followed, she directly asked the respondent to comment thereon. The described measurement tool is very similar to the method used by Woiceshyn (2009; 2011; 2015), where 19 oil company CEOs were interviewed.

According to the detailed research project timeline and schedule, interviews were completed during July 2015, within the limited timeframe allowed for completion of the research study. The interviews were conducted at locations where the respondents felt comfortable, mainly their offices, and included limited or no external distractions where possible.

During interviews it was important for the researcher to maintain effective interpersonal skills of building trust, giving respect, conversing, showing sensitivity and being an active and thoughtful listener (Saunders & Lewis, 2012). Within the researcher's own

framework of ontological and epistemological perspectives, she broadened her own horizons through extensive upfront thinking about possible options of answers to be received; how to keep the interviewee engaged during the allowed interview time and also how to gain the most well-intentional value from the available interview time. Secondary data used in the qualitative research included the nominated company's shared values of safety (zero harm), people (caring work environment), integrity (consistent set of values and standards), accountability (ownership and responsibility), stakeholder focus (value creation) and excellence (value add beyond expectations) (Annual Integrated Report, 2014).

4.7 Data gathering process and collection method

Poor data management can have a negative impact on the credibility and trustworthiness of the research study and therefore confidentiality was immediately confirmed at the commencement of each interview. All interviews were recorded and transcribed into text for subsequent analysis and interpretation. After each interview field notes were compiled indicating *inter alia* dates, names, titles and the description of settings, chronologies, or the absence thereof, to facilitate the process of identifying patterns or themes. Data collection were logged on the conceptual framework of thinking and feeling, research methods, values and biases; anything that could impact the applied research practices and the intent of the research objectives.

Qualitative data consists mainly of two types of data, namely text and non-text. Text data are in the form of words that were recorded as text, which can include field notes and written answers to questions posed in the semi-structured interviews (Saunders & Lewis, 2012). All non-text data like interview recordings were transcribed into text data and it can be assumed that for the purpose of this research study, all data, including the field notes containing the interviewee's non-verbal behaviour, are text data.

The Atlas.ti (2013) qualitative data analysis software was applied in the management of data in this research study. Atlas.ti was selected because it is a standard programme specifically designed for qualitative data management and analysis and in addition to that, the software was introduced to the researcher through the GIBS Masters in Business Administration program. The Atlas.ti software mainly assisted with data management of text data in the form of storage and through the application of coding, the ordering of data and easy retrieval of data for further analysis.

4.8 Data analysis approach

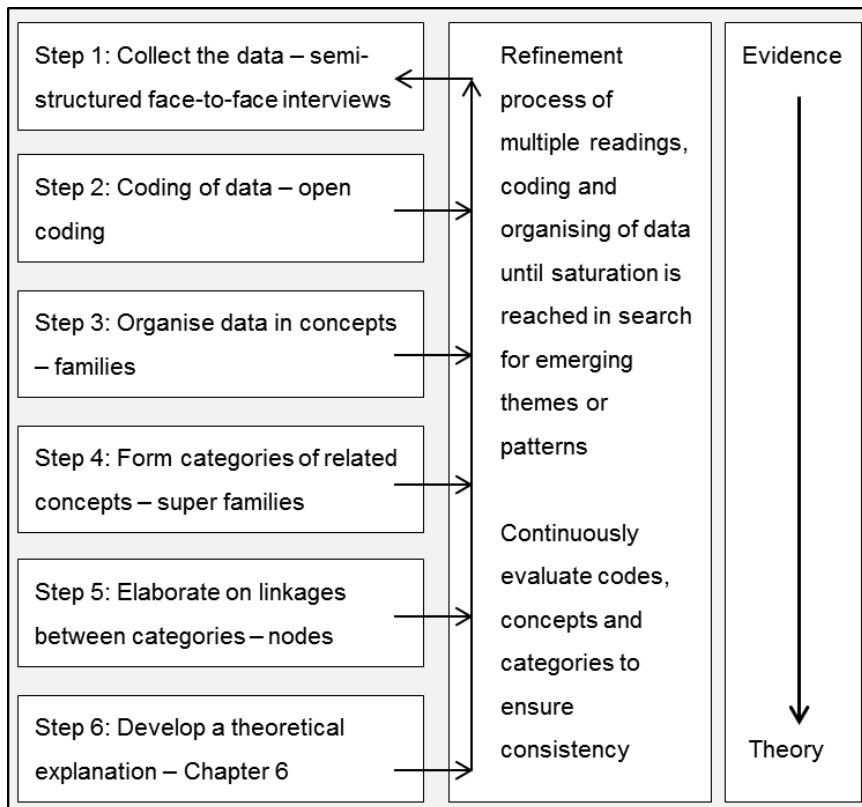
The analysis of qualitative data can easily be seen as a process of sorting, organising and coding of information, but it is definitely not merely a mechanical process taking place in a vacuum (Schurink, 2009). Saunders and Lewis (2012) described the analysing of qualitative data and analysing patterns and themes by categorising the data, as similar to completing a jigsaw puzzle. In the attempt to examine the occurrence of patterns and themes to test propositions and answer questions in the qualitative data analysis process, Saunders and Lewis (2012) proposed the following process whereby the researcher should firstly develop meaningful categories or codes to be able to describe the data, secondly decide on the units of data for analysis, and lastly code the units of data accordingly for meaningful interpretation and analysis.

The data analysis aimed to thematically unravel the meaning of the translated interview data and field notes and present it in parallel with the proposed research questions and objectives. The data analysis process involved multiple readings, coding, organising of data and searching for emerging themes or patterns and was an iterative process of thinking and reviewing of all data captured in the Atlas.ti qualitative data analysis software. This represented a refinement process (Corbin & Strauss, 2008) of interpretation to extract meaningful knowledge, to be able to answer the research questions, listed in Chapter 3 and meet the research objectives stated in Section 1.6 of Chapter 1.

Data analysis of all text data were done through coding (Corbin & Strauss, 2008; Saunders & Lewis, 2012) and commenced with a process called open coding. Figure 10 below represents the inductive data analysis approach followed in the building and testing of theory, as adapted from Rambaree (2014). Open coding during the initial stages of the analysis process consisted of multiple codes and could initially be seen as unstructured (step 2). The complete data analysis process however involved multiple readings and re-readings to firstly scrutinise the raw data for complete understanding and interpreting of field note information. The initial open coding allowed the researcher to derive at broad statements for further analysis and investigation. The next step in the data analysis process was to identify relationships between already identified codes and where possible, codes were merged or linked to other more prominent principles identified as codes. For further effective data analysis and interrogation, codes were grouped into meaningful families and super families to derive a more profound understanding of decision-making styles and guiding principles

applied in the decision-making process at the nominated company (steps 3, 4 and 5). Appendix 5 provides a network view of final open coded words identified and grouped into families and super families for more clarity. The Atlas.ti (2013) qualitative data analysis software tool also allowed for the comparison of primary documents based on the categories of gender, age and managerial level.

Figure 10: Inductive data analysis approach



Source: Adapted from Rambaree, 2014, p. 3

Coding of data for interpretation (Corbin & Strauss, 2008) was done *inter alia* according to the following principles:

- Was central to the research objectives and questions;
- Related to the keywords identified in the research;
- Related to personal or company values identified;
- Was a re-occurring concept or theme;
- Was variable and modifiable; and
- Was meaningful to other codes identified.

4.9 Strategies to ensure quality of data

Schurink (2009) stated that the most important criterion of qualitative research is credibility and to ask the questions *how* and *according to what* principles and logic the claims and analysis were formulated and substantiated. This was confirmed by the definitions of validity and reliability provided by Saunders and Lewis (2012). Validity describes whether the research study accurately measures what it originally intended to measure and reliability describes whether the data collection methods and analysis procedures produced stable and consistent results. To further support credibility, the researcher ensured congruence or a golden thread throughout the complete research process towards research conclusions. A logical flow was ensured by completing a consistency matrix (Appendix 4), or “reverse test” to ensure validity and consistency between questions asked, theory support, data collection and the analysis of conclusions (Saunders & Lewis, 2012, p. 125).

To ensure the quality of the qualitative research, both Bailey (2014) and Schurink (2009) proposed an auditing trail as a method for the researcher to systematically maintain documentation and insights of analysis during the entire research process. An effective tool was the usage of a research diary from the start of the research journey, where a record was kept of the researcher’s thinking and feelings concerning the research framework, questions, methods, values and biases. A record was also kept of the researcher’s awareness of her presence in every situation, which further assisted in the sense making of the data gathered.

4.10 Research ethics

Researchers conducting qualitative research are confronted with many ethical dilemmas (Schurink, 2009). For researchers it is essential to examine the foundations of their own thinking and because the researcher interviewed colleagues and peers, she continuously reflected on decisions taken and how reactions and responses were perceived. She was acutely aware of her own theoretical, ontological (assumptions of social reality) and epistemological (how it should be studied) perceptions and beliefs and how this might have impacted the data gathering and analysis approach. It is possible that, dependent on the researcher’s beliefs, the same phenomenon from different interviews can be investigated and analysed, but interpreted differently. An awareness of and reflection of the researcher’s own assumptions and background, as

well as personal, emotional and interpersonal relationships and influences continuously guided the research process captured in the research diary. Notice was taken during the interview process on the use of expressions and attention was paid to specific wording and body language. During the data analysis process the researcher was reflective and critical when evaluating the information gathered, but also cognisant of being too critical or judgemental towards specific interviewees in the executive manager's sample group.

Ethically responsible research depends both on the integrity of the researcher and his or her values, but also on the researcher's behaviour in relation to the rights of the interviewee (Saunders & Lewis, 2012). The protection of the interviewee's welfare and rights was confirmed by ensuring the interviewees' anonymity and their right to withdraw from the research if they desired to do so. Refer to Appendix 6 for the consent form presented to the respondents. Interviewees were comprehensively informed about what was expected from them, in order for them to provide informed consent to form part of the research. At the start of each interview, confidentiality according to the consent form was reiterated and it was also stated that any biographical data would not be disclosed, but merely used for analysis purposes. In addition, an overview of the study was verbally provided to each interviewee which included information on the main focus of the study, background, research issues, motivation for and objectives of the research. Furthermore, in terms of the researcher's personal values framework, plagiarism was avoided at all costs by appropriately acknowledging original sources (Saunders & Lewis, 2012).

4.11 Research limitations

Possible limitations to the research study identified *inter alia* include:

- “Most qualitative research will benefit at some stage from an element of quantitative processing of data” (Saunders & Lewis, 2012, p. 113), but other than the coding of data, no supportive quantitative research was performed in this research study;
- Extreme caution was taken not to draw definite conclusions, as an exploratory approach in research only allows the researcher to seek more and not extract understanding about an observed situation (Saunders & Lewis, 2012, p. 111).

The impact is that exploratory research can be very subjective and caution was taken towards researcher bias;

- Decision making during a crisis situation was not a focus point of this research and one might find that conclusions can be different if considered in terms of a detailed crisis management study;
- Unavailability of key strategic decision makers and leaders at the nominated company due to time constraints, might have impacted the study and could have provided a misrepresentation of findings and conclusions reached in the research study;
- The use of the non-probability purposive sampling method meant the exclusion of important strategic decision makers at the nominated company, which could have led to an incorrect conclusion on the prevalent decision-making style and guiding principles applied in strategic decision making;
- Translation errors might possibly have led to incorrect conclusions during the data analysis process and impacted the trustworthiness of the research done;
- Valid inferences from text data might be impacted by inconsistent coding and classification of data in the researcher's data analysis approach;
- Managers of only one company were interviewed. Therefore conclusions reached on decision-making styles and guiding principles are not directly applicable to any other company within South Africa or internationally;
- Values and moral principles of managers and the researcher might differ and could have an impact on the interpretation of certain responses;
- Cultural and communication style differences between the researcher and interviewees might have impacted the interpretation of responses; and
- Interviewees might have been dishonest during the interview process, which would have a negative effect on the validity and trustworthiness of the research findings.

CHAPTER 5: RESULTS

This chapter represents the findings of data collected as described in the methodology and design process in Chapter 4. Through the interpretation of data gathered, it was attempted to resolve the research questions and research objectives as defined in Chapter 1 and Chapter 3 respectively.

As introduction to this chapter, the reader is reminded about the interview process and how the vignettes were structured for the interview discussions. As described in Chapter 4, Section 4.6; the same set of three vignettes (Appendix 2) were provided to the respondents and a standard set of semi-structured and open-ended questions (Appendix 3) were posed to each respondent. The first vignette (safeguarding of assets) tested managerial decision making in a difficult or crisis situation where people's lives were at stake; the second vignette (crude oil renaissance) tested decision making in terms of capital prioritisation with a long-term focus in mind, where rational decision making was more prominent; and in the third vignette (industry rivalry) decision making had both a long-term and short-term stakeholder focus, where the application of both decision-making styles, or even a hybrid approach was possible.

5.1 Sample description

Data was collected through semi-structured, face-to-face interviews with 14 C-suite executives and senior managers at the nominated chemicals company. Respondents included three Executive Vice Presidents (EVPs), six Senior Vice Presidents (SVPs) and five Vice Presidents (VPs) within the top and senior management layers at the selected company. All interviews were performed during office hours at the manager's office; a secluded and quiet environment conducive for conducting an interview except for one interview that was completed after business hours at a coffee shop. Although some of the interviews were rescheduled up to three times, the scheduling of appointments was less complicated than anticipated and the researcher was fortunate to complete all interviews during the month of July 2015.

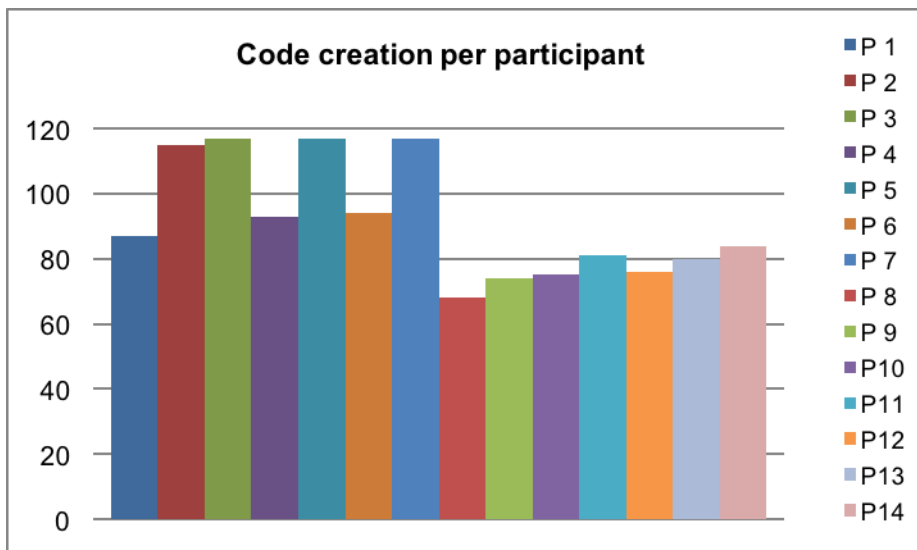
The aim of the purposive sampling technique in the identification of respondents was firstly done in terms of extensive managerial experience, but also in terms of diversity.

The three EVPs, as well as the six SVP respondents interviewed were all male and the VP respondents consisted of two females and three males. Although more diversity in terms of gender was targeted, the sample group's female representation was 14%, which is in line with the demographics of the executive and senior management layers at the selected company. The low overall female representation at the executive and senior managerial level is possibly due to the nominated company's technological environment; an environment which is traditionally not conducive for greater female representation.

The selected company's organisational structure is aligned with an integrated value chain approach and respondents interviewed covered almost the complete value chain which included activities of Upstream, Downstream, Operations, Business Enablement, Strategy, Research and Technology, Portfolio Management, Corporate Financing, Marketing and Sales, and Information Management. In terms of classification according to age, only one SVP is below 50 years of age, which means that 57% of all respondents are 50 years and older and 43% are within the age group of 40 to 49 years. The 40 to 49 age group consists mainly of VPs. The average years' managerial experience within the sample group is 17 years, with 43% of respondents previously being bursary holders of the selected company.

The average interview time was 36 minutes and the average word count per interview was 4 146 words for each interview. Although the interview time and average word count for the interviews of the EVPs and SVPs were longer and more than the VPs, the VPs interviewed cannot be described as second-order respondents; even though the VPs lack the years managerial experience (20 years for EVPs and SVPs, versus 12 years for VPs) and are much younger than their seniors (52 years for EVPs and SVPs, versus 44 years for VPs). Appendix 7 provides a detailed list of respondents and some additional information as described above. Figure 11 indicates that coding saturation occurred within the first three respondents, which are also the most experienced respondents of the sample group, where after the creation of new codes declined as data analysis progressed.

Figure 11: Code creation for each participant



5.2 Findings relating to the data analysis approach

In order to bring meaning to the findings, it is imperative to elaborate in this chapter on the data analysis method and approach, as described in Section 4.8. Consistent with the methodology described in Chapter 4, an inductive data analysis approach (see Figure 10) was followed to build and test decision theory. This means that a bottom up approach was followed in the codification, sense making and interpretation of data (exploring and seeking for answers from the data). Furthermore, a content analysis approach was followed to scrutinise through the text interview data and examine trends and patterns as these unfolded in the sense making process. Content analysis is an effective data reduction technique where text is compressed into fewer categories, based on explicit rules of coding for further analysis.

5.2.1 Coding and primary documents

All interviews were voice recorded (step 1 of Figure 10) and then transcribed into text data. All text data was imported into Atlas.ti as primary documents and each primary document was analysed through an initial process of open coding (step 2 of Figure 10). It is important to note that no preconceived coding was utilised to ensure that no established ideas were enforced onto the data being analysed. Therefore each code word was chosen specifically to describe the identified phenomena as accurately as possible. The principles of creating an open code were firstly in terms of relevance to the research objectives and questions, research key words and personal or company values identified. Secondly the open coding was based on identifying re-occurring

concepts or themes, and whether the open code was modifiable and meaningful to other codes identified.

A constant comparison analyses approach (Saunders & Lewis, 2012) was applied where all codes were continuously compared to other codes to ensure uniqueness, connection and note differences in the process. Thoughts and questions that arose during the analysis were captured in memos. All memos were specifically labelled; descriptive of the content it reflected in the raw data. Codes allocated to specific quotes were not static and were changed and/or merged intermittently as data became clearer or new insight was gained. The same coding process was followed in the analysis process of all text data. After the refinement process of multiple readings and comparison, a total of 64 open code words were created, which include code words of *inter alia*: rational, intuitive, hybrid, principles, experience, consultation, competitive advantage, leadership, safety, and people. A network view of code words created is presented in Appendix 5. For progressive analysis and comparison purposes, primary documents were classified into primary document families of age, gender and managerial level.

5.2.2 Code and super code families

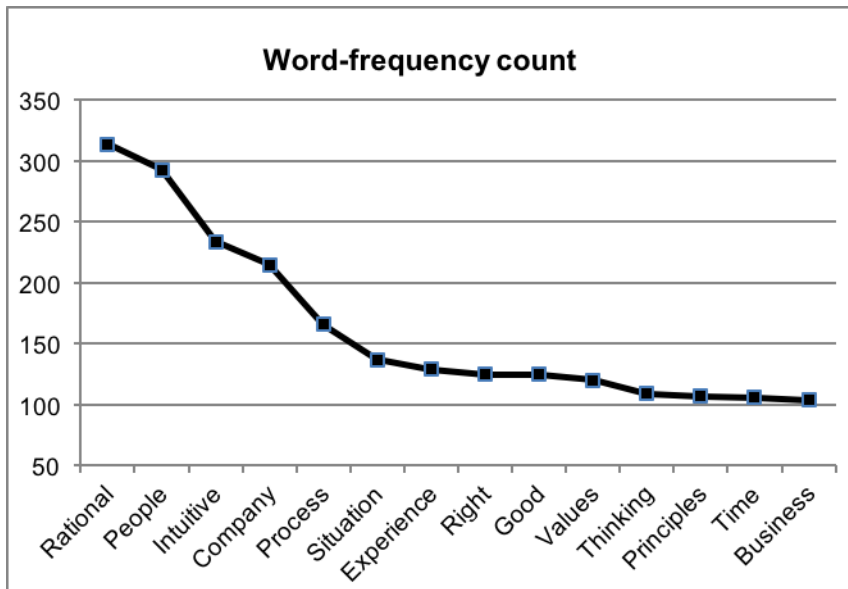
In the search for emerging themes and patterns and through the continuous interpretation of open coded words achieved through multiple readings and the organisation of data; open coded words were grouped into seven code families (step 3 of Figure 10) namely company strategy, company values, personal values, hybrid decision making, intuitive decision making, rational decision making and participant background. Furthermore by applying the process of constant comparison analyses the seven code families were grouped into two super code families (step 4 of Figure 10), consisting of preferred decision-making style and guiding principles. The two super code families created is in direct correlation with the research objectives and research questions and were supportive in answering the research questions (Chapter 3) and meeting the research objectives (Chapter 1). As a final step, before linking the data analysis results to theory, nodes were created to indicate further relationships and linkages between the different codes identified (step 5 of Figure 10).

5.2.3 Word-frequency count

The word-frequency count diagram (Figure 12) is a representation of the assumption that words mentioned the most, are the words that reflect the greatest concern and

assisted in making inferences about important matters and themes. It should be mentioned that in performing the word-frequency count, one should keep in mind that some words may have multiple meanings and the diagram might be misleading. However, the word-frequency count from the 14 interviews indicated critical and meaningful words that are evident in the research questions and objectives, as well as in the identified research keywords. Although the words “decision” and “decisions” were in total indicated 685 times in the word-frequency count, it was excluded from the diagram as it does not contribute to the process of sense making. As indicated in Figure 12 the most frequently used words include *inter alia* rational, people, intuitive, company, process, situation, experience, and values.

Figure 12: Word-frequency count



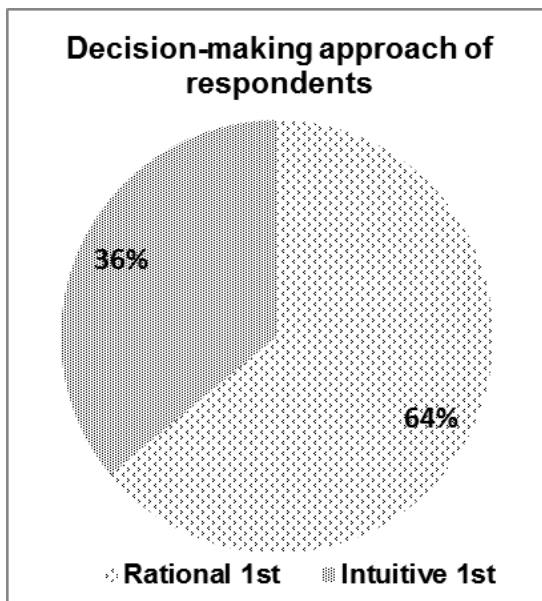
5.3 Research Question 1 results: Preferred decision-making style

What preferred decision-making style (rational analyses, intuitive/experiential or a hybrid approach of integration) exists among the members of the managerial sample group in strategic decision making at the nominated chemicals business?

Results in terms of the preferred decision-making style at the appraised company can briefly be summarised as follows, but should be read in conjunction with the detailed conclusion on the preferred decision-making style as discussed in the upcoming Section 5.3.8.

- All the respondents interviewed indicated they apply a situation-based decision-making style, but overall a hybrid approach of integration is the sample group's personal decision-making preference style, which can be classified into two different approaches (see Figure 13).
- The more dominant approach in decision making is where 64% of the respondents felt that they are more comfortable in applying a rational decision-making style first through a methodological, analytical approach of logical thinking, supported by a process of consultation and collaboration for confirmation of the final answer. The respondents indicated that as experience and knowledge escalate over time; their rational decision-making approach actually becomes much more intuitive.
- However, most of the rational decision makers claimed that they also test their rational decisions with intuitive thinking as Respondent P3 indicated "*rational thinking is also checked with gut*".
- The second approach is where 36% of the respondents felt they make an experience-based intuitive decision first, but before making the final judgement, it is first being tested through a rational approach of consultation and collaboration with team members and/or external experts.

Figure 13: First decision-making approach of respondents



5.3.1 Rational decision-making approach

Within the preferred decision-making style of a hybrid approach of integration at the

appraised company, the balance is leaning over to the rational decision-making style. Respondent P3 indicated that an individual has to:

“First understand the process, and then go through a logical thinking process, where after you have to do your homework”.

Homework refers to following a rational validation process of gathering all the information. Another rational decision maker, Respondent P5, indicated that he only gets *“comfort by having the facts, understand the landscape, issues, the ups and downs”* and by knowing the complete economic impact and risks involved. *“Only then will I make the decision”.*

According to Respondent P5, decision making is furthermore a *“plain, methodical, analytical process up to the point of making the final decision”* and Respondent P11 indicated that her *“first fall back is always [rational] if there is new information on the table”.* Both Respondents P10 and P14 indicated that their preferred decision-making style is rational as they tend to collect as much as possible evidence first, before making the final decision. As indicated by Respondent P7, *“rational tools”* were developed to try and deal with uncertainty like scenario development and sensitivity analysis:

“Even when we make rational decisions we try and incorporate intuitive perspective via applying tools”.

Other references to the rational decision-making style include: *“cold numbers”* (Respondent P2); *“spend your imagination before you spend our money”* (Respondent P3); *“connect all the dots”* (Respondent P4); *“an all-round view of the problem”* (Respondent P5) and Respondent P9 indicated that:

“It is probably the one that still brings the most amount of comfort because it is more black and white and there is less greyness about it”.

However, there is also a down side to the rational decision-making process. Respondent P13 felt that it is better to make a decision than to:

“Get stuck in the rational, where you over analyse and don’t make a decision timeously and miss opportunities”.

Respondent P5 said that *“rational decision making can also paralyse you”* and Respondent P12 asked what the price of slowness is and *“if he had gone through all the analysis paralysis, would he have come to a different decision”*, which he didn't think would have been the case.

5.3.2 Consultative approach

All respondents confirmed a consultative approach is critical in the rational decision making process as it affirms ideas and increases confidence. Respondent P1 indicated that decisions could be informed in many ways.

“You could probe, you could get a bit of consensus, you could get input, you can have a lot of ... I would say ingredients, that makes the final dish that you are going to have to make a decision on”.

The importance of the consultative approach was confirmed by Respondent P2 who said:

“You cannot claim to have monopoly of wisdom ... consultation helps with buy in ... as everybody feels as if they have participated”.

The buy-in statement was supported by Respondent P8.

Respondent P7 said *“I cannot ignore the legitimate input of others”* and Respondent P11 stated that her decision-making style is more rational and that she likes to see all the facts on the table to be able to make an informed decision. However she likes to *“solicit opinions from other people”* so that a well-rounded, thought-through position can be taken. She further stated that she gets *“inputs from other people to make sure there are no blind spots or points”* where facts have not been considered.

5.3.3 Intuitive decision-making approach

The “intuitive first” decision makers indicated that their decision-making style is based on gut feel, but that they will rationalise their decision before making the final judgement. Respondent P8 indicated that he forces himself through the process of logic thinking and Respondent P4, who applies the same decision-making process, stated that his decisions through this process actually become rational more than

intuitive, as facts and information converts the intuitive decision into a rational decision. Respondent P9 pointed out that in terms of intuition; he thinks that:

“If you sit back you will actually find that in the [intuitive] background there is a rational framework that you have just started to colour in over time”.

Additionally, Respondent P6 claimed that *“the intuitive part comes in with the entrepreneurial spirit”* and Respondent P10 indicated that *“there is a pool of information and then there is the sort of grey zone which will be more intuition-based”*. Other references to the intuitive decision-making style includes: *“you know the steps, you know what needs to be done”* (Respondent P8) and *“[previous] training tends to kick in and you are working on auto pilot”* (Respondent P10).

The negative impact of intuition was also mentioned during the interviews. Respondent P5 indicated that *“one has to be very careful [in applying intuition]; you cannot be driven by emotion”* and Respondent P13 indicated that intuition *“comes with risk, but it has to be calculated risk”*.

5.3.4 Importance of experience

Respondent P8 claimed that *“intuition without experience is dangerous”*. Respondent P2 stated that for him, intuitive decisions are made through experience:

“Experience will tell you the success of a location [but] nine out of ten times the rational [validation] will confirm the intuitive through experience”.

“As you have gone through it so many times, you just know ... the pattern from rational decisions makes it actually intuitive”.

Respondent P7 indicated that decision making for him *“started off as a structured process, but that his intuitive capability evolved with experience”* and that the ability to apply intuition grows because of pattern thinking. He mentioned the example of thinking through scenarios within the strategic environment, which is very much intuition-based. But with experience, he is able to depend more on his intuitive decision-making style, as he stated: *“my automatic internal references kick in”*. This statement was supported by Respondent P10 who felt that due to previous experience, *“maybe you will make better decisions in the future”*, supported by Respondent P12

who said: *“capitalise on past experiences”*. In support, Respondent P14 felt that:

“Experience is the part that gives you confidence on the intuitive side ... and allows you to make quicker decisions”.

“Experience can also work against you” and the decision maker can become complacent, as Respondent P4 indicated. He explained the example of driving home and on some days he cannot even remember what road he took, as it all becomes sub-conscious. *“In a foreign place and a foreign car I would have been much more on guard”*. This is supported by Respondent P5 who indicated that one should be careful with experience as:

“Experience doesn’t necessarily mean a good solution; you also get people who become dogmatic with experience”.

Respondent P13 warned that one can become overconfident with intuition and *“there is a risk that you can get it all wrong”*.

5.3.5 Time as a factor

Vignette 1 (safeguarding of assets) (Appendix 2) tested managerial decision making specifically in a difficult or crisis situation, where time constraints are a reality. The benefit of intuition was emphasised by several respondents as making the decision process much quicker. Respondent 9 indicated that due to previous exposure he is *“able to pull analogies when confronted with a quick decision”*. However, Respondent P13 indicated that to speed up the process the decision maker needs to apply intuition, but that *“it comes with risk; yet it has to be calculated risk”*. This statement is supported by Respondent P7 and means that an element of rational thinking is still necessary to capture the risk element.

In terms of having to make a decision within a restricted timeframe, half of the respondents felt that their decision-making style will change and the other half thought that, although there might be a different set of criteria, they will apply the same decision making style and will follow the same methodology in decision making; just more rapidly. Within the subgroup that thinks their decision-making style will change, most of the rational decision makers indicated that decision making within a constricted timeframe will most definitely move towards the intuitive style as decision making will

become much more directive, with less or no consultation. Respondent P6 indicated that:

“Crisis is not necessarily a disaster. It sometimes forces you to think harder and more critically and re-examine your strategy”.

5.3.6 Hybrid approach of integration by essentials

The preferred decision-making style at the appraised company is a hybrid approach of integration in decision making. The respondents can be classified into two groups; one group that applies the rational decision-making style first and then checks their decision with gut and another group that applies intuitive decision making first and checks it with a process of rational analysis before making the final judgement. Two Respondents namely P3 and P5, claimed to make use only of rational decision making however, during the vignette discussions (Appendix 2) it was clear that they do apply an intuitive decision-making approach under certain circumstances as Respondent P3 stated that *“intuitive decisions are checked with rational styles [and] rational thinking is also checked with gut”*. Respondent P2 pointed out that decision making for him is a combination of both decision-making styles and is very much situation-based. *“An investment decision is a cold, rational business and people related issues are intuition-based”*. According to him the ability to apply intuition or gut takes time and it is based on *“experienced judgement”*. Respondent P1 referred to his decision-making style as a *“fair mix”*, supported by Respondents P4 and P6, who indicated it as a *“fair balance”*. Respondent P7 indicated that:

“Decision making is not a black or white thing. It is [rather] circumstantial and I cannot remember when I only applied one [decision-making style]”.

Respondent P7 also indicated that there is always *“a floating balance between rationality and intuition”* and that:

“There are just too many unknown factors in our industry, [which necessitates] that very important balance between intuition on top of a very strong rational logical thinking”.

Respondent P11 stated that *“we need to be flexible so that we can become more proactive going forward”* and Respondent P12 very effectively described the hybrid approach of integration as the “what” and the “how” of decision making:

“The “what” is intuitive [as] you need to grow [in terms of strategy]. “How” am I going to grow, is more rational. I need people with certain personality traits, running capital [and so forth]. That is more rational”.

5.3.7 Perceived decision-making style at the selected company

During the interviews the respondents were asked to describe their perceived view of a preferred decision-making style within the appraised company. The majority of answers received indicated a decision-making style of a hybrid approach of integration and that decision making is situational-based. However, the balance seemed to lean towards the rational decision-making style. As Respondent P13 indicated: *“We have the extreme rationalists and the extreme intuitive guys”* and Respondent P7 supported this statement by saying that:

“As a result of being technocratic and conservative, we are bureaucratic, which drives us to rational bias, but not exclusive of intuitive thinking”.

Respondents indicating the preferred decision-making style as a hybrid approach of integration agreed on the importance of an appropriate balance in decision-making styles and that the one decision-making style should not necessarily overshadow the other.

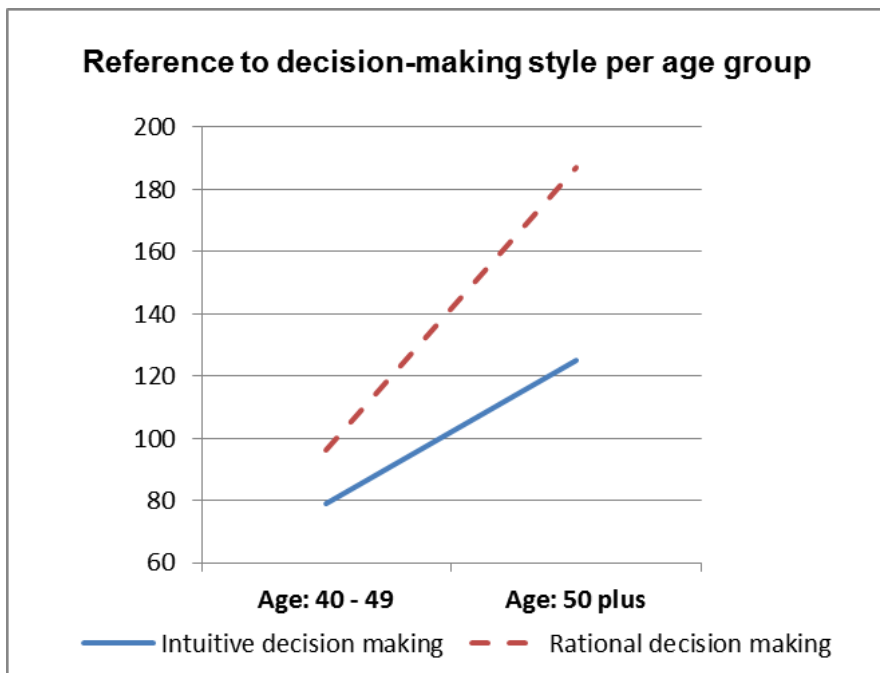
However, some of the respondents thought that only a rational decision-making style is being applied as the company mainly employs professional engineers and accountants. Respondent P2 claimed that *“systematic thinking is engrained”* in the company; supported by Respondent P3 who indicated that the company operates in a *“rule-based and risk-based environment”* and *“when you work with shareholder’s money, conservatism is the way to go”*. It also seemed as if the decision-making style has changed over the years from being much more intuitive, but as Respondent P12 indicated: *“that was experience”*.

With the hybrid approach of integration leaning towards the rational side, most of the respondents warned against being too rational and the “*price of slowness*” (Respondent P12) that it brings. Respondent P2 said that:

“We can get into paralysis analysis and miss opportunities, because we just analyse things. Crossed all the t’s and dotted all the i’s”.

Figure 14 is an indication of the number of times references were made in terms of either the rational or intuitive decision-making style. Although this does not offer conclusive evidence, it does seem to suggest that the younger managers are more intuitive focused than the older, more senior top executives.

Figure 14: Reference to decision-making style for each age group



5.3.8 Conclusion on results: preferred decision-making style

From Research Question 1’s results, it is clear that a hybrid approach of integration is the preferred decision-making style at the nominated company. Decision making applied is situation-based, but due to the technocratic environment within which the selected company operates, the balance leans towards the rational decision-making style. Even the intuitive first thinkers clearly stated that they test their intuitive decisions through a rational approach of systematic thinking and consultation before making the final decision.

Figure 15 in Section 6.2.7 attempts to indicate the preferred decision-making style at the nominated company as perceived by the researcher with the hybrid approach of integration as the overarching decision-making style. The two decision-making styles within the hybrid approach of integration are firstly the rational decision-making style, which is dependent on extensive time periods available in which the decision can be made and follows a process of consultation to affirm ideas and increase confidence. The second decision-making style of intuitive decision making is dependent on extended experience and knowledge where success only comes with many years of managerial experience. The curved line in the middle of the diagram represents the floating balance between the two decision-making styles of rational analyses and intuition. The decision-making framework also indicates the side effects of the different decision-making styles if the one decision-making style overshadows the other.

5.4 Research Question 2 results: Guiding principles

What guiding principles are found to be prominent in decision making during the interview process?

Several guiding principles in decision making were found during the interview discussions and are classified into principles of values, people, safety, excellence and distinction, value creation and business focus, logical and systematic thinking, responsibility and leadership, and stakeholder focus. Each of these evident guiding principles is being discussed in the rest of this section.

5.4.1 Values

Values, especially integrity is a very important guiding principle between all respondents, as Respondent P1 said *“I make my decisions based on values first”*. Respondent P2 stated that:

“Values under-grad your decision-making; that includes values of integrity, values of safety and values of people, or values around sustainability of the company ... values are fundamental. In fact it is the foundation on which you stand, particularly integrity”.

Two respondents specifically mentioned the “mirror test” they as leaders have to pass and Respondent P3 described it as:

“The mirror test is who you are, what you are, what is ethical, what is non-ethical, what does it mean to live the company values and are they aligned with your personal values”.

Respondent P12 supported the mirror test approach by saying:

“Can I pass the mirror test on this; so can I look at myself in the mirror and say hang on, from a values perspective, did I do the right thing?”

Honesty and transparency as values are evident from Respondent P3’s comment:

“Give them the truth, the whole truth, nothing but the truth as quickly as possible. Don’t lie, put everything on the table”.

This is supported by Respondent P13 who said:

“Even when dealing with clients it is important to be completely honest ... because [in] that way you gain more respect from that client, even if it is bad news you have to give him”.

Other words in terms of values used during the interviews include people, respect, fairness, ethical and win-win, and more than a third of the respondents mentioned that their values are based on religious beliefs as Respondent P9 stated:

“I am a Christian, so a lot of my personal values come from that background in terms of value for life, respect for others, a deep sense of our Higher being, but also a bigger purpose, morals, honesty, trying to find win-win outcomes”.

Integrity is defined as a shared corporate value at the appraised company and Respondent P3 emphasised the importance of values by saying:

“Will you knowingly make an unethical decision? Do you understand as a leader the concept of what is fair and not fair, what is fair to the individual and what is fair to the company? And that comes with time ... as you have to be comfortable in your skin, with yourself [and] the company, when you make these decisions”.

When discussing Vignette 3 (industry rivalry) (Appendix 2), both Respondents P8 and P9 warned against self-interest and egos that might get into conflict between personal ambitions and the company's ambitions. As Respondent P9 stated:

“Unfortunately it is the reality of big business ... often egos get involved and then it is not rational, it is not intuitive, it is all about that feeling of achievement, and that I think is extremely dangerous”.

5.4.2 People

Vignette 1 (safeguarding of assets) (Appendix 2) focussed on testing guiding principles relating to people, which is listed as a shared corporate value of the selected company and was named by all the respondents as a very important value driver.

Comments received from all the respondents indicated that people are seen as the most critical and important resource and value priority. To indicate the importance of people as a guiding principle, all respondents used similar wording to Respondent P4 who said: *“your first priority is always people”*. Respondent P5 stated that: *“my ethos says to me you do what is right for the people”*. Respondent P14 indicated the importance of people clearly when he said:

“I mean companies are people and therefore you need to be careful that you do not kill the spirit of the company”.

Although fairness is seen as a major element of the values guiding principle, most of the respondents referred to the fairness in terms of equality to people and all stakeholders. Respondent P5 referred to guiding principles as *“over-achingly – fairness – what is the fair decision to make”* and Respondent P10 indicated the importance of fairness in the following statement:

“If I was in that position and someone was making that decision about me, how would I like it to be?”

Another way of looking at the importance of people as a guiding principle is the emphasis placed by the respondents on the process of consulting and collaboration towards interdependence in the decision-making process to ensure the final decision

taken is the most accurate decision. As Respondent P2 indicated and as mentioned before *“you cannot claim to have monopoly of wisdom”* and *“consultation helps with buy in ... as everybody feels as if they have participated”*.

5.4.3 Safety

Vignette 1 (safeguarding of assets) (Appendix 2) was used to test guiding principles relating to safety of people and production facilities. Safety is listed as a shared corporate value of the selected company, because of the precarious environment in which the nominated company operates and is seen by all the respondents as a critical guiding principle in decision making.

Respondent P9 indicated the key principle as *“the zero harm principle”* and in particular *“to people, that the lives of our people and their wellbeing are non-negotiable”*. Respondent P2 emphasised the people and safety principle further by saying:

“Shut down the plant immediately, because the safety of the employees is at stake ... your first priority is safety”.

This was supported by Respondent P3 who said:

“If that means you have to stop the plant; then you stop it ... first and foremost, it’s always the safety of the people and then the assets”.

The safety of people is also not limited to employees, but includes the environment and communities as Respondent P6 indicated:

“Protecting all lives at risk, including the community, including contractors ... you put the value on life higher than facilities. So that is what I would consider integrity”.

5.4.4 Excellence and distinction

Excellence is a shared corporate value of the assessed company and this value is evident in comments made by all the respondents during the interview process. It is also evident in the balance leaning over to the rational side in the hybrid approach of decision making where final decisions are based on facts, consultation and well thought through processes and scenarios. Other words used by the respondents

indicating excellence included framework, road map, milestones, model, homework, no blind spots, all aspects covered, and so forth.

Respondent P7 expressed excellence by saying:

“In terms of a structured process the completeness and thoroughness of analysis is almost a guiding principle ... it is the pursuit of excellence [and] kind of my practice of driving for excellence in terms of understanding the issue, challenging my own thinking around the issue, challenging the answer I come up with”.

Respondent P9 specifically stated that in the process of product development “secure the end product in a manner so that I can use it later again”. This supported by Respondent P1 who said:

“We do what we do well within the framework that we operate, so it is about improvement, it is about excellence in all we do, it is about making sure that you get back to a high performance team and unleashing I would say all the value that you can ... that can again sustain the long-term viability of your company”.

In addition to the limited statements mentioned above on excellence, Respondent P6 believed “that you have to be proactive in terms of being prepared for scenarios; you are prepared for [both a] high price scenario [and a] low price scenario”, indicating the entire complex business cycle and environment. In striving for excellence, Respondent P2, as mentioned before, warned against the negative side of rational decision making by saying:

“We can get into paralysis analysis and miss opportunities, because we just analyse things. Crossed all the t’s and dotted all the i’s”.

5.4.5 Value creation and business focus

A critical behaviour of the appraised company is to focus on the group’s operations and activities as one business with only one bottom line. This behaviour is evident in responses from all the respondents where most of them used similar wording to Respondent P6 who said “you have to make the decisions that are in the best interests of the company”. The focus on a one bottom line for the company is also evident in

Respondent P11's comment who said:

"Not from a segment perspective, but from a total group perspective. So what makes the most sense from a group perspective, what adds the most value, and then without obviously sacrificing values and integrity for the company".

During the interviews the focus was highly on value creation and words mostly used included strategy, growth, long term impacts, do what is best for the company, sustainability, competitive advantage, opportunities, robustness, return on investment, and risk mitigation. As Respondent P1 indicated:

"Refocus your strategy, so you would also then interrogate the robustness of your strategy; is it still the way that you want to grow?"

Respondent P6 indicated that in terms of Vignette 2 (crude oil renaissance) (Appendix 2), it is all about:

"Cash preservation, competitive alignment, or alignment with strategic fit, and then it has to be about opportunity assessment which means, are there any opportunities, it is risk assessment ... and everything is rational ... rank the opportunities and deliver, focus on the ones that can help you the most and delay the ones that you can't, and eliminate the ones that you shouldn't [do]. You have no choice but keep an eye on the long-term and preserve your strategy and your strategy content".

During the interviews most of the respondents commented on the takeover situation sketched in Vignette 3 (industry rivalry) (Appendix 2) as a difficult situation, but also saw it as an opportunity, as Respondent P9 indicated *"within the threat [see] the opportunity as well"*.

5.4.6 Logical and systematic thinking

Logical and systematic thinking was applied by all respondents, which is supportive of the fact that the balance in the hybrid approach of decision making leans to the rational decision-making side. The rational thinkers spoke about understanding the issue first and then challenging their own thinking, where the intuitive thinkers will apply a rational approach of validation to confirm their intuitive decision. Respondent P7 said he is

applying a “fiwhy” rule and explained it as:

“The fiwhy rule is basically if you think about a subject and you’ve asked yourself five questions of why; in succession to get confidence in your answer, that sort of thoroughness comes born to you”.

As previously mentioned, Respondent P2 indicated that “systematic thinking is engrained”, supported by Respondent P1 who specified there is a cascading effect where “strategy informs your business plan; informs your budget and resources”. Respondent P7 indicated that “rational tools” were developed to try and deal with uncertainty like scenario development and sensitivity analysis. The logical and systematic thinking process is opposed to being emotional as Respondent P5 pointed out and as mentioned earlier: “one has to be very careful [in applying intuition]; you can’t be driven by emotion”.

5.4.7 Responsibility and leadership

Another shared corporate value and critical behaviour at the appraised company is authorised accountability, meaning that everybody should take ownership of his or her behaviour, as well as the responsibility to perform. As Respondent P1 indicated; “I am not in favour of committees; someone has to make a decision [based] on accountability” which is supported by Respondent P3 who said:

“People's experience, knowledge, attitudes, skills, environments all has an influence ... but in the end it is leaders that make the decision and once they've made the decision they should be kept accountable ... you have to be comfortable in your skin, with yourself, the company, when you make these decisions”.

In the discussion of Vignette 2 (crude oil renaissance) (Appendix 2), Respondent P9 indicated that in the sketched scenario:

“The company had the opportunity to significantly clean out the cupboard, and this is where you now need to be very careful in terms of doing the right things for the right reasons ... because you actually set the tone in striking that balance in terms of being responsible, doing what is right in terms of where the strategy wants to take you”.

In terms of the same vignette discussion, Respondent P1 supported this by clearly stating “*you need to stick to your strategy and your plan!*” Respondent P5 described his responsibility *inter alia* as:

“I would say long-term sustainability of the plant, long-term sustainability of the work force, respect from the community, respect from the employees, respect from the government, [all] the stakeholders”.

Together with responsibility, the aspect of leadership was very important to the respondents as Respondents P3 and P12 referred to the “mirror test” they as leaders have to pass and as Respondent P2 questioned:

“How do we improve the decision making processes of the leaders, because that is the real hallmark of good leadership ... everything rises and falls because of leaders ... [how do] we produce a new generation of leaders that can think and can make decisions based on their values and at the same time their intuition is very much guided by what is right and what is wrong?”

All the respondents were perceived as having a positive outlook on whatever decision they are confronted with. Several respondents referred to seeing the “*opportunity within the threat*” and as Respondent P6 stated:

“The best time to build competitive advantage is when it is a difficult time and you need to keep an eye on that, provided you have the means and capabilities ... look at a crisis as an opportunity as well”.

5.4.8 Stakeholder focus

Stakeholder focus is a shared corporate value at the selected company and during the interview discussions, stakeholder value, fairness and inclusivity were for all the respondents of the utmost importance. In discussing Vignette 1 (safeguarding of assets) (Appendix 2), respondents addressed mainly the broader stakeholder community, which was also applicable for Vignette 2 (crude oil renaissance) (Appendix 2) and Vignette 3 (industry rivalry) (Appendix 2), but here they were more concerned about shareholder value.

Decision making for Respondent P6 is based on:

“Three pillars including 1) [the] bottom line, which is about making a return for the shareholder; 2) satisfaction of stakeholders, employees, and people feel valued and they make a contribution, and 3) making a difference in whatever area we operate, in the communities out there”.

He further explained his view on stakeholder focus when he said:

“Everybody is a stakeholder in this process. And you have to unfortunately trade-off between the three and it is a tough decision, but sometimes the shareholders involvement is paramount, but the community is key to ensure sustainable operations. So it is just a constant trade-off and ensuring that whatever decision is made, it is sustainable”.

The third stakeholder he referred to, but not mentioned in his quotation, is employees. Respondent P6 explained his statement further through an example by saying:

“It is just like coming home and having to explain to your family that you don’t have the resources and we have to prioritise, defer, cancel – and is it making it an inclusive process?”

Respondent P9 addressed stakeholder focus by asking:

“What is this deal all about and how does it meet that framework of what is right for the shareholders, but also the right thing to do for the stakeholders?”

Respondent P5 indicated that decision making should have a long-term focus with a win-win outcome when he said:

“I wouldn’t make a decision that benefits me now and I know it is going to kill the relationship a year later”.

Respondent P3 stated it explicitly by saying *“when you work with shareholders’ money, you have to be conservative”.*

5.4.9 Conclusion on results: guiding principles applied

The guiding principles experienced during the interviews and listed above are all inter-related. Similarly, the guiding principles of values, people, safety and creating value for the business are linked, which is evident in Respondent P2's comment who stated that:

“Values under-grad your decision-making; that includes values of integrity, values of safety and values of people, or values around sustainability of the company”.

Respondent P5 addressed several guiding principles including value creation, stakeholder focus, responsibility and leadership in his comment of:

“I would say long term sustainability of the plant, long term sustainability of the work force, respect from the community, respect from the employees, respect from the government, [and] the stakeholders”.

There are ample examples of respondents' quotes on guiding principles that cannot be connected to only one principle. Although the researcher attempted to indicate the guiding principles experienced during the interviews separately, it was in fact difficult to connect only one guiding principle between quotations.

Figure 16 in Section 6.3.6 attempts to indicate an integrated decision-making framework, consisting of the elements of a hybrid approach of integrating the essentials of both decision-making styles of rational analysis and intuitive thinking, together with the guiding principles exhibited during the interviews, as basis for the decision-making process at the selected chemicals company. Decision making at the appraised company is perceived to take place through a process of logical thinking, focussed on value creation for the company, based on a set of values and guiding principles, as indicated by the arrow in Figure 16. Although the direction of the arrow is towards the intuitive decision-making style it does not have any significance. The arrow is only an indication of the decision-making process in the integrated decision-making framework, where it is underpinned with guiding principles. It is important to note that all wording used by the researcher in the construction of Figure 16 is specific wording articulated by the respondents during the interview process.

5.5 Research Question 3 results: General principles applied by the oil company CEOs

How do the sample managers' decision-making guiding principles compare with the general principles as described by Woiceshyn (2009; 2011)?

Woiceshyn (2009; 2011) identified the following principles during the interviews with the 19 oil company CEOs: rationality, value creation and independence as general principles and justice, self-interest and honesty as three other general principles. Table 3 in Section 6.4 reflects a comparison of the principles used by the oil company CEOs and the guiding principles found evident in decision making at the appraised company.

By comparing the two sets of principles, it was difficult to conduct a one-on-one comparison as some of the oil company CEOs principles were encompassed in more than one selected company guiding principle and a direct correlation was not possible. On the other hand, each set of guiding principles contained principles, or elements of principles not being addressed in the other set of guiding principles, or not explored at all by either researcher. Guiding principles of the selected company that was only partly addressed by Woiceshyn (2009; 2011) included values, responsibility and leadership. Two appraised company guiding principles never addressed by Woiceshyn included safety and stakeholder focus (the words were not even mentioned in Woiceshyn's research document). These guiding principles actually address social responsibility and reputational risk, and are two critical guiding principles. Oil company CEOs' general principles not addressed by the researcher included self-interest and the mid-range principles of consequence management and reward in the performance management process.

5.5.1 Rationality

Woiceshyn's (2009; 2011) study of principles employed by the 19 oil company CEOs illustrated that rationality was considered to be important. Rationality is about using reason as opposed to allowing emotions in the decision-making process. Woiceshyn (2009; 2011) used words like *facts* and *homework* which is similar to wording used by the current research study's respondents and was discussed as part of the rational decision-making process (Section 5.3.1). The rationality general principle can be compared to the guiding principles of excellence and distinction (Section 5.4.4) and logical and systematic thinking (Section 5.4.6). Woiceshyn's (2009; 2011) notion of

gaining expert opinion in the rationality general principle can be compared to the respondents' consultative and collaborative approach towards interdependence in decision making, discussed as part of the people guiding principle (Section 5.4.2).

5.5.2 Value creation

Woiceshyn's (2009; 2011) study of principles employed by the 19 oil company CEOs considered value creation and included concepts of risk reduction, relative advantage and corporate strategy, which are similar concepts to the assessed company's guiding principle of value creation and business focus (Section 5.4.5). Inasmuch as words like strategy, growth, long-term impacts, do what is best for the company, sustainability, competitive advantage, opportunities, robustness, return on investment and risk mitigation were used by the respondents interviewed.

5.5.3 Independence

Woiceshyn's (2009; 2011) study of principles employed by the 19 oil company CEOs confirmed the general principle of independence that encompasses the idea that effective CEOs will consult others, but that final decisions will be made based on their own objective thinking. The independence general principle relates to the guiding principle of people (Section 5.4.2), that addresses the consultative and collaborative approach in decision making, and the guiding principle of responsibility and leadership (Section 5.4.7), where respondents of the current research study indicated that they are not afraid of taking decisions in terms of accountability and responsibility. As indicated by Respondent P3:

"People's experience, knowledge, attitudes, skills, environments all has an influence ... but in the end it is leaders that make the decision and once they've made the decision, they should be kept accountable".

It was the researcher's experience that the interviewed respondents, as part of the people guiding principle, placed a large focus on interdependence through consultation and collaboration in the decision-making process, rather than independence as described by Woiceshyn (2009; 2011).

5.5.4 Justice

Woiceshyn's (2009; 2011) study of principles employed by the oil company CEOs made mention of the general principle of justice that is concerned with treating people objectively (Golden Rule) as companies' performance is dependent on other people's input. This relates to the appraised company's guiding principle of values (Section 5.4.1) and as indicated by Respondent P3 and mentioned earlier:

"The mirror test is who you are, what you are, what is ethical, what is non-ethical, what does it mean to live the company values and are they aligned with your personal values".

The oil company CEOs principle of justice also relates to the selected company's guiding principle of people, that embraces the importance of people as indicated by Respondent P4; *"your first priority is always people"* and fairness to people as indicated by Respondent P10; *"if I were in that position and someone was making that decision about me, how would I like it to be?"* However, the statement by Respondent P10 refers to the importance of all stakeholders, including individuals and teams in the consultative and collaborative approach towards interdependence in decision making; addressed as part of the people guiding principle (Section 5.4.2).

Woiceshyn's (2009; 2011) study explained that the general principle of justice also refers to applying positive and negative consequence management in the oil companies' performance management process. However, the notion of the treatment of people during non-performance was never discussed with the selected company's respondents during the data collection interview process.

5.5.5 Self-interest

Self-interest, as one of the general principles employed by the CEOs in Woiceshyn's (2009; 2011) study entails the fact that managers held themselves as primary value, meaning that work has to offer a challenge and purpose, but also enjoyment. Differently stated, it can refer to creating and sustaining an appropriate work-life balance. Although all the interviewed respondents in the current research study were very passionate about their contribution to a sustainable future for the company, the notion of work-life balance was never mentioned or discussed during the interviews.

5.5.6 Honesty

Woiceshyn's (2009; 2011) study of principles employed by the 19 oil company CEOs emphasised the general principle of honesty, which is concerned with never faking reality in order to gain a value. This principle is similar to the appraised company's guiding principle of values (section 5.4.1). However, honesty as an effective oil company CEO principle is listed as an other general principle, relegating the principle to lesser importance. Values as guiding principle at the appraised company include words and concepts of integrity, honesty, transparency, fairness and ethical leadership and are, together with critical behaviours, a first priority in interactions with stakeholders towards sustainable operations and value creation. As Respondent P1 said "*clearly within the framework of values that is my first point of departure [in decision making]*", supported by Respondent P2 who indicated "*values are fundamental; in fact it is the foundation on which you stand, particularly integrity*".

5.6 Research Question 4 results: Corporate values at the nominated company

How do the sample managers' decision-making principles compare with the shared corporate values of the nominated chemicals business?

The selected company's shared corporate values (section 2.5.3) include safety (zero harm), people (caring work environment), integrity (consistent set of values and standards), accountability (ownership and responsibility), stakeholder focus (value creation) and excellence (value add beyond expectations).

In Section 5.4, where results on guiding principles experienced during the interview process were discussed, the researcher indicated the relevance of these guiding principles regarding the shared corporate values of the selected company (see Table 4 in section 6.5 for comparison purposes). Although these might have been differently worded, the guiding principles experienced during the interview process and the shared corporate values are completely aligned, which was clearly visible in the respondents' behaviour and responses during the interviews. However, two additional guiding principles were listed, namely value creation and business focus, and logic and systematic thinking, which can be connected to the excellence guiding principle of

delivering what is promised and commitment to continuous improvement towards sustainable value creation.

The similarity between the shared corporate values and exhibited guiding principles are evident in comments like the one from Respondent P1; *“I have been with this company [for] so long that actually the values are flowing in my blood”* and Respondent P10 who said:

“My personal values are pretty close to the company values and for me that is like a given, it is the background to everything”.

Respondent P13 indicated that:

“There is a match between my values and the company’s values [and] then it becomes easy and the ultimate outcome is always a win-win”.

Additional to these statements Respondent P3 indicated that:

“You will not be able to fit into an organisation if your personal values and the organisation’s values are not aligned”.

5.7 Leadership at the selected company

The researcher’s experience, specifically from the interviews conducted with the more senior leaders, was that during the open-ended question period, or pre-vignette discussions, they actually pre-empted the scenarios sketched in the vignettes and they actually unknowingly started to answer the semi-structured questions beforehand. In the discussions they provided several examples explaining a certain concept or statement and concluded each section by summarising their viewpoints. The researcher felt privileged to interview these C-suite managers and top executives at the selected chemicals company and positively experienced it as coaching and mentoring sessions. The respondents were focused on being a learning organisation and as Respondent P6 indicated *“as an organisation we have to have the culture that accommodates failure as a learning part”* and Respondent P3 said *“one should learn from good and bad experiences”*. The concept of a learning organisation is supported by Sadler-Smith (2010, as cited in Sadler-Smith, 2015) who stated that intuitions as

judgements cannot be seen as right or wrong, but that it should rather be seen as hypotheses for exploitation. He further stated that even wrong decisions or judgements should be seen as a positive learning curve towards an increase in experience and knowledge.

However, as already discussed in Section 5.1, the younger VPs interviewed cannot be described as second-order respondents, as they contributed tremendously in terms of their values and overall wisdom on guiding principles and sustainable value creation for the selected company.

5.8 Conclusion

Chapter 5 presented the research question results in terms of the preferred decision-making style and guiding principles evident at the selected company. It further presented a comparison between evident guiding principles and the general principles as described by Woiceshyn (2009; 2011), as well as a comparison with corporate shared values at the nominated company. In Chapter 6 however, these results were interpreted in relation to the literature discussed in Chapter 2.

CHAPTER 6: DISCUSSION OF RESULTS

6.1 Introduction to the discussion of results

Data was collected by conducting face-to-face semi-structured interviews as described in Chapter 4 and the results were discussed in Chapter 5. With the research limitations in mind (Chapter 4), and through triangulation credibility proof of the analysed results, the aim of Chapter 6 is to make conclusions in terms of theory as discussed in the literature review (Chapter 2) and to address the research questions presented in Chapter 3 and meet the research objectives as stated in Chapter 1.

Chapter 6 provides an integrated view between literature researched and the findings from the interview process in the researcher's effort to successfully answer the research questions and meet the research objectives in the study of guiding principles in rational and intuitive strategic decision making. The integrated decision-making framework as presented in Figure 16 (Section 6.3.6), is a representation of combined findings from the data collection process and an attempt by the researcher to illustrate the interpreted importance and interdependence of all elements of the hybrid approach of integration in decision making, together with guiding principles that underpin the decision-making style that was evident at the selected chemicals company.

6.2 Research Question 1: Preferred decision-making style

What preferred decision-making style (rational analyses, intuitive/experiential or a hybrid approach of integration) exists among the members of the managerial sample group in strategic decision-making at the nominated chemicals business?

The purpose of Research Question 1 was to interrogate the prevailing decision-making style that is being applied by the C-suite executives and senior managers at the selected chemicals company in their daily strategic decision-making pursuit in the current volatile, complex, uncertain and dynamic macroeconomic and business environment. The challenge for these managers is how they ensure responsive,

superior performance towards long-term profit maximisation and sustainable value creation for all stakeholders and to assess the decision-making style or styles that are applied in the process. Is the decision-making style a rational or intuitive thinking approach, or do they apply both decision making styles as a hybrid approach of integration?

Based on the results discussion (section 5.3), the preferred decision-making style at the nominated chemicals company can be summarised as follows:

- The respondents' decision-making style is situation-based;
- This leads to an overall hybrid approach of integration as decision-making style;
- A floating balance between rational and intuitive decision making leans towards the rational decision-making style;
- The rational decision-making style is fact-based and rule-based and a methodological, analytical approach of logical thinking towards the final decision;
- Consultation and collaboration, as elements of an interdependence behaviour, are critical to affirm ideas and increase confidence in making the final decision;
- However, as experience and knowledge escalate over time, the rational decision-making approach actually becomes more intuitive;
- Intuitive decision making is experienced-based and among others, linked to uncertain situations where time constraints are a reality;
- Both rational and intuitive decisions are checked for confirmation and accuracy by applying the opposite decision-making style sequentially, before the final decision is made; and
- Respondents acknowledged the side effects of both decision-making styles, and were aware of the disadvantages of one style overshadowing the other or being applied exclusively.

Findings on the prevalent decision-making style are furthermore explicated in the remainder of this section and presented in an interpreted decision-making framework in Figure 15 (Section 6.2.7).

6.2.1 Situation-based evidence of the preferred decision-making style

The respondents' situation-based, decision-making style was specifically evident during the discussion of Vignette 1 (safeguarding of assets), which tested managerial decision

making specifically in a difficult or crisis situation, where time constraints are a reality. The research indicated that half of the respondents believed that their decision-making style would change and the other half thought that, although there might be a different set of criteria, they would apply the same decision-making style and would follow the same methodology in the decision-making process, albeit in a much quicker manner. The situation-dependent aspect of decision making is in correspondence with Franklin's (2013) view that decision-making styles depend on a variety of elements including the existence of uncertainty, risk taking, monetary objectives, or whether it is a team or individual decision. In addition and evident in the current volatile macroeconomic environment within which the selected company operates, Khatri and Ng (2000) linked decision-making styles to unstable decision-making environments. An unstable, uncertain environment was also the scenario sketched in Vignette 1, where people's lives and production facilities were in danger.

However, statements from the respondents who indicated that they would follow the same decision-making style, just much quicker, are in contrast with contingency theory as mentioned above, although Smith (2015) argued that one decision-making style might be a perfect fit for a specific situation, but completely inappropriate for another. The basis for contingency theory in decision making is that there is no one best way for decision making as one size does not fit all. Decision making always depends on the evaluation of several internal and external constraints, as was evident in the Vignette 1 interview discussions. For theory development, one should note that some respondents indicated that in a crisis situation they still apply the same decision-making style, although in a much quicker manner, but this finding needs additional research.

6.2.2 Hybrid approach evidence of the preferred decision-making style

An overall hybrid approach of integration was found to be the sample group's preferred decision-making style as more than one respondent indicated that decision making is not black or white. Because decision making is circumstantial, the respondents claimed that they could not remember when last they applied only one decision-making style. Therefore the research is meaningful in terms of the dual processing theory as captured in Sadler-Smith's (2015) two-minds model (Figure 3) and Smith's (2015) model of dynamic decision making (Figure 6) where she emphasised the need for practices to embrace the reality of inconsistencies; of greyness and not only black or white realities. Inconsistencies are the norm in consistency theory and Smith (2015) indicated that exploitation and exploration define each other and should be used

concurrently. Additionally, Woiceshyn (2009; 2011; 2015) as demonstrated in her model of integration by essentials (Appendix 1, Figure 17), argued that both decision-making styles are fundamentals interacting constantly, whereas Simon (1987) stated that effective managers do not choose between decision-making styles as knowledge and expertise lead them to automatically use both styles.

The research findings are therefore meaningful and concur with literature as it was clear from the interviews that respondents are flexible in applying both decision-making styles alongside each other, but also sequentially when respondents verify their original answer through consultation before making the final decision. Woiceshyn's (2009; 2011; 2015) study indicated the preferred decision-making style of the effective oil company CEOs also as the hybrid integration of essentials decision-making approach. As the assessed company also operates in a similar dynamic and integrated macroeconomic business environment, an assumption from findings is that a direct correlation may exist between the business environment and the type of business decisions made, and the preferred decision-making style. However, companies operating in a different business environment, for instance where innovative thinking is needed may possibly have a different preferred decision-making approach. This assumption should be tested through additional research over a broader spectrum of companies within different business environments and industries.

However, because of the technocratic operational environment at the appraised chemicals company the sample group's decision-making style **leans towards the rational decision-making** side of the hybrid approach of integration. As a respondent indicated:

“As a result of being technocratic and conservative, we are bureaucratic, which drives us to rational bias, but not exclusive of intuitive thinking”.

Again the respondent indicated flexibility by acknowledging the application of both decision-making styles, but with rational bias. One plausible explanation for this is that rational bias is mainly due to the company's excellence corporate value and guiding principle. Excellence as a principle is critical in achieving the company's operational strategic agenda of developing and commercialising technologies, leading to consequential large financing requirements needed for sustaining the existing asset base and delivering on growth projects. In terms of the monetary layout, risk mitigation and fiduciary responsibilities, managers feel more comfortable with a conservative

decision-making approach and therefore the rational, fact-based and analytical approach of getting to the final answer is superior. This research finding is significant and concurs with literature as Woiceshyn's (2009; 2011; 2015) integration by essentials decision-making model (Appendix 1, Figure 17) indicated that the core decision-making segment happens in the conscious or reasoning fragment, before moving on to the subconscious or intuitive segment of the hybrid approach of integration in decision making.

However, equilibrium or a floating balance between the two decision-making styles of rationality and intuition are important as there are just too many unknown factors in the dynamic and volatile macroeconomic environment of the integrated chemicals industry. Another aspect that needs further research is the concept of conservatism in decision-making towards rational bias, about which the researcher was unable to find any literature assessment.

6.2.3 Rational decision-making evidence of the preferred decision-making style

The rational decision-making process at the selected company was described by respondents by words such as plain, factual, methodical, analytical, rule-based, within a framework, and as a respondent indicated *"my first fall back is always [rational] if there is new information on the table"*. Rational tools like funnelling, scenario development and sensitivity analysis are developed to deal with decision theory and uncertainty in decision making at the appraised company. These findings are meaningful in terms of literature where Mason (2015) used the descriptive wording of evidence-based or fact-based to describe the rational decision-making process, which she described as being data-driven decisions that support continuous improvement. Mason's (2015) argument gives context to the statement above on the accountability and responsibility involved in terms of large capital investments and therefore it is anticipated that the decision-making style within the hybrid approach of integration leans towards the rational decision-making style. Research findings on the use of the rational decision-making style are similar to Woiceshyn's (2009; 2011; 2015) integration by essentials decision-making model (Appendix 1, Figure 17) where the core segment of decision making, happens in the reasoning portion. However, the application of a rational decision-making style is dependent on the existing experience and knowledge of the decision maker and the time available for making the decision. Figure 15 (Section 6.2.7) indicates the interrelationship where a rational decision-

making style is normally adopted by a more inexperienced decision maker, who has more time available to make the final decision.

Within the rational decision-making style at the assessed company, all respondents confirmed the importance of a **consultative and collaborative** approach to affirm ideas and increase confidence. Because of the existence of underlying corporate critical behaviours at the appraised company, this consultative approach can rather be referred to as interdependence behaviour between teams and individuals in the decision-making process, to ensure sustainable value creation. The importance of the consultative approach in decision making is confirmed by words such as: “*you cannot claim to have monopoly of wisdom*” and “*I cannot ignore the legitimate input of others*”, which supports the notion of interdependence in decision making. The significance and application of a consultative approach in decision-making is indicated in Figure 15 (Section 6.2.7), where more consultation and collaboration will take place during the rational decision-making process and less during intuitive decision-making.

The consultative approach finding relates to Smith’s (2015) integrating practices that focus on synergies and mutual reliance as part of the scholar’s research on embracing inconsistencies in dynamic decision making in strategic paradox management. These findings are further limitedly discussed as elements of Franklin’s (2013) systematic approach in decision making; described through the decision star (Figure 4) and expert model (Figure 5) decision-making models, where he emphasised the importance of identifying and involving the correct sponsors for decision making. The decision-making star and expert model can be compared and are similar to the selected company’s rational analyses techniques, which are systematic processes of upfront collecting of as much data and information as possible. Through a process of prioritisation and elimination, only the critical elements remain to support the decision making (Kourdi, 2003), also accredited as decision theory. However, very limited literature reviews could be found supporting the application and importance of a consultative approach in decision-making.

6.2.4 Experiential intuitive decision-making evidence

During the interview process respondents acknowledged the fact that as **experience and knowledge** escalate over time, the rational decision-making approach actually becomes more intuitive by means of recognised patterns, as one “*just knows*” the next steps due to previous training, as internal references kick in from prior rational decision

making experiences. Findings support Glöckner and Witteman (2010) who argued that intuition is centred in spontaneous processes that rely on facts and knowledge structures attained through repetition and learning. These findings furthermore support and expand on experiential intuition as described by Sadler-Smith and Burke-Smalley (2015) as sophisticated “pattern matching” (p. 12) originated from experience, practice and feedback. The importance of experience is emphasised by a respondent who pointed out that *“intuition without experience is dangerous”*. The findings are also in agreement with scholars, Salas et al. (2010) (Figure 7) and Hogarth’s (2010) description of intuition as entrenched in expertise and the outcome of experiential intuition as the knowing without knowing effect. The knowing without knowing concept of the experiential intuitive decision-making style is confirmed by a respondent who claimed:

“If you sit back, you will actually find that in the [intuitive] background there is a rational framework that you have just started to colour in over time”.

As indicated in Figure 15, research affirmed that an inexperienced decision maker relies more on rational decision-making processes, where little experience and knowledge is needed, while the time factor creates a benefit. On the other end of the continuum, as knowledge and experience multiply over time through repetition, training and by being exposed to similar previous experiences and surroundings, the experienced decision maker is able to make faster decisions by applying pattern thinking from subconscious information, in the intuitive decision-making process. This further indicates that every decision maker has the ability to apply the intuitive decision-making style; where one knows the steps and is able to make quicker decisions, but which all originally started from rational decision-making experiences in the past that developed with exposure and knowledge over time. Intuitive decision making is therefore a learned skill, where a decision maker can capitalise on past experiences and allow rational decisions to become actually intuitive. In terms of the dual processing theory, effective intuitive decisions are not possible without applying the pattern of rational decision making first; as intuitive capability only evolved with experience.

The intuitive research finding is similar to the interaction between the reasoning and intuition cognitive levels, as described by Woiceshyn (2009; 2011; 2015) in her integration by essentials model (Figure 17). Intuitive decision making at the appraised company is seen as based on **gut** and relates to the feeling attribute of decision

making. This was especially evidenced in Vignette 1 (safeguarding of assets), where people's lives were at stake and comments like *"your first priority is always people"* were received. Hayashi (2001) also referred to intuitive feelings as gut and Sadler-Smith (2015) defined one of the attributes of intuition as having an affective tone. Research findings in terms of intuition concur with literature and one respondent referred to intuitive strategic decision making as the *"what"*, whereas the *"how"* decisions will represent more rational decision making. The *"what"* and *"how"* associations in decision making were not evident in the literature reviewed by the researcher.

Other than experience as an important impact factor in intuitive decision making, respondents acknowledged the impact of **uncertain or volatile situations** where **time constraints** are a reality. Respondents agreed that decision making within a constricted timeframe would become much more directive and the process of decision making would be much quicker, with less or no consultation, which is in contrast with the rational decision-making approach where the process is much slower. Findings are in correlation with the statement of Mason (2015) who indicated that in volatile and uncertain environments it might mean that decisions must be taken more rapidly and effectively. It also supports Sadler-Smith's (2015) view on the impact of trends like globalisation and technology development, which is similar to the current dynamic and fast-moving business environment of today. However, no literature reviewed by the researcher indicated any time constraint benefits, as one respondent indicated:

"Crisis is not necessarily a disaster. It sometimes forces you to think harder and more critically and re-examine your strategy".

6.2.5 Evidence of applying both decision-making styles sequentially

All respondents indicated that it did not matter what decision-making style they utilise first, they will, for confirmation and in ensuring accuracy of the decision, sequentially apply the opposite decision-making style as well, before the final decision is made. This confirmation approach is defined by Agor (1986, as cited in Dane & Pratt, 2007) who indicated that many managers apply intuition after the process of rational analysis, which is differently stated by Sadler-Smith (2015), who said that intuition is useful in seeing the bigger picture and for checking the results of rational analysis. One respondent referred to the application of decision-making styles as due to confirmation bias, as he stated:

“I force myself to think through the logic ... I like to consult other people ... I like to test, I also know that we as human beings have an irrational base in our brain which is called confirmation bias”.

The sequential application of decision-making styles in terms of confirmation bias coincides with the constant interaction between the reasoning and intuitive cognitive levels in decision making as described by Woiceshyn (2009; 2011; 2015). However, no literature reviewed by the researcher addressed the pertinent validation of intuitive decisions by sequentially applying the rational analysis decision-making style afterwards. According to Woiceshyn the concurrent application of both decision-making styles happens through the filtering process of spiralling between new facts and the integrated knowledge accumulated in the sub-conscious in the form of concepts and principles, which was evident during the interview process in the respondents’ flexibility of applying both decision-making styles in the process of getting to the final decision.

Confirmation bias might relate to Smith’s (2015) integrating practices that focus on synergies and mutual reliance as part of the scholar’s research on the embracing of inconsistencies in dynamic decision making in strategic paradox management. At the assessed company, confirmation bias is a consequence of the goal-focussed and results-driven business environment and the outcome-based performance approach, which adds to the need for the affirming of ideas and attaining confidence in the final decision. However, the community-based environment and culture at the appraised company, as a result from the localisation of production facilities, also adds to the interdependence behaviour between decision makers to allow for comfort in the decision-making process.

6.2.6 Evidence of side effects of the different decision-making styles

Respondents acknowledged the side effects of the decision-making styles; noting the adverse effects of one decision-making style overshadowing the other, or being exclusively applied, as Kourdi (2003) warned by saying that rational analyses and intuitive decision-making should complement rather than undermine each other. The two decision-making styles should be kept in balance, as difficulties like overconfidence, might lead to irrational and flawed decision making. In terms of the intuitive decision-making approach, a respondent indicated *“there is a risk that you can get it all wrong”*.

Side-effect findings of the intuitive decision-making style include *inter alia* that decisions cannot be based on emotion and that experience may lead to people becoming dogmatic in decision making. The findings also indicate that rational decision making comes with the cost of it being slow, leading to missed opportunities and even “paralysing” the decision maker. This echoes what Langley (1995) cautioned against as compromising to “analysis paralysis” (p. 63), and she argued for a fine line and balance between intuition and rationality. Research findings in terms of acknowledging the side effects of both decision-making styles therefore concur with literature, as it is important for the specific company to be responsive to market demands and capitalise on opportunities by being agile in the way decisions are made.

6.2.7 Conclusion on the discussion of results: Preferred decision-making style

The research study’s findings disclosed that, based on the issue at hand of whether it is a business, technical, environmental or people decision, the decision-making style at the selected chemicals company is situation- and circumstantial-based. This assumption is in agreement with the **contingency theory** of scholars including Franklin (2013), Khatri and Ng (2000) and Smith (2015) who indicated that decision making always depends on internal and external constraints. The situation-based approach in decision making leads to an overarching hybrid approach of integration in decision making as more than one respondent indicated that they cannot remember when last they have only applied one decision-making style; confirming the **duel processing theory** as captured by Sadler-Smith’s (2015) two-minds model and Smith’s (2015) model of dynamic decision making.

However, due to the technocratic environment in which the selected company operates, the decision-making style leans towards the rational decision-making style, a fact-based and rule-based environment, which Mason (2015) described as being concerned with data-driven decisions that support continuous improvement. Driving excellence and continuous improvement at the appraised company were exhibited as being possible through an effective and a more conservative decision-making process of rational analysis. **Decision theory** is applied through rational tools of funnelling, scenario development and sensitivity analysis. However, rational decision-making comes with the cost of being slow, leading to missed opportunities and even possibly “paralysing” the decision maker, which the respondents acknowledged as side effects,

aligned with the nominated company's view of being agile in the way decisions are made in being able to sustainably deliver on shareholder value.

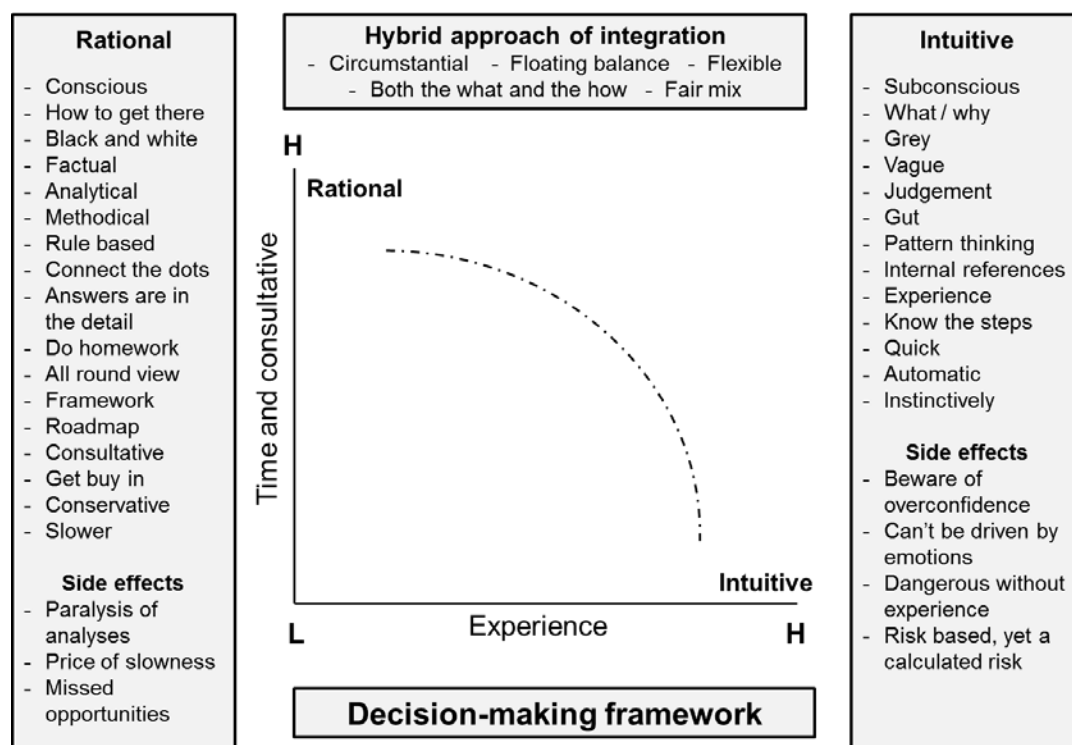
Although the respondents indicated that they have the propensity of taking the final decision, an **interdependence** approach of **consultation** and collaboration is followed in the rational decision-making approach to validate ideas and increase confidence in the final decision. Respondents highlighted that as **experience** and knowledge escalate over time, the rational decision-making approach becomes more intuitive, ensuring that the decision-making process becomes quicker and decreases the possibility of lost opportunities. Mason (2015) indicated that in volatile and uncertain environments it might mean that decisions must be taken more rapidly and effectively. To complete the hybrid approach of integration decision-making framework (Figure 15 below); intuitive decision making is acknowledged as the decision-making style that speeds up the process, but it is dependent on extensive experience and knowledge that comes with years of managerial experience.

However, respondents indicated that caution should be taken that the two decision-making styles are kept in **balance**, as difficulties like overconfidence might lead to irrational and flawed decision making (Kourdi, 2003). **Confirmation bias** leads decision makers at the appraised company to, after applying the one decision-making style first, affirm the decision and increase confidence in the final decision by sequentially applying the other decision-making style as well, before the final decision is taken. The confirmation decision-making approach at the appraised company is seen as valid in the volatile and uncertain macroeconomic environment in which it operates to mitigate risk and ensure effectiveness in creating value sustainably. Research findings in terms of the preferred decision-making style at the selected company is significant in terms of Woiceshyn's (2009; 2011; 2015) model of integration by essentials (Appendix 1, Figure 17), where she argued that both decision-making styles are fundamentals interacting constantly; which is in line with the concurrent and sequential hybrid approach of integration decision-making style evident during the interview process of the current research study. However, literature could not be found that pertinently addresses the validation of intuitive decisions by sequentially applying the rational analysis decision-making style as well, to apprehend the confirmation bias principle.

Figure 15 below is a decision-making framework and an attempt by the researcher to indicate the preferred decision-making style at the selected company. The hybrid

approach of integrating both decision-making styles is the overarching decision-making style with rational decision making, dependent on extensive time periods available for the decision to be made, supported by an interdependence approach of consultation to confirm that blind spots are addressed. The intuitive decision-making style is dependent on extended experience and knowledge and success in applying this style only comes with many years of managerial experience. The curved line in the middle of the diagram represents the floating balance between the two decision-making styles of rational analyses and intuition. The vertical axes of the diagram can be compared to the slower, effortful and possibly rule-based System 2 cognitive process, whereas the horizontal axes is similar to the quick and involuntary System 1 cognitive process (Stanovich & West, 2000, cited in Kahneman, 2002). The framework indicates the negative or side effects listed by respondents if styles are applied superior to the other, or in seclusion. It is important to note that all words used in the construction of Figure 15 are specific wording articulated by the respondents during the interviews.

Figure 15: Decision-making framework based on preferred decision-making style



The decision-making framework can be exploited by other decision makers to consider and evaluate in an integrative way, the decision-making style applied by executives at their own companies. This concludes that Research Question 1 was resolved and the research objective was met.

6.3 Research Question 2: Guiding principles

What guiding principles are found to be prominent in decision-making during the interview process?

The purpose of Research Question 2 was to gather and identify the prominent guiding principles exhibited by executives and senior managers' in their strategic decision-making processes at the assessed company. The importance of principles was confirmed by Langley (1995), who argued that principles are derived from previous experiences to allow strategic leaders to make faster and more effective decisions. Woiceshyn (2009; 2011; 2015) indicated that guiding principles act as mental space savers or generalisations to retrieve information faster and more accurately when faced with familiar situations that had been dealt with successfully in the past. Woiceshyn (2009) supported this argument further by arguing that principles recognise cause-and-effect relationships and act as decision guides to speed up the process of decision making.

Based on the findings from data gathered during the interview process (Section 5.4), the researcher was able to group evident principles into guiding principles of values, people, safety, excellence and distinction, value creation and business focus, logical and systematic thinking, responsibility and leadership, and stakeholder focus, as indicated in Figure 16 (Section 6.3.6). Differences between the appraised company's evident guiding principles and the effective CEOs guiding principles as described by Woiceshyn (2009; 2011) are discussed in Section 6.4 and correlation between or differences against the selected company's shared corporate values are discussed in Section 6.5.

6.3.1 Significance of values as a guiding principle

Values, especially the integrity value is a shared guiding principle between all the respondents and is seen as the foundation on which decisions are made in a personal, business or leadership capacity. Integrity is a shared corporate value and therefore alignment should exist between individual and corporate values. The research finding on values coincides with Walumbwa et al. (2014) who argued that a leader should also understand what their personal decision-making attributes are and continuously challenge the validity and relevance of those principles in a constantly changing environment.

Two respondents mentioned the “mirror test” leaders have to pass in assessing themselves. This is in correspondence with the literature reviewed, as Drucker (1977, as cited in Liu, 2015) alluded to the “mirror test” (p. 283) in his argument that it does not matter what decision making process the decision maker follows; the decision maker should, at reaching the final decision, be comfortable about the final choice made.

The research indicated that the values guiding principle consists of a set of values, or principles indicating the standard of behaviour in a specific situation. Other value ideals or beliefs classified here, as mentioned by the respondents, include transparency, fairness, honesty, respect, ethical leadership, people issues and religion. The findings are important in terms of literature as values influence decision making on a daily basis and if there is alignment with corporate values, it creates opportunities for individual growth and increases company productivity towards sustainable value creation. The alignment of values leads to trust and commitment in the workplace, thereby inspiring people towards collaboration in delivering on the strategic objectives of the selected company. Research however also indicated that leaders should be aware of self-interest and egos that contradicts the value guiding principle and is often to the detriment of effective decision making in sustainable value creation.

6.3.2 Significance of people, safety and stakeholder focus as guiding principles

The interconnectedness between the guiding principles of people, safety and stakeholder focus is best described by a respondent who argued:

“Protecting all lives at risk, including the community, including contractors ... you put the value on life higher than facilities”.

The zero harm principle of safety is applicable to people first, including all other stakeholders. One respondent emphasised the importance of the people aspect by saying that *“companies are people and in decision-making leaders should take care not to kill the spirit of the company”*. This remark relates to the guiding principle of values which includes *inter alia* integrity, ethical leadership, fairness and respect in terms of equality to people and all stakeholders. It also relates to the corporate culture of high performance that defines the way in which each individual interacts with one another, but also with all other stakeholders in making a difference wherever he or she interacts

and operates. The guiding principles of people, safety and stakeholder focus are all shared corporate values at the assessed company to ensure alignment between individual and company values.

The findings that people, safety and stakeholder focus are guiding principles relate to literature where Dane and Pratt (2007) argued that rationality is normally related to the head, whereas intuition is connected with the heart. In terms of the feeling element of the heart, the researcher linked the people, safety and stakeholder focus guiding principles to the intuitive decision-making style component of the hybrid approach of integration. This concurs with Sadler-Smith's (2015) definition of intuition where he described it as being uninvited, instantaneous, with an affective or feeling tone. Research indicated that because of the affective or feeling tone, the guiding principles of people, safety and stakeholder focus relate extensively to the guiding principle of values, as zero harm to people first, inclusivity and equality are all important aspects mentioned in receiving buy-in as people feel valued, as well as creating the ability to build sustainable relationships.

6.3.3 Significance of excellence and distinction, supported by logical and systematic thinking as guiding principles

In pursuit of excellence and distinction, respondents indicated that a structured process of thorough analysis is applied, whereby they not only challenge their own thinking and answers, but also those of others, done through a process of consultation and collaboration that enhances interdependency in the decision-making process. Excellence and distinction as guiding principle also involves continuous improvement towards sustainably unleashing value and long-term viability of the company. The drive for excellence happens proactively within a structured framework of logical and systematic thinking of understanding the issue first and then applying non-emotional rational tools like funnelling, scenario development and sensitivity analysis to deal with uncertainty, and/or by applying the "*fiwhy rule*" to attain confidence in the answer.

The logical and systematic thinking process applied at the selected company are supportive of the rational decision-making style in the overall hybrid approach of integration, which is fact-based and evidence-based (Mason, 2015), where respondents tend to collect as much as possible data and information first, to ensure correctness in the final decision. The pursuit of excellence and distinction by means of applying a process of logical and systematic thinking, verify rational decision-making

literature as described by Franklin (2013) where he argued it to be a dynamic progression to the final decision which has characteristics that include being systemic, iterative, adaptive, self-correcting, and active. Franklin's decision star (Figure 4) and expert model (Figure 5) decision-making models support rational decision making. Research findings on logical and rational thinking are supportive of Woiceshyn's (2009; 2011; 2015) integration by essentials decision-making model (Figure 17), where conscious reasoning is the core element of the hybrid approach of interaction between the decision-making styles. Research indicated that striving for excellence at the appraised company towards a high performance organisation allows for continuous improvement and capitalising on opportunities for sustainable value creation for all stakeholders, where knowledge and learning can escalate through personal growth. Excellence is a shared corporate value at the appraised company and therefore alignment should exist between individual and company values.

6.3.4 Significance of value creation and business focus as a guiding principle

A critical behaviour at the appraised company is to focus on the group's operations and activities as "one business with one bottom line". A shared comment from respondents during the interviews was; *"you have to make decisions that are in the best interests of the company"*, but not by sacrificing the value of integrity and other shared corporate values in the process. The guiding principle of value creation and business focus include elements of long-term strategy preservation and robustness, sustainability and competitive advantage, risk mitigation and return on investment; value drivers towards business optimisation and sustainably delivering on shareholder value.

The research findings are meaningful in terms of literature as Keelin and Arnold's (2002) view on strategy is that in a complex and volatile strategic decision-making environment, it requires highly strategic thinkers with an essential trait of strategic perspective to see the bigger picture and to simplify complex and randomly disconnected detail. In further support of literature, respondents made comments on value creation and business focus like *"within the threat, [see] the opportunity as well"* meaning that imagination, strategic focus and agility are critical for success in the current volatile macroeconomic environment.

6.3.5 Significance of responsibility and leadership as a guiding principle

Another defined critical behaviour at the selected company is empowered

accountability, indicating that every individual should take ownership of his or her decisions and behaviour, as well as take responsibility to perform. Accountability in terms of business decisions is not the only essential aspect for the respondents; they are also concerned about accountability in terms of leadership as they are setting the tone of being responsible in doing what is right for the company in relation to strategic fit and sustainable value creation.

Leadership was described by one of the respondents as being “*comfortable in your skin, with yourself, the company, when you make decisions*” and another respondent accepted ownership and accountability in terms of leadership when he asked:

“How do we improve the decision making processes of the leaders, because that is the real hallmark of good leadership ... everything rises and falls because of leaders ... [how do] we produce a new generation of leaders that can think and can make decisions based on their values and at the same time their intuition is very much guided by what is right and what is wrong?”

Findings on responsibility and leadership as guiding principles are important and significant in terms of Drucker’s (1977, as cited in Liu, 2015) “mirror test” (p. 283) where he argued that the decision maker should, at reaching the final decision, be comfortable about the final choice made; no matter what decision-making process was followed. Leadership acts as the catalyst for everything to work together as the final choice in decision making relates to all elements in the broader business environment; inclusive of business focus, people focus and stakeholder focus.

The research findings on responsibility and leadership as guiding principle corresponds to Kourdi’s (2003) argument where he stated that for decision makers to make the right decisions, they should have the ability to handle complexity and apply rigorous judgement and knowledge, while having the confidence to take the necessary action. The research findings indicated mature leadership at the selected company where the more senior leaders pre-empted the vignette scenarios and supported their answers through ample examples and a summary of opinions. Responsibility and leadership as guiding principles are again interrelated to the values guiding principle as decisions should be guided by “*what is right and what is wrong*”, while leadership is essential to also see an opportunity, even with a crisis at hand.

6.3.6 Conclusion on the discussion of results: Guiding principles applied

Guiding principles allow strategic leaders to make faster and more effective decisions (Langley, 1995) and enable the recognition of cause-and-effect relationships based on previous experience to speed up the process of decision making (Woiceshyn, 2009). Guiding principles evident during the interviews were in alignment with shared corporate values (section 6.5) and Woiceshyn's (2009; 2011) principles of effective CEOs, however with less similarity and some exclusion (section 6.4).

Values influence decision making on a daily basis and values including integrity, transparency, fairness and honesty, all relate to ethical leadership and social responsibility. Respondents at the assessed company view values as the foundation on which decisions are made and these research findings placed the literature that was reviewed in context as Walumbwa et al. (2014) argued that principles should be dynamic and in perfect alignment with the leader's core values which drives their moral compass in strategic decision making. The alignment of values is to the benefit of embedding a corporate culture towards high performance, where trust and commitment is a building block in delivering on strategic objectives to the benefit of all stakeholders.

The people, safety and stakeholder focus guiding principles are interconnected in terms of fairness, equality, inclusivity and integrity, and the application of the intuitive decision-making style, which has attributes of being instantaneous with an affective or feeling tone (Sadler-Smith, 2015). The inclusive people aspect is important because although a strong corporate culture may not guarantee success, it defines the interconnectedness between people in the workplace and enhances the company's likelihood of achieving or sustaining long-term sustainability and value creation. The three guiding principles are also shared corporate values and relate extensively to the guiding principle of values; essential in building sustainable relationships with all stakeholders.

Excellence as a guiding principle and shared corporate value is seen as a process of continuous improvement in creating value sustainably. It happens proactively within a structured rational framework of logical and systematic thinking that is fact-based and evidence-based (Mason, 2015), where respondents collect as much data and information as possible first by applying non-emotional rational tools and together with consultation, affirm ideas and become comfortable with their final decisions. A critical behaviour at the appraised company is to focus on the group's operations and activities

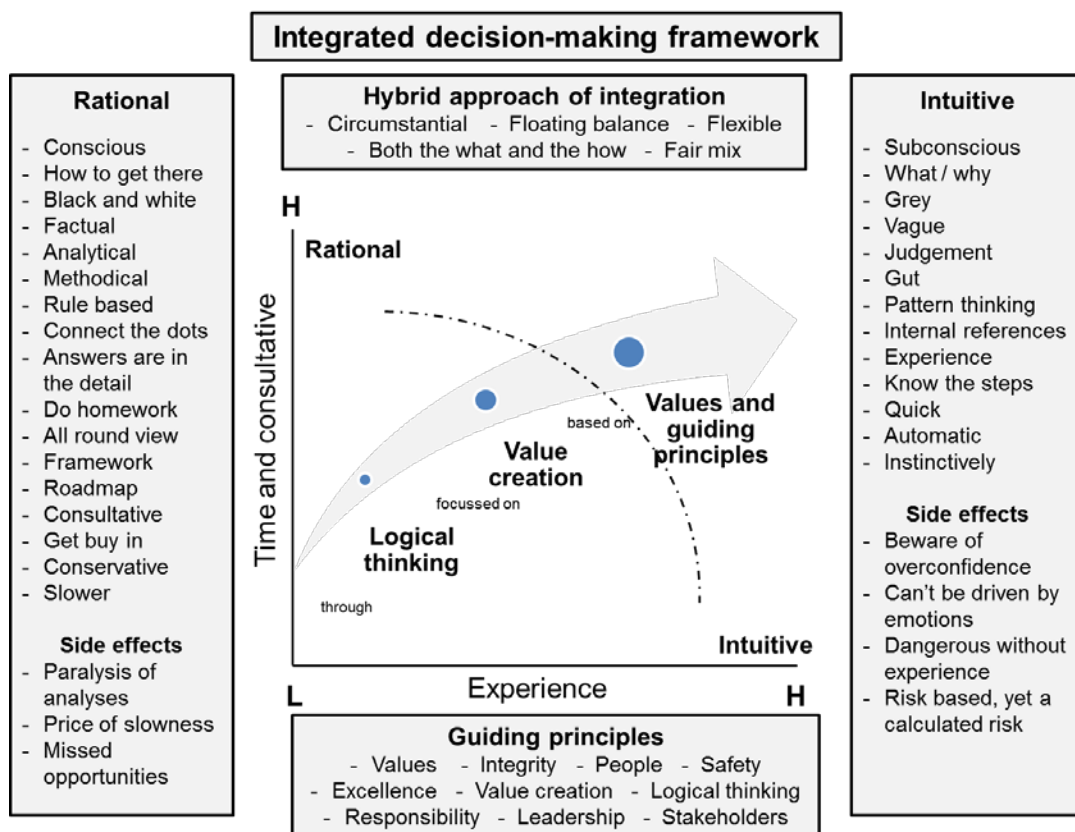
as “one business with one bottom line”, concentrating on strategic alignment and sustainable value creation, but not to the detriment of integrity and other shared corporate values.

Leadership acts as the catalyst for everything to work together and leaders have the accountability, which is another critical behaviour and shared corporate value, in setting the tone of being responsible in doing what is right for the company; aligned with strategic objectives. Research findings are meaningful and place Drucker’s (1977, as cited in Liu, 2015) “mirror test” (p. 283) concept in context, which again is interrelated to the values guiding principle.

After analysing and interpreting the results of the different guiding principles exhibited during the interview process, the researcher concluded that the guiding principles are all inter-connected. Different guiding principles were being addressed in the same respondent quotation and the researcher found it difficult to link quotations solitary to only one principle. This supported Locke’s (2002) study who defined a principle as a universal reality on which other realities depend and indicated that principles cannot be applied in a vacuum; rather they should be coordinated towards achieving one goal.

Figure 16 below is an extension of Figure 15 (section 6.2.7) and attempts to indicate an integrated decision-making framework prevalent in decision making at the appraised chemicals company. It consists of both the rational and intuitive thinking components of a hybrid approach of integration of essentials and is underpinned by the exhibited guiding principles as discussed above. Decision making at the selected company is perceived to take place through a process of logical thinking, focussed on value creation for the company and all stakeholders, based on a set of values and guiding principles, as indicated by the arrow in Figure 16. Although the direction of the arrow indicates an inclination towards the intuitive decision making style, it does not have much significance. The arrow is only an indication of the decision-making process followed in the integrated decision-making framework, where it is underpinned with guiding principles as a foundation. It is important to note that all words used in the construction of Figure 16 are specific terms articulated by the respondents during the interviews.

Figure 16: Integrated decision-making framework



Although Figure 16 is a reflection of the researcher's findings about the constituents of an integrated decision-making framework, it is also a valuable tool available for other decision makers to utilise to consider and evaluate the decision-making style applied by executives at their own companies in an integrative manner. This concludes that Research Question 2 was resolved and the research objective was met.

6.4 Research Question 3: General principles applied by the oil company CEOs

How do the sample managers' decision-making guiding principles compare with the general principles as described by Woiceshyn (2009; 2011)?

To assess the credibility of the selected company's guiding principles; the purpose of Research Question 3 was to compare the evident decision-making principles of the sample group with the principles of effective CEOs as listed by Woiceshyn (2009; 2011) which include rationality, value creation and independence as three general principles and justice, self-interest and honesty as three other general principles. The

guiding principles identified by the researcher as evident during the interview process (Section 5.4) included values, people, safety, excellence and distinction, value creation and business focus, logical and systematic thinking, responsibility and leadership, and stakeholder focus. By comparing the two sets of principles in Table 3 below, it was difficult to identify a direct correlation between the principles as each set of guiding principles had principles, or sub-principles not addressed in the other set, or not explored at all by either researcher.

The rationality general principle delineated in Woiceshyn's (2009; 2011) study of principles employed by CEOs is associated with the selected company's guiding principles of logical and systematic thinking and excellence and distinction, including a subsection of the people guiding principle. The CEOs' rationality general principle is concerned with adhering to reality by applying non-emotional logical and disciplined thinking, based on facts and evidence. This is aligned with the excellence and distinction principle supported by logical and systematic thinking, where a structured process of rational thinking and thorough analysis are applied in the pursuit of excellence towards creating value. The notion of seeking advice from outside experts and teams in the CEOs' rationality general principle correlates with a subsection in the people guiding principle, where consultation and collaboration as part of the interdependence behaviour are important elements of affirming ideas and becoming comfortable in decision making.

The value creation general principle listed in Woiceshyn's (2009; 2011) study of principles employed by CEOs has the best direct correlation with the value creation and business focus guiding principle at the selected company. The value creation guiding principle in both sets refer to sustainable value creation for the company, by focussing on long-term delivery of strategic objectives, prolonging of competitive advantage, profit maximisation and risk mitigation. However, respondents at the appraised company specifically stated that value creation is applied as a guiding principle, but not to the detriment of the values guiding principle, including integrity and other shared corporate values in the process. Woiceshyn (2009; 2011) however, only addressed the element of honesty as other general principle, which is only an element of the appraised company's value guiding principle. The implication for other companies is that ignorance of values as a guiding principle, including integrity and ethical leadership for instance in corporate social responsibility, might result in reputational risk with serious financial implications, as environmental incidents are a huge possibility within the integrated oil and gas industry.

Independence as a general principle was stated in Woiceshyn's (2009; 2011) study of principles employed by CEOs, and is related to the guiding principle of responsibility and leadership, including a subsection of the people guiding principle at the appraised company. The CEOs independence general principle relates to the CEO applying his or her own thinking and having confidence in his or her own abilities to make a final decision after a process of consultation and seeking expert advice. The CEOs independence general principle aligns with the responsibility and leadership guiding principle in terms of the critical behaviour of empowered accountability where leaders take responsibility for their decisions, actions and behaviours. A subsection of the people guiding principle at the selected company as described above refers to affirming ideas and confirmation thereof before the final decision is made, which happens through a process of consultation and collaboration as indicated by the respondents. This subsection of the people guiding principle concurs with the mid-range principles listed under the independence general principle of the effective CEOs study by Woiceshyn (2009; 2011). However, in contrast to the independence general principle as referred to by Woiceshyn (2009; 2011), the researcher rather experienced a focus on interdependence in the decision-making process at the assessed company, that is individually and collectively beneficial in terms of learning and knowledge sharing with the focus on long-term sustainable value creation for the company, whereas the CEOs' independence general principle is focused more on the individual itself. The researcher is of the opinion that other companies should also rather focus on interdependence in decision making than independence, as interdependence assists with buy-in in the decision-making process as everybody feels as if they have participated and the embracing of new behaviours takes place much more rapidly in an interdependence decision-making environment.

Justice as the other general principle of the effective CEOs can be partly compared to the guiding principles of values and people; however the mid-range principles and notions of taking self-credit and the non-performance treatment of people as part of consequence management in the performance management process were never discussed during the interviews. The Golden Rule of treating others as you would like to be treated is specifically mentioned by Woiceshyn (2009; 2011) as mid-range principle, but the researcher related it only to the fairness element of the values guiding principle. Therefore justice as a general principle in Woiceshyn's (2009; 2011) study of principles employed by CEOs was not interpreted by the researcher as a holistic value guiding principle that includes integrity, honesty, transparency and ethical leadership as

evident at the assessed chemicals company. The selected company's people first aspect of the people guiding principle is also not as prominently addressed by Woiceshyn (2009; 2011).

The self-interest other general principle in Woiceshyn's (2009; 2011) study of principles employed by CEOs involves the concept of holding yourself as primary value and does not sacrifice your interests in the process, which includes a focus on appropriate work-life balance. This aspect was also not discussed with the respondents during the interview process; however the respondents rather focussed on accountability in terms of leadership and the "mirror test" they as leaders have to pass, as one respondent said:

"[The] mirror test is who you are, what you are, what is ethical, what is non ethical, what does it mean to live the company values and are they aligned with your personal values".

Respondents within the sample group were experienced leaders acting with humility, but with a professional spirit towards sustainable value creation for the company, which is in direct contrast to the researcher's interpretation of the self-interest CEOs other general principle. As described by Woiceshyn's (2009; 2011) study of principles employed by CEOs, self-interest is instead only focussed on the individual itself.

Honesty as other general principle of the effective CEOs within Woiceshyn's (2009; 2011) study of principles employed by CEOs can only be partly compared to the guiding principle of values evident at the selected company. The appraised company's value guiding principle actually encompasses a holistic view of leadership values of integrity, honesty, fairness, ethical leadership, transparency and so forth. Honesty is also listed as a general other CEOs principle in Woiceshyn's (2009; 2011) study, leading the researcher to interpret it as a second-order guiding principle. This is in absolute contrast with the importance of the values guiding principle evident at the assessed company, as one respondent describe it as: *"values are fundamental, in fact it is the foundation on which you stand, particularly integrity"*. As indicated above, ignorance of values as a guiding principle, especially during corporate social responsibility interactions are critical, as huge reputational risk and financial impacts in terms of environmental incidents is possible within the oil and gas environment. The researcher is of the opinion that the honesty CEOs other general principle is rather seen as a second-order principle and Woiceshyn's (2009; 2011) study of principles

employed by CEOs' should have had much more emphasis on a holistic values view.

The guiding principle of safety, with the focus on zero harm to all stakeholders and production facilities and the guiding principle of stakeholder focus in terms of value creation, inclusivity and fairness were not addressed by Woiceshyn (2009; 2011) as part of the effective CEOs principles. Additionally, the researcher is of the viewpoint that the guiding principles of values and responsibility and leadership were only partly addressed in Woiceshyn's (2009; 2011) study of principles employed by CEOs', however according to literature, these guiding principles are the critical elements that might impact a company's triple bottom line as a company has to focus on a holistic view of social, environmental and financial impacts in decision making (Visser, 2013). If not, reputational risk with negative financial implications will deplete all value created. However, CEOs' general principles not addressed by the researcher include self-interest and the mid-range principles of consequence management and reward in the performance management process.

The researcher is of opinion that the values guiding principle and the guiding principle of responsibility and leadership should receive much more emphasis at companies as this is the basis on which decisions are made towards sustainable value creation and reputational risk and the consequent negative financial impact might deplete any value previously created.

Table 3: Oil company CEOs’ principles compared to guiding principles at the selected company

Principles used by effective CEO’s (Woiceshyn, 2009, p. 305; 2011, p. 318)		Guiding principles at the selected company
General principles applied to scenarios	Rationality (observation and logic)	Logical and systematic thinking
		Excellence and distinction
		People (priority and interdependence)
	Value creation (material value)	Value creation and business focus
Independence (own thinking)		People (priority and interdependence)
		Responsibility and leadership
Other general principles	Justice (Golden Rule)	Values (integrity, honesty, transparency, respect, fairness, ethicality, mirror test)
		People (priority and interdependence)
	Self-interest (pursue values with a long term approach)	–
	Honesty (do not fake reality in pursuing values)	Values (integrity, honesty, transparency, respect, fairness, ethicality, mirror test)
Not identified	–	Safety (zero harm)
	–	Stakeholder focus (value creation, inclusivity and fairness)

The construction of Table 3 and discussion thereof above demonstrates that Research Question 3 was resolved and the research objective was met.

6.5 Research Question 4: Corporate values at the nominated company

How do the sample managers’ decision-making principles compare with the shared corporate values of the nominated chemicals business?

Walumbwa et al. (2014) argued that principles should be dynamic and in perfect alignment with the leaders’ core values which drive their moral compass in strategic decision making. Therefore the purpose of Research Question 4 was to compare the perceived decision-making principles of the sample group with the shared corporate values of the selected chemicals company. The shared corporate values at the appraised chemicals company include safety, people, integrity, accountability, stakeholder focus and excellence (Sections 2.5.3 and 5.6) and evident guiding principles exhibited during the interview process included values, people, safety,

excellence and distinction, value creation and business focus, logical and systematic thinking, responsibility and leadership, and stakeholder focus.

Shared corporate values define what the selected company stands for as an organisation and direct actions and behaviours. It is furthermore used to interpret and respond to business opportunities and challenges and to establish the expectation of interacting behaviours with all stakeholders. At the selected company shared values are the foundation of a high performance culture and align decisions and activities in delivering sustainable results. Benefits of alignment between individual values and shared corporate values include increased productivity and efficiency towards sustainable value creation, which is enabled through increased employee engagement and collaboration, leading to interdependence in decision making.

Table 4 below indicates a complete alignment between the exhibited guiding principles of the respondents and the shared corporate values of the selected company. Similarity can be assumed although the descriptive wording between the two sets of principles is slightly different. Evident of the similarity between the two sets of principles is a comment from one respondent who said that: *“I have been with this company so long that actually the values are flowing in my blood”*. However, two additional guiding principles were listed namely value creation and business focus, and logic and systematic thinking. However these two additional guiding principles can be linked to the excellence guiding principle as they represent the sub-principles of excellence on delivering what is promised and a commitment to continuous improvement towards sustainable value creation to all stakeholders.

The research findings on the alignment between individual and shared corporate values are therefore meaningful in terms of literature as Walumbwa et al. (2014) argued that principles should be dynamic and in perfect alignment with the leader's core values, however, it should also be aligned with the organisation's corporate values and culture. Oliver and Roos (2005) supported this argument by stating that a leader's values should be in line with group norms as it influences decision making.

One respondent commented on the correlation between his personal values and the company's corporate values by saying:

“There is a match between my values and the company's values [and] then it becomes easy and the ultimate outcome is always a win-win”.

Table 4: Shared corporate values compared to evident guiding principles

Shared corporate values	Evident guiding principles
Safety (zero harm)	Safety (zero harm)
People (caring work environment)	People (priority and interdependence)
Integrity (consistent set of values and standards)	Values (integrity, honesty, transparency, respect, fairness, ethicality, mirror test)
Accountability (ownership and responsibility)	Responsibility and leadership
Stakeholder focus (value creation)	Stakeholder focus (value creation, inclusivity and fairness)
Excellence (value add beyond expectation)	Excellence and distinction
	Value creation and business focus
	Logical and systematic thinking

The construction and discussion of Table 4 demonstrates that Research Question 4 was resolved and the research objective was met.

6.6 Assumptions to the discussion of results

The research study's findings disclosed that based on the issue at hand the decision-making style at the selected chemicals company is **situation-based**. This assumption is in agreement with the **contingency theory** of scholars including Franklin (2013), Khatri and Ng (2000) and Smith (2015) who indicated that decision making always depends on internal and external constraints. The situation-based approach in decision making leads to an overarching **hybrid approach of integration** in decision making as more than one respondent indicated that they cannot remember when last they have only applied one decision-making style. This confirms the **duel processing theory** as captured by Sadler-Smith's (2015) two-minds model and Smith's (2015) model of dynamic decision making.

However, the decision-making style leans over to the **rational** analysis approach in a fact-based and rule-based environment which Mason (2015) referred to as data-driven decisions that support continuous improvement. **Decision theory** is applied through rational tools of funnelling, scenario development and sensitivity analysis. However, rational decision making may come with the **cost** of being slow, leading to **missed**

opportunities and even possibly “paralysing” the decision maker. The research indicated that a **consultative** approach, as interdependence behaviour, is followed in the rational decision-making style to validate ideas and increase confidence in the final decision. It also indicated that as **experience and knowledge** escalate over time, the rational decision-making approach becomes more **intuitive**, ensuring the decision-making process is **quicker** (Mason, 2015) and the possibility of lost opportunities is less.

Limited literature was found on the concept of **confirmation bias** which leads decision makers to sequentially apply both decision-making styles for affirmation of ideas. This is significant in terms of Woiceshyn's (2009; 2011; 2015) model of integration by essentials (Appendix 1, Figure 17), where she argued that both decision-making styles are fundamentals interacting constantly. However, no literature reviewed by the researcher addressed the pertinent validation of intuitive decisions by sequentially applying the rational analysis decision-making style afterwards.

Guiding principles allow strategic leaders to make more rapid and effective decisions (Langley, 1995). Guiding principles evident during interviews are in alignment with shared corporate values (Section 6.5) and Woiceshyn's (2009; 2011) principles of effective CEOs, however in this instance with less similarity and some exclusion (Section 6.4). The researcher concluded after analyses of the results on the guiding principles exhibited, that guiding principles at the assessed company are all **interconnected**; as principles cannot be applied in a vacuum, they should be coordinated towards achieving one goal (Locke, 2002).

Values influence decision making on a daily basis and respondents at the appraised company see values as the foundation on which decisions are made, especially integrity. The research findings placed the literature that was reviewed in context as Walumbwa et al. (2014) argued that principles should be dynamic and in perfect alignment with the leader's core values, which drives their moral compass in strategic decision making. The **people, safety** and **stakeholder focus** guiding principles are interconnected in terms of fairness, equality and integrity as well as the intuitive decision making style, where it has an attribute of having an affective or feeling tone (Sadler-Smith, 2015).

Excellence and distinction as a guiding principle is part of the continuous improvement process of **creating value** sustainably, which happens proactively at the

selected company within a structured rational framework of **logical and systematic** thinking that is fact-based and evidence-based (Mason, 2015). **Leadership** acts as the catalyst for everything to work together and leaders have the accountability (a critical behaviour and shared corporate value) in setting the tone of being **responsible** in doing what is right for the company; aligned with strategic objectives. The research findings are meaningful and place Drucker's (1977, as cited in Liu, 2015) "mirror test" (p. 283) concept in context. However, it is important to note that the impact of corporate culture (including low uncertainty avoidance and willingness to take unknown risks), values, gender, and personality styles might have a vast impact on a company's decision-making style and supporting guiding principles and can differ completely from the research findings.

Figure 16 (Section 6.3.6) indicated an integrated decision-making framework prevalent in decision making at the appraised chemicals company. The hybrid approach of integration is the overarching decision-making style with rational decision making, dependent on extensive time periods available for the decision to be made, supported by an interdependence approach of consultation for affirmation. The intuitive decision-making style is dependent on extended experience and knowledge, and success in applying this style only comes with many years of managerial experience. The curved line in the middle of the diagram represents the floating balance between the two decision-making styles of rational analyses and intuition. The horizontal axes of the diagram can be compared to the quick, instinctive and emotional System 1 cognitive process, whereas the vertical axes is similar to the slower, more deliberate, logical and possibly rule-based System 2 cognitive process (Stanovich & West, 2000, cited in Kahneman, 2002). The framework indicates the negative or side effects listed by respondents if styles are applied superior to the other, or in seclusion. Decision making is underpinned by the exhibited guiding principles and is perceived to take place through a process of logical thinking, focussed on value creation to the benefit of all stakeholders, based on a set of values and guiding principles, as indicated by the arrow. However, the direction of the arrow towards the intuitive decision-making style does not have any significance.

Although the integrated decision-making framework (Figure 16) is a reflection of the researcher's findings, it is also a practical tool available for other decision makers to exploit and evaluate in an integrative way, the decision-making style applied by their own executives. However, decision makers should take note that research was undertaken at only one business and the same conditions might not be applicable in

their own environments. Companies operating in a different business environment and industry may possibly have a different decision-making approach with different supporting guiding principles.

Table 3 in Section 6.4 illustrated a comparison of the guiding principles evident at the appraised company and the effective leaders' principles as listed by Woiceshyn (2009; 2011). However, it was difficult to identify a direct relationship as each set of guiding principles had principles, or elements of principles not being addressed in the other set, or not explored at all by either researcher. Based on the research findings the researcher is of opinion that the values guiding principle and the guiding principle of responsibility and leadership should receive much more emphasis at companies as this is the basis on which decisions are made towards sustainable value creation and reputational risk, together with the risk that consequent negative financial impact might deplete any value created.

Table 4 in Section 6.5 illustrated a complete alignment between the respondents' exhibited guiding principles and the shared corporate values of the appraised chemicals company. Similarity can be assumed, although the descriptive wording between the two sets of principles is slightly different. Evident of the similarity between the two sets of principles is a comment from one respondent who said that: *"I have been with this company so long that actually the values are flowing in my blood"*.

CHAPTER 7: ASSUMPTIONS AND RECOMMENDATIONS

7.1 Introduction

Chapter 7 revisits the research objectives outlined in Chapter 1 by evaluating the research results and findings as explained in Chapters 5 and 6. Major findings discussed include the hybrid approach of integration decision-making style, consisting of both the rational and intuitive decision-making approaches; supported by guiding principles as the foundation for these approaches. Implications of research findings for management and other decision makers are highlighted, while attention is drawn to limitations of the research. Finally, recommendations for possible future research are identified and briefly discussed.

7.2 Principal findings

7.2.1 Decision-making styles

The research findings indicated that the application of decision-making styles are primarily situation-based and is dependent on internal and external trends and constraints (Franklin, 2013; Khatri & Ng, 2000; Smith, 2015). Findings also indicated that the hybrid approach of integration decision-making style is prevalent, both within the oil and gas industry (Woiceshyn, 2009; 2011; 2015), as well as the integrated energy and chemicals industry as observed at the appraised company. To embrace the reality of inconsistencies (Smith, 2015) and to ensure sustainable business success, one decision-making style should not be applied secondary to the other and decision makers should aim to be flexible in applying both rational and intuitive decision-making approaches (Agor, 1986; Dane & Pratt, 2007; Epstein, 2010; Langley, 1995; Louis & Sutton, 1991; Simon, 1987; Woiceshyn, 2009; 2011; 2015). However, in the oil and gas industry mentioned above, rational bias is a consequence of the technocratic business environment where huge capital investments are required and therefore the rational fact-based (Mason, 2015) and analytical approach of attaining the final answer is preferred.

As experience and knowledge escalate over time, the rational decision-making approach actually becomes more intuitive, ensuring that the decision-making process becomes quicker (Dane & Pratt, 2007; Woiceshyn, 2009; 2011; 2015) and the possibility of lost opportunities decrease. Intuition is engrained in expertise and develops with years of managerial experience as internal references become second-nature from previous training and prior rational decision-making experiences. Quicker decision making is possible as the experiential intuitive system influences the rational system through “pattern matching” (Sadler-Smith & Burke-Smalley, 2015, p. 12) and the outcome is the knowing without knowing effect (Hogarth, 2010; Salas et al., 2010) in decision making.

A consultative approach (Shivakumar, 2014) of interdependence behaviour between teams and individuals, including external experts, is followed in the validation of ideas to increase and ensure confidence in the decision-making process. Confirmation bias (Agor, 1986, cited in Dane & Pratt, 2007; Sadler-Smith, 2015) further leads decision makers to, after applying the one decision-making style first, affirm the decision by sequentially applying the other decision-making style as well, before the final decision is reached. However, no literature reviewed by the researcher addressed the pertinent validation of intuitive decisions by sequentially applying the rational analysis decision-making style afterwards.

The researcher concluded that because the industries mentioned above have an analogous dynamic macroeconomic business environment, a direct relationship may exist between the industry, the type of business decisions required, and the preferred decision-making style. However, findings favouring this assumption may not be applicable to other companies as industry environments differ and business success is impacted by different strategic objectives, macroeconomic trends, challenges and constraints.

7.2.2 Guiding principles

Guiding principles allow decision makers to make faster and more effective decisions (Smith, 2015; Walumbwa et al., 2014, Woiceshyn, 2009; 2011; 2015) as these enable the decision maker to immediately realise whether a decision is right or wrong in terms of the “mirror test” that is used to assess the leader (Drucker, 1977, cited in Liu, 2015, p. 283). It is important for principles to be in perfect alignment with the leader’s core

values that drive their moral compass in strategic decision making (Walumbwa et al., 2014). Although descriptive wording was slightly different, the alignment was remarkably evident in the noticeable similarity between the respondents' recognised guiding principles and the appraised company's shared corporate values (Table 4 in section 6.5). The alignment of principles and values in a corporate environment benefits the embedding a corporate culture towards high performance, where trust and commitment are building blocks for delivering strategic objectives to the benefit of all stakeholders.

However, in the comparison of evident guiding principles at the selected company and the oil company CEOs' general principles (Woiceshyn, 2009; 2011), it was difficult to identify a direct relationship as each set of guiding principles had principles, or sub-principles, that were not addressed in the other set, or not explored at all by either researcher (Table 3 in Section 6.4). Corporate culture, values, gender and personality styles may have a significant impact on decision-making styles and supporting guiding principles, and therefore the conclusive list of evident guiding principles should not be seen as comprehensive as it may differ completely with another company due to its surrounding influences. The researcher concluded that guiding principles are all interconnected (Locke, 2002) as it influences other principles and should be coordinated towards achieving one goal.

7.2.3 Integrated decision-making framework

Figure 16 (Section 6.3.6) depicted an integrated decision-making framework evident at the appraised chemicals company. The hybrid approach of integration is the overarching decision-making style, with rational decision-making dependent on less experience and extensive time periods available for a decision to be taken, supported by a consultative approach as interdependence behaviour for confirmation of ideas. Intuitive decision making is much quicker and dependent on extended experience and knowledge, and success in applying this style only comes from many years of managerial experience. The curved line in the middle of the diagram represents the importance of being flexible and is the prerequisite for a floating balance between the two decision-making styles. The horizontal axes of the diagram compare to the quick, instinctive and emotional System 1 cognitive process, whereas the vertical axes is similar to the slower, more deliberate, logical and possibly rule-based System 2 cognitive process (Stanovich & West, 2000, cited in Kahneman, 2002). The framework

also indicated possible negative or side effects if either style is applied superior to the other, or in exclusivity.

Guiding principles underpin the decision-making process and assist to speed up the course of action in achieving a goal. Decision making takes place through a process of logical thinking, focussed on value creation to the benefit of all stakeholders, based on a set of values and guiding principles, as indicated by the arrow. However, the direction of the arrow towards the intuitive decision-making style does not yield any significance.

The integrated decision-making framework (Figure 16) is a reflection of the researcher's findings, but it is also a practical tool available for other decision makers to exploit and evaluate the decision making style applied in their own business environments in an integrated manner. However, decision makers should take note that research was undertaken at only one company and the same decision-making surroundings may not be applicable in their own business environments.

7.3 Implications for management

Senior management in general should take note of a hybrid integration of essentials decision-making approach as a potential preferred decision-making style, but which happens with rational bias and confirmation bias that comes at a cost of being slow, possibly leading to missed opportunities and even “paralysing” the decision maker (Langley, 1995, p. 63). The results may suggest that when senior executives make strategic decisions it is important for them to be aware of their preferred decision-making style, the environment in which decisions should be taken, the amount of experience involved and the time period allowed for decision making in the pursuit of creating sustainable value for all stakeholders.

The current volatile, uncertain and fast-moving macroeconomic business environment (Khatri & Ng, 2000) has an enormous impact on strategic decision making and therefore the strengths and weaknesses delineated in the integrated decision-making framework (Figure 16), should act as a compass towards converting negative aspects into positives, while further strengthening positive attributes. The current dynamic business environment implies that C-suite executives have more responsibility in terms of creating shareholder value, while mitigating risk and they should be more adaptable to extremes, which means that decisions should be taken more rapidly and effectively.

To ensure sustainable business success, one decision-making style cannot be realistically applied as being superior to the other and equilibrium between the decision-making styles is needed. However, intuitive decision making, allowing for a faster decision-making process (Dane & Pratt, 2007; Woiceshyn, 2009; 2011; 2015) is only established through knowledge and experience over time.

To create and sustain a pragmatic decision-making culture and to enable better understanding of the preferred decision-making style, the integrated decision-making framework (Figure 16) should be adopted and applied as a living, learning and development tool and adapted as new insights are gained. It can be used as a development instrument during coaching sessions or as an induction tool for new managers to better understand the environment of decision making. To build a sustainable decision-making culture it is important for all employees to understand the decision-making process as an activity of logical thinking focussed on value creation to all stakeholders which is based on a set of values and guiding principles. To curb confirmation bias the consultative decision-making process should be seen as a learning and development experience for younger leaders to increase proficiency in applying the quicker intuitive decision-making style, where justifiably applicable.

An exceptional achievement at the appraised company is the complete alignment between personal guiding principles and shared corporate values, as well as the inclination of respondents to see, within the threat, also the opportunity. However, note must be taken on the exclusion of general principles such as self-interest, where the individual holds himself as the primary value and where he does not sacrifice his own interests for the greater good of others. Another oil company CEOs general principle (Woiceshyn, 2009; 2011), which senior executives should consider and address more pertinently, is the aspect of an appropriate work-life balance to ensure the well-being of employees. Management should regularly evaluate shared corporate values to confirm applicability and if need be, decide on revision or adopting other values.

Senior executives should take note of the importance of values as the foundation on which decisions are made and that principles should be dynamic and in perfect alignment with the leader's core values which drives their moral compass in strategic decision making (Walumbwa et al., 2014). The alignment of values benefits the embedding of a corporate culture that is poised towards high performance, where trust and commitment are building blocks for delivering strategic objectives to the benefit of all stakeholders.

7.4 Limitations of the research

To ensure credibility of the research study it is important to acknowledge and highlight any limitations that may have influenced the research results and/or findings. The limitations of the research section should be read together with section 4.11 that contains a detailed list of possible limitations identified.

Major possible limitations to the research study are delineated as follows:

- The research was conducted by interviewing C-suite executives at only one company and assumptions reached on decision-making styles and guiding principles as a foundation for these decision-making styles will not be directly applicable to another company; meaning that the integrated decision-making framework (Figure 16) may only be applicable to a company within a similar industry and/or with similar dynamics;
- The non-probability purposive sampling method used, together with diary constraints, might have meant the exclusion of some important strategic decision makers at the selected company. This may have impacted assumptions reached regarding the prevalent decision-making style and guiding principles applied in strategic decision making. However in ensuring optimum data collection and research benefit, the researcher included in the interview process a diversity of respondents with extensive managerial experience; and
- Decision making in a crisis situation was not a focus point of this research and one may find that assumptions can be different if considered in terms of a detailed crisis management study. Nevertheless, the findings begin to illuminate decision-making styles in complex business environments where time constraints are a reality.

7.5 Suggestions for future research

Based on the research findings and with the research limitations in mind, future research will assist in gaining a more profound understanding of the application of decision-making styles, including both intuition and rationality in strategic decision making and the importance of guiding principles to support more rapid and effective decision making.

The researcher suggests additional research on the following aspects:

- Extend the research to include a variety of businesses in different industries to allow for diversification and elimination of any industry bias in the evaluation of decision making styles and guiding principles applied;
- Corporate culture (including low uncertainty avoidance and willingness to take risks), personal values, gender and personality styles may have a significant impact on assumptions made regarding decision-making styles and supporting guiding principles and this aspect should be addressed further;
- The researcher was not able to find any literature on conservatism as a decision-making approach towards rational bias and therefore recommends that additional research is needed in this regard;
- Confirmation bias transpires where both rational and intuitive decisions are assessed for accuracy by applying the opposite decision-making style sequentially, before the final decision is made. However, no literature that was reviewed addressed the pertinent validation of intuitive decisions by sequentially applying the rational analysis decision-making style afterwards. As this was an exploratory study, this finding may be supported in future research;
- A consultative decision-making approach, as part of interdependence behaviour in the confirmation of ideas and decisions are prevalent at the selected company. However, very little literature assessment could be found regarding this integrating conduct and therefore it is recommended that future research is needed in support of this finding;
- Guiding principles that support decision making should be researched further as significant differences between the appraised company and the efficient oil company CEOs study (Woiceshyn, 2009; 2011) were evident from the research. Although similar industries are applicable, no direct relationship was found between the two sets of principles as each set of guiding principles had principles, or sub-principles, that were not addressed in the other set, or not explored at all by either researcher; and
- Some respondents indicated that in a crisis situation they still apply the same decision-making style, although in a much quicker manner, but because decision making in a crisis situation was not the priority of this research, this finding needs additional study.

7.6 Concluding remarks

Effective strategic decision making is a dynamic process and an outcome of careful analysis, planning and implementation as a result of rational bias in the hybrid approach of integration. Flexibility between rational and intuitive decision making is essential in the current complex macroeconomic business environment, where the decision-making process should become quicker and the decision maker should rely more and more on the intuitive decision-making process, which is engrained in experience and knowledge.

The research concluded in the development of an integrated strategic decision-making framework (Figure 16), that it can be applied as a living, learning tool at the selected chemicals company and adapted as new insights are gained, but it is also a valuable framework available to other decision makers to consider and evaluate the decision-making style applied by their executives and supported by guiding principles in an integrative manner, relevant in their own business environments.

REFERENCES

- Agor, W. H. (1986). The logic of intuition: How top executives make important decisions. *Organizational Dynamics*, 14(3), 5-18. doi:10.1016/0090-2616(86)90028-8
- Aziza, B. (2013). The big deal about a big data culture (and innovation). *Sloan Management Review*, 54(2), 1-5. Retrieved April 10, 2015, from <http://sloanreview.mit.edu/article/the-big-deal-about-a-big-data-culture-and-innovation/>
- Bailey, L. F. (2014). The origin and success of qualitative research. *International Journal of Market Research*, 56(2), 167-184. doi:10.2501/IJMR-2014-013
- Corbin, J., & Strauss, A. (2008). *Basics of qualitative research* (3 ed.). California: Sage Publications.
- Dane, E., & Pratt, M. G. (2007). Exploring intuition and its role in managerial decision making. *Academy of Management Review*, 32(1), 33–54. doi:10.5465/AMR.2007.23463682
- Dinur, A. R. (2011). Common and un-common sense in managerial decision making under task uncertainty. *Management Decision*, 49(11), 694-709. doi:10.1108/002517411111130797
- Epstein, S. (2010). Demystifying intuition: What it is, what it does and how it does it. *Psychological Inquiry*, 21(4), 295–312. doi:10.1080/1047840X.2010.523875
- Franklin, C. L. (2013). Developing expertise in management decision making. *Academy of Strategic Management Journal*, 12(1), 21-37.
- Friese, S. (2013). ATLAS.ti 7 User Manual. (7.1.0). Berlin. Retrieved April 12, 2015, from http://atlasti.com/wp-content/uploads/2014/05/atlasti_v7_manual_201312.pdf?q=/uploads/media/atlasti_v7_manual_201312.pdf

- Glöckner, A., & Witteman, C. (2010). Beyond dual-process models: a categorisation of processes underlying intuitive judgement and decision making. *Thinking and Reasoning*, 16(1), 1-25. doi:10.1080/13546780903395748
- Hayashi, A. M. (2001). When to trust your gut. *Harvard Business Review*, 72(2), 59-65. Retrieved March 24, 2015, from http://66.199.228.237/boundary/complex_decision_making_and_ethics/Trust_your_gut.pdf
- Hodgkinson, G. P., Sadler-Smith, E., Burke, L. A., Claxton, G. & Sparrow, P. R. (2009). Intuition in organizations: Implications for strategic management. *Long Range Planning*, 42, 277-297. doi:10.1016/j.lrp.2009.05.003
- Hogarth, R. M. (2010). Intuition: A challenge for psychological research on decision making. *Psychological Inquiry*, 21(4), 338-353. doi:10.1080/1047840X.2010.520260
- Inamizu, N. (2015). Garbage can code: Mysteries in the original simulation model. *Annals of Business Administrative Science*, 14, 15-34. doi:10.7880/abas.14.15
- Kahneman, D. (2002). Maps of bounded rationality: A perspective on intuitive judgment and choice. *Prize Lecture*, 449-489.
- Kahneman, D., & Klein, G. (2009). Conditions for intuitive expertise. *American Psychologist*, 64(6), 515-526. doi:10.1037/a0016755
- Keelin, T., & Arnold, R. (2002). Five habits of highly strategic thinkers. *Journal of Business Strategy*, 23(5), 38-42. doi:10.1108/eb040273
- Khatri, N., & Ng, H. A. (2000). The role of intuition in strategic decision making. *Human Relations*, 53(1), 57-86. doi:10.1177/0018726700531004
- Klein, G., & Klinger, D. (1991). Naturalistic decision making. *Human Systems IAC Gateway*, 11(3), 16-19. Retrieved March 24, 2015, from <http://www.au.af.mil/AU/AWC/AWCGATE/decision/nat-dm.pdf>
- Kourdi, J. (2003). Rational or intuitive? Frameworks for decision-making. In *Business strategy: A guide to effective decision making* (pp. 66-75). London, Great Britain: Profile Books Ltd.

- Langley, A. (1995). Between "paralysis by analysis" and "extinction by instinct". *Sloan Management Review*, 36(3), 63-76. Retrieved March 29, 2015, from <http://0-search.proquest.com.innopac.up.ac.za/docview/1302991966?accountid=14717>
- Liu, S. Y. (2015). Harness common sense for decision making. In J. Liebowitz (Ed.), *Bursting the big data bubble: The case for intuition-based decision making* (pp. 203-211). Boca Raton: CRC Press, Taylor & Francis Group. Retrieved March 23, 2015, from <http://0-proquestcombo.safaribooksonline.com.innopac.up.ac.za/book/databases/9781482228854>
- Locke, E. A. (2002). The epistemological side of teaching management: Teaching through principles. *Academy of Management Learning and Education*, 1(2), 195-205.
- Louis, M. R., & Sutton, R. I. (1991). Switching cognitive gears: From habits of mind to active thinking. *Human Relations*, 44(1), 55-76.
- Mason, M. (2015). Decision making. In J. Liebowitz (Ed.), *Bursting the big data bubble: The case for intuition-based decision making* (pp. 279-284). Boca Raton: CRC Press, Taylor & Francis Group. Retrieved March 23, 2015, from <http://0-proquestcombo.safaribooksonline.com.innopac.up.ac.za/book/databases/9781482228854>
- Matzler, K., Uzelac, B., & Bauer, F. (2014). The role of intuition and deliberation for exploration and exploitation success. *Creativity and Innovation Management*, 23(3), 252-263.
- Miller, C. C., & Ireland, R. D. (2005). Intuition in strategic decision making: friend or foe in the fast-paced 21st century? *Academy of Management Executive*, 19(1), 19-30. doi:10.5465/AME.2005.15841948
- Nominated company. (2014). *Annual Integrated Report*. Johannesburg. Retrieved April 20, 2015
- Oliver, D., & Roos, J. (2005). Decision-making in high-velocity environments: the importance of guiding principles. *Organization Studies*, 26(6), 889-913. doi:10.1177/0170840605054609

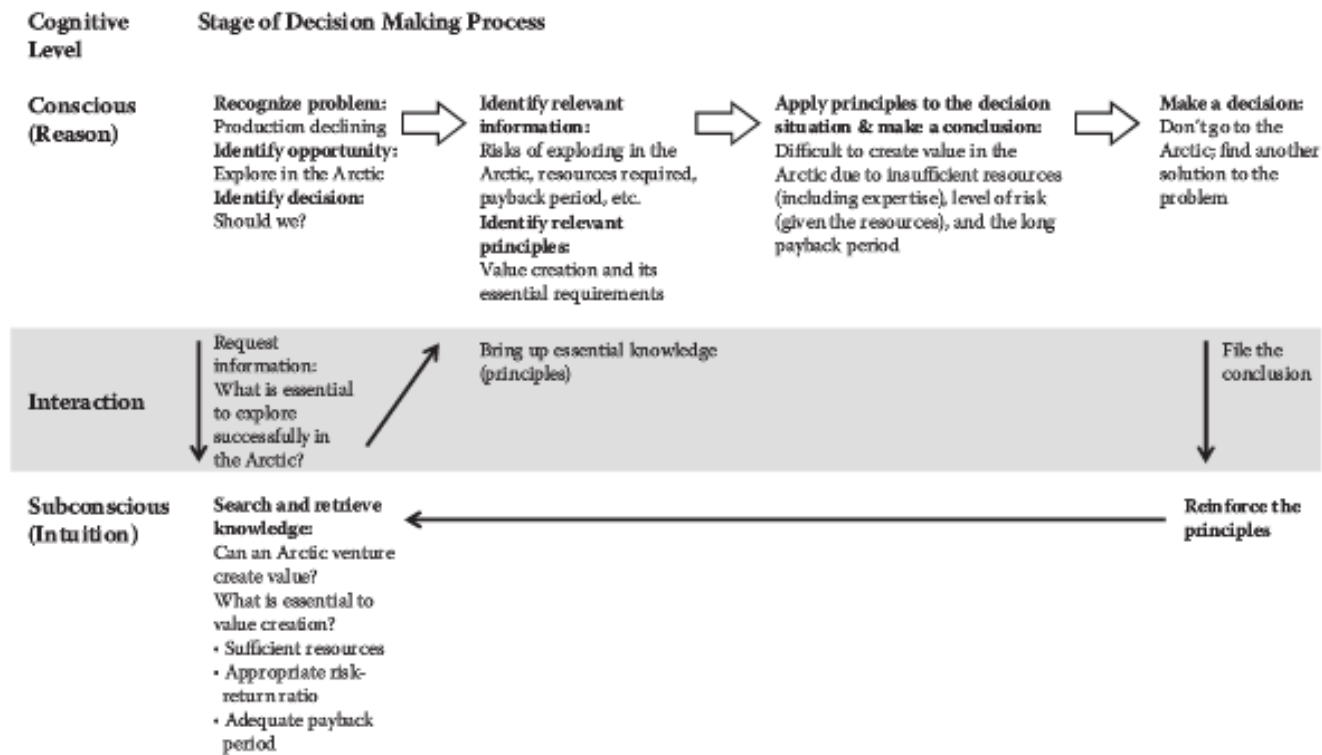
- O'Reilly III, C. A. & Tushman, M. L. (2011). Organizational ambidexterity in action: how managers explore and exploit. *California Management Review*, 53(4), 5-22.
- Rambaree, K. (2014). Three methods of qualitative data analysis using ATLAS.ti: 'A Posse Ad Esse'. Berlin. Retrieved August 23, 2015, from https://opus4.kobv.de/opus4-tuberlin/files/4427/14_rambaree_4427.pdf
- Sadler-Smith, E. (2015). Researching intuition: A curious passion. In J. Liebowitz (Ed.), *Bursting the big data bubble: The case for intuition-based decision making* (pp. 3-19). Boca Raton. Retrieved March 23, 2015, from <http://0-proquestcombo.safaribooksonline.com.innopac.up.ac.za/book/databases/9781482228854>
- Sadler-Smith, E., & Burke-Smalley, L. A. (2015). What do we really understand about how managers make important decisions? *Organizational Dynamics*, 44, 9-16. doi:10.1016/j.orgdyn.2014.11.002
- Salas, E., Rosen, M. A., & DiazGranados, D. (2010). Expertise-based intuition and decision making in organizations. *Journal of Management*, 36(4), 941-973. doi:10.1177/0149206309350084
- Saunders, M., & Lewis, P. (2012). *Doing research in business and management*. Edinburgh Gate: Pearson.
- Schurink, W. (2009). The internal audit as tool to enhance the quality of qualitative research. *Journal of Public Administration*, 44(4.2), 788-802.
- Shivakumar, R. (2014). How to tell which decisions are strategic. *California Management Review*, 56(3), 78-97. doi:10.1525/cm.2014.56.3.78
- Simon, H. A. (1987). Making management decisions: the role of intuition and emotion. *Academy of Management Executive*, 1(1), 57-64. Retrieved March 22, 2015, from <http://0-www.jstor.org.innopac.up.ac.za/stable/4164720>
- Smith, W. K. (2015). Dynamic decision making: A model of senior leaders managing strategic paradoxes. *Academy of Management Journal*, 1015(1), 58-89. doi:10.5465/amj.2011.0932

- Visser, W. (2013). Triple Bottom Line. (W. Visser, Ed.) *Corporate sustainability & responsibility: An introductory text on CSR theory & practice - past, present & future*, 26-28.
- Walumbwa, F. O., Maidique, M. A., & Atamanik, C. (2014). Decision making in a crisis: What every leader needs to know. *Organizational Dynamics*, 43, 284-293. doi:10.1016/j.orgdyn.2014.09.005
- Woiceshyn, J. (2009). Lessons from "Good Minds": how CEOs use intuition, analysis and guiding principles to make strategic decisions. *Long Range Planning*, 42, 298-319. doi:10.1016/j.lrp.2009.05.002
- Woiceshyn, J. (2011). A model for ethical decision making in business: reasoning, intuition and rational moral principles. *Journal of Business Ethics*, 104, 311-323. doi:10.1007/s10551-011-0910-1
- Woiceshyn, J. (2015). Making effective decisions by integrating. In J. Liebowitz (Ed.), *Bursting the big data bubble: the case for intuition-based decision making* (pp. 73-85). Boca Raton: CRC Press, Taylor & Francis Group. Retrieved March 23, 2015, from <http://0-proquestcombo.safaribooksonline.com.innopac.up.ac.za/book/databases/9781482228854>

APPENDICES

Appendix 1: Integration by essentials diagram

Figure 17: Interaction of reason and intuition in decision making



Source: Woiceshyn, 2015, p. 76

Appendix 2: Vignettes for semi-structured interviews

Vignette 1: Safe guarding of assets

It is the year 2017 and you are the Senior Vice President at the operations plant of SynChem, a credible company in the chemicals industry. The plant has exceeded production targets for the previous five years and if production is kept up, this year will be another hitter. The largest ever maintenance shutdown was successfully completed just a week ago; ramp up went exceptionally well and production returned to normal much quicker than expected. You just walked out of a meeting where the production targets for the financial year were discussed and with just another month to go, you feel very pleased with the team's performance and the Short Term Incentive is in the bag.

As you walk out of the room, you hear the fire alarms go off and a call on your cell phone from the Safety Health and Environment operations office confirmed that there was a gas explosion in one of the reactors at the refinery plant. A fire broke out, spreading very quickly and the fire brigade is on its way. Ten workers are trapped in the fire and more explosions are a real possibility. Potential loss of human life and severe plant damage is a reality.

Vignette 2: Crude oil price renaissance

It is the year 2020 and you are the Chief Executive Officer of SynChem, a credible company in the chemicals industry. The collapse of global oil prices (a decline of nearly 50 percentage points early in 2015) adversely affected the petroleum and chemicals sectors and many firms had to take corrective actions. SynChem was not excluded from this mega-trend and the company went through a tremendous challenge and had to undergo a rigorous group-wide change programme; including cut backs in operating expenditures, retrenchment of people, capital portfolio optimisation and restructuring of capital investments.

Conversely it seems as if our luck has changed. Within a period of three months, the crude oil price almost doubled and is now at \$130 per barrel. Everything seems so much easier now as profitability has sky-rocketed; SynChem's market share doubled

and the shareholders seem so much more comfortable. The problem is now that during the tough years, the research and development budget has been cut to almost zero and critical capital investments have been placed on hold.

Vignette 3: Industry rivalry

It is the year 2017 and you are the Chief Executive Officer of SynChem, a credible company in the chemicals industry. The collapse of global oil prices (a decline of nearly 50 percentage points early in 2015) adversely affected the petroleum and chemicals sectors and many firms had to take corrective actions. SynChem was not excluded from this mega-trend and the company went through a tremendous challenge and had to undergo a rigorous group-wide change programme; including cut backs in operating expenditures, retrenchment of people, capital portfolio optimisation and restructuring of capital investments. The morale of people is low, leaders are not trusted and critical behaviours are not entrenched in a high performance culture, where everyone should have one common goal towards driving shareholder value sustainably.

The news just broke: Shell completed a major acquisition of the Towers Group for US \$75 billion, which represents the largest purchase of an exploration and production company in history. This deal will make Shell twice the size of its nearest competitor, ExxonMobil. Within this ambiguous environment another difficult challenge appeared on the horizon for SynChem. One of its competitors wants to put in a takeover bid! This is not just rumours; there are explicit indicators that this could be a reality.

Appendix 3: Questions for semi-structured interviews

Vignettes 1 and 3:

1. What will be your first reaction and decisions regarding the difficult situation?
2. On what basis will you make these decisions? Please substantiate.
3. What are the key principles you will make use of in making these decisions?
4. What combination of analytical and intuitive decision making will you apply? Or will a hybrid approach be pragmatic? Please clarify.

Vignette 2:

1. What decision-making process will you follow to ensure that capital investments are reinstated?
2. On what basis will you decide which projects go first? Please substantiate.
3. What are the key principles you will make use of in making these decisions?
4. What combination of analytical and intuitive decision making will you apply? Or will a hybrid approach be pragmatic? Please clarify.

General open ended questions:

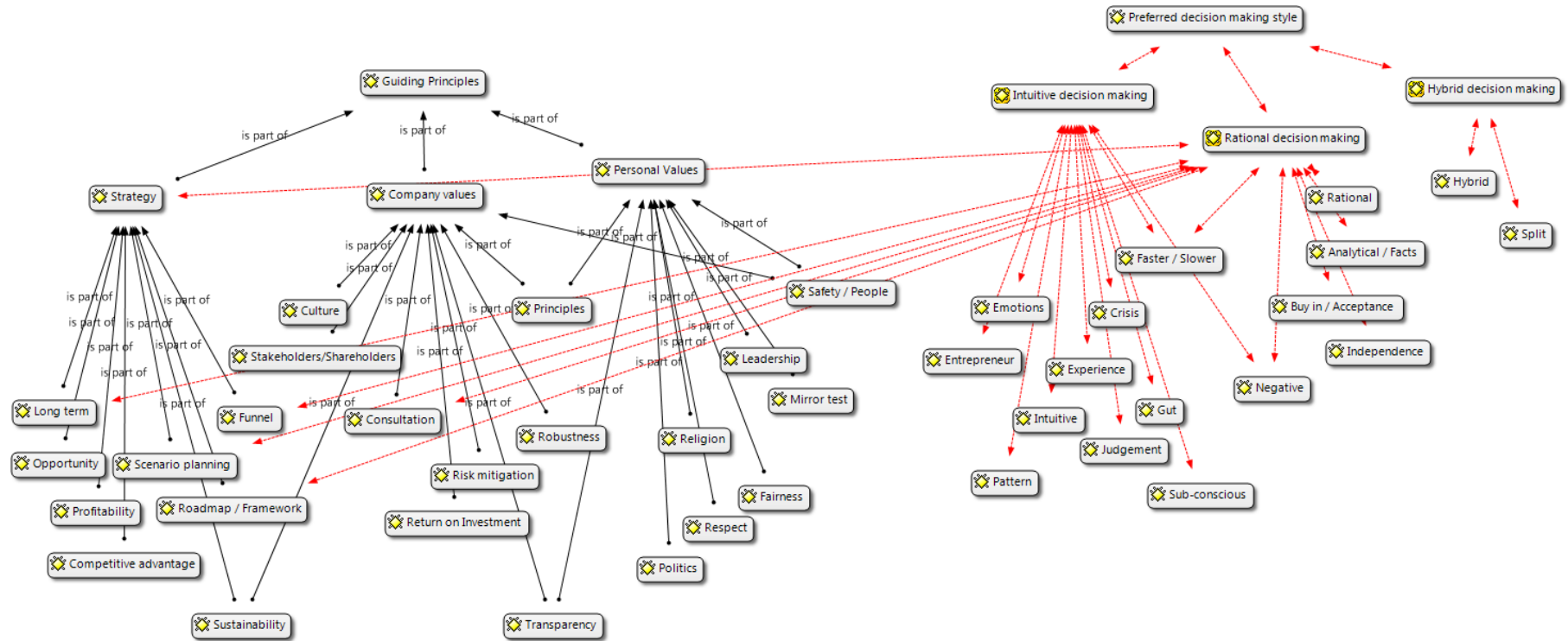
1. Name, age, qualification and current position in organisational structure.
2. Total number of year's working experience and number of years at managerial level with the current employer and external managerial working experience.
3. Define your personal definition of victory in strategic decision making. How do you know if it was a good or a bad decision?
4. Describe your thinking process in attaining a final answer when confronted with a problem. What process do you normally follow in deciding between choices?
5. What is your personal source of effective thinking and why? Answers could *inter alia* include experience, pattern identification, visualising alternatives and so forth.
6. Do you have a preference between rational and intuitive thinking?
7. Does experience assist you in your decision-making approach?
8. In a crisis or any other situation, will your decision-making style change?
9. Define your own decision-making guiding principles.
10. Additional open-ended questions can include: personal values, motivation, outside interests, background and reaction to failure.

Appendix 4: Consistency matrix

Title: Guiding principles in rational and intuitive strategic decision making at a chemicals business

Research questions	Literature review	Data collection tool	Analysis
1. What preferred decision making style exist?	Kahneman (2002) Mason (2015) Sadler-Smith (2015) Smith (2015) Woiceshyn (2009; 2011; 2015)	Vignette questions Open ended questions 4, 5, 6, 7 and 8	Frequency analysis and content analysis through coding
2. What guiding principles were found prominent during the interviews?	Langley (1995) Locke (2002) Olivier and Roos (2005) Walumbwa et al. (2014) Woiceshyn (2009; 2011)	Vignettes questions Question 3, 9 and 10	Frequency analysis through coding
3. How do guiding principles compare between the sample group and the 19 CEOs?	Woiceshyn (2009; 2011)	Vignettes questions Question 3, 9 and 10	Content analysis through coding
4. How do guiding principles compare between the sample group and the corporate values?	Walumbwa et al. (2014) Annual Integrated Report (2014)	Vignettes questions Question 3, 9 and 10	Content analysis through coding

Appendix 5: Network view of codes used, families and super-families



Appendix 6: Consent form

I am conducting research on guiding principles in rational and intuitive decision making and am trying to find out more about the decision-making styles applied by executives in the local South African market and specifically at the nominated chemicals business. Our interview is expected to last about an hour and will help me determine the decision-making styles and guiding principles that exist and are applied. **Your participation is voluntary and you can withdraw at any time without penalty.** Of course, all data will be kept confidential. If you have any concerns, please contact either my supervisor or myself. Our details are provided below.

Researcher: Sonnette Biddulph
Email: sbiddulph@tishri.co.za
Phone: +27 83 633 0629

Research Supervisor: Dr Charlene Lew
Email: lewc@gibs.co.za
Phone: +27 11 771 4284

Name of participant: _____

Signature of participant: _____

Date: _____

Signature of researcher: _____

Date: _____

Appendix 7: List of respondents

Respondent	Level	Gender	Age – above 50 / 40 to 49	# years managerial experience	Ave # of years' experience per level	Word count	Codes created	Bursary holder
Respondent P1	Executive	M	50 plus	17	22	4 465	87	Yes
Respondent P2	Vice	M	50 plus	23		3 880	115	No
Respondent P3	President	M	50 plus	25		4 594	117	Yes
Respondent P4	Senior Vice President	M	40 – 49	21	19	4 285	93	No
Respondent P5		M	50 plus	18		4 062	117	Yes
Respondent P6		M	50 plus	20		3 002	94	No
Respondent P7		M	50 plus	20		6 872	117	No
Respondent P8		M	40 – 49	18		3 358	68	Yes
Respondent P9		M	50 plus	20		4 619	74	Yes
Respondent P10	Vice President	F	50 plus	15	12	4 327	75	No
Respondent P11		F	40 – 49	10		3 084	81	No
Respondent P12		M	40 – 49	15		4 208	76	No
Respondent P13		M	40 – 49	10		4 140	80	No
Respondent P14		M	40 – 49	8		3 148	84	Yes

Appendix 8: Ethical clearance letter

Gordon Institute of Business Science University of Pretoria

Dear Mrs Sonnette Biddulph

Protocol Number: **Temp2015-01115**

Title: **Guiding principles in rational and intuitive strategic decision making at a chemicals business**

Please be advised that your application for Ethical Clearance has been APPROVED.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Kind Regards,

GIBS Ethics Administrator

Appendix 9: Turnitin report

Turnitin Originality Report

Final dissertation by Sonnette Biddulph

From Test your originality (GIBS Information Center)



- Processed on 29-Oct-2015 21:34 SAST
- ID: 529812914
- Word Count: 38735

Similarity Index

9%

Similarity by Source

Internet Sources:

6%

Publications:

4%

Student Papers:

5%

sources:

- 1 < 1% match (student papers from 28-Oct-2013)
[Submitted to University of Johannesburg on 2013-10-28](#)
- 2 < 1% match (publications)
[Woiceshyn, J.. "Lessons from "Good Minds": How CEOs Use Intuition, Analysis and Guiding Principles to Make Strategic Decisions", Long Range Planning, 200908](#)
- 3 < 1% match (student papers from 14-Jun-2013)
[Submitted to Murdoch University on 2013-06-14](#)
- 4 < 1% match (Internet from 31-Mar-2014)
<http://upetd.up.ac.za/thesis/available/etd-03092013-155546/unrestricted/dissertation.pdf>
- 5 < 1% match (Internet from 27-Mar-2014)
http://www.sasol.co.za/sites/default/files/publications/integrated_reports/downloads/Sasol%20IR%202013lores.pdf
- 6 < 1% match (publications)
[Walumbwa, Fred O., Modesto A. Maidique, and Candace Atamanik. "Decision-making in a crisis: What every leader needs to know", Organizational Dynamics, 2014.](#)
- 7 < 1% match (student papers from 04-Oct-2015)
[Submitted to University of Newcastle on 2015-10-04](#)
- 8 < 1% match (Internet from 21-Jul-2015)
<http://hj.diva-portal.org/smash/get/diva2:720732/FULLTEXT01.pdf>
- 9 < 1% match (Internet from 28-May-2014)
<http://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=3786&context=etd>