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Heuristics in managerial decision making during company turnaround and uncertainty

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ABSTRACT

The ever-changing business landscape is becoming increasingly uncertain and complex. Negative environmental forces, often uncontrollable by companies, are frequently causing firms to pursue a state of turnaround to navigate out the spiral of decline they unfortunately enter. Managerial decision making is understood to be an important lever that firms possess with potential to enable or disable successful organisational turnaround, driving a business imperative for understanding. Heuristics, often referred to as shortcuts or rules of thumb, have enjoyed growing acceptance in academia as a valuable decision technique to combat uncertainty under decision constraints of time and cost. This research explored the use of heuristics by managerial decision makers during company turnaround, the relationship between heuristics and changes in company environment, and motivating factors for heuristics in conditions of company turnaround.

The research was conducted as a qualitative exploratory and quasi-experimental study containing three purposefully designed vignettes prompting a decision to be made, followed by several open ended questions. Data was collected from thirteen semi-structured interviews with Senior Managers in various decision making positions across a firm undergoing turnaround. The use of vignettes to test heuristic use in a qualitative manner contrasts existing computational quantitative studies, contributing to future research in heuristic decision making and environmental influence.

Key findings revealed the use of three heuristics, although not dominant, in conditions of turnarounds by managerial decision makers, namely the Take-the-best, Satisficing and Recognition heuristic. However, a blended approach, combining both rational and cognitive decision making, was the preferred approach. Heuristic use was found to be influenced by changes in the company environment and better suited during company turnaround, where uncertainty is evident. The study extends existing factors for heuristics by revealing that comfort level, decision impact, urgency, pressure and strategic importance motivate heuristic use in organisational turnaround. Identified heuristic development methods contribute to existing literature and provides guidance to companies intending to address uncertainty in company turnaround decision environments.

KEYWORDS

Heuristics, Managerial Decision Making, Turnaround, Uncertainty

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master 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.

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Lovendran Govender

07 November 2016

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1.1 Research Title

Heuristics in Managerial Decision Making During Company Turnaround and Uncertainty

1.2 Research Problem

Business environments are becoming increasingly volatile, uncertain, complex and ambiguous, often requiring a response from capabilities within affected organisations to enable company turnarounds from negative to positive performance (Horney, Pasmore, & O'Shea, 2010). In a statement by Andre Haldane (Chief Economist at the Bank of England) the response to uncertainty and complexity in the modern finance environment was criticized (Mousavi & Gigerenzer, 2014). Haldane promoted the use of heuristics (which are simple rules of thumb or mental shortcuts used in making quick decisions) to combat uncertainty, noting that complexity generates uncertainty and that the only way to combat uncertainty is with a "regulatory response grounded in simplicity" – not with more complexity (Mousavi & Gigerenzer, 2014, p. 1671). Heuristics (Albar & Jetter, 2009; Dietrich, 2010; Mousavi & Gigerenzer, 2014).

Decision making capabilities in the managerial layer of an organisation, where turnaround strategy is executed, is thought to be a powerful inhibitor or enabler to successful turnarounds (Horney et al., 2010). The research study conducted uncovers whether the use and benefits associated with heuristic-based decision making in uncertainty are extended to the specific environment of company turnaround. In addition, the research examined the prevalence of heuristics in turnarounds, the influence of company environment on decision making approach and motivators of heuristics in turnaround conditions.

In a study mandated by the World Economic Forum (WEF), weak growth and turbulence in both developed and emerging markets were asserted be part of the six factors shaping the global economy in 2016 (Borg, 2015). Borg (2015) describes how even developed countries in Europe are subject to global economic interdependence, and face an increased likelihood to experience unstable and uncertain conditions due to their reliance on currently poor-performing emerging markets (e.g. the Chinese growth decline and reforms), the on-going refugee crisis and political disturbances in their stakeholders and neighbours (e.g. Russia's changing role in world politics creating regional uncertainties).

A growing number of firms are being placed in environments of uncertainty, whether through macroeconomic conditions, microeconomic conditions, unstable labour relations or even political instability (Maitland & Sammartino, 2015). The ability to adapt, survive and turnaround in these often prolonged periods of instability is crucial to a company's long term success. Decision making at the managerial level can have a major impact on the delivering of strategic outcomes and inevitably the success, or failure, of a company (Albar & Jetter, 2009; Horney et al., 2010).

Africa has experienced a high growth over the last 15 years up to 2016. Despite the harsh economic conditions Africa has grown on average 5% over this period (George, Corbishley, Khayesi, Haas, & Tihanyi, 2016). With respect to this growth rate, however, there are certain studies that have underscored incidences of firm failure due to volatile and uncertain environments. Indeed, Olawale and Garwe (2010, cited in George et al., 2016) noted that in South Africa, for example, 70% of small-and-medium-sized enterprises (SMMEs) ultimately fail (the highest rate in the world) mostly attributed to external factors (George et al., 2016). The impact of firm survival is significant to country and continental economies as it is the private sector that generates "90% of employment, two-thirds of investment, and 70% of economic output in Africa" (George et al., 2016, p. 377).

Evidently, firm survival in an uncertain and volatile environment is needed to combat rising unemployment and inequality, which are dually critical developmental priorities across the continent. For academic research, Africa is a prime context for analysis as "employee behaviours and work relations have been relatively understudied" (George et al., 2016, p. 384). The focus on emerging markets has continued to be prevalent as they contain the majority of the world's population and land, and continue to grow faster than the developed world (Kearney, 2012).

Granted that the survival of firms in uncertainty is important, and even more so in emerging markets, the area of managerial decision making has attracted substantial interest from academics, shareholders and executives in firms as an ability to mitigate against impacts of the environment and thereby ensure effective turnaround, longer-term adaptability, survival and growth. The importance of managerial decision making and the impact it has on strategy execution, financial returns and firm performance has been frequently alluded to by scholars (Boulding et al., 1994; Chng, Shih, Rodgers, & Song, 2014; Francis & Desai, 2005; Maitland & Sammartino, 2015; Trahms, Ndofor, & Sirmon, 2013).

Uncertainty in the form of political, social and economic instability can pose a threat to the success of managerial decisions, and the inevitable execution of strategy coupled to financial returns (Maitland & Sammartino, 2015). A critical consideration posited by Mousavi and Gigerenzer (2014, p. 1676) points to the observation that entrepreneurs are able to generate profits in markets because they manage to deal with "immeasurable, irreducible uncertainty" in an intelligent manner. Additionally, there is the belief that errors in managerial decisions exist primarily due to the pressures and complexity in the decision environment (Boulding et al., 1994).

One context commonly associated with environmental uncertainty is that of organisational turnaround. Managers navigating through a spiral of decline and into a turnaround situation face distinctly different challenges than those in organisations during periods of certainty or stability (Trahms et al., 2013). It can therefore be assumed that the highly volatile, complex and ambiguous environment that turnaround firms operate in is largely analogous to conditions of uncertainty. Given the inferred similarity between turnaround conditions containing uncertainty, one can presume that managerial decision making techniques, proven under uncertainty, could similarly prove effective to managerial decision making in company turnarounds (Francis & Desai, 2005; Miller, 2008; Trahms et al., 2013).

In response to the challenge of uncertainty, research concerning decision making under conditions of considerable uncertainty has, over time, revealed numerous techniques believed to combat effects of uncertainty in decisions (Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014). One such technique, providing empirical proof of effectiveness under uncertainty, is the use of heuristics. Heuristics, a controversial decision making style with historically negative connotations, has been recently viewed as a valuable decision making technique. Heuristics are essentially simple rules-of-thumb that offer the benefits of efficiency in decision making i.e. quicker and using less information in comparison to traditional decision making approaches (Albar & Jetter, 2009; Dietrich, 2010; Mousavi & Gigerenzer, 2014). Mirroring the proverbial *time-equals-money* assertion, any time wasted in decision making may inhibit firms from outperforming their competitors. Contrasting views, however, illustrate the downfalls of heuristics (bias, errors and subjectivity due to inherent personal experiential development) to be detrimental to decisions.

Given the benefits of heuristics in conditions on uncertainty, and the apparent uncertainty during company turnarounds, one questions whether heuristic-based decision approaches can be extended to company turnarounds. Accordingly, of the

many heuristics that have been identified and formalised over time, questions remain in terms of its benefit to managerial decision making and suitability to specific business or company environments. And in particular, are there specific decision making heuristics that are more suited to a company attempting turnaround during significant environmental uncertainty conditions?

1.3 Research Objectives

Against this context, it is important to understand how heuristics are used in managerial decision making within a company undergoing turnaround as well as in situations of considerable uncertainty, in order to promote effective decisions to navigate companies out of adverse situations. Thus, the objectives of this research were to:

1. Identify which heuristics are being used by managers within companies that are in a state of turnaround.
2. Determine the applicability of these heuristics being used and the relationship to their decision environment.
3. Provide an understanding of managerial perception in terms of the value that heuristics provide and the motives behind its use (or non-use) in the decision making process.
4. Provide guidance and insight on whether companies should be encouraging the use of heuristics during times of duress and uncertainty in an effort to support a successful turnaround, promoting improved company performance, adaptability and long term survival.

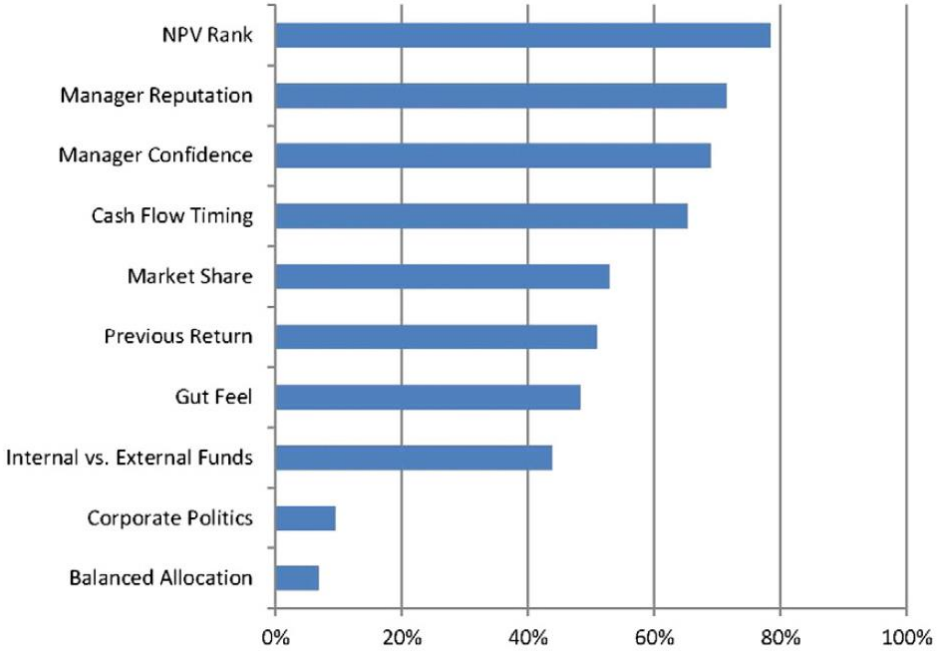
The research is grounded in the study of decision making heuristics and their relationship to the environment under which decisions are being made.

1.4 Research Motivation

There have been significant developments made concerning the study of managerial decision making, however, research on *how* managers actually address decision making is an underdeveloped research stream (Chng et al., 2014). Indeed, current literature points to limited field evidence in the area of managerial decision making, in spite of this being an area of growing interest (Goldfarb et al., 2012). Behavioural model application to managerial decisions is noted as a relatively new area of inquiry (Goldfarb et al., 2012). Additionally, Chng et al. (2014) indicate a gap in the research that specifically concerns investigations into “how managers actually approach and make these important decisions” (p. 629).

A study done by Graham, Harvey and Puri (2012, cited in Mousavi and Gigerenzer, 2014) described that nearly half of all managers which subscribe to a popular CEO magazine find that their “gut feel [is] an important or very important factor in making capital allocation decisions” (p. 1673). This rate is likely to be even higher given the reluctance of managers to admit to unverified factors that drive their respective decisions. Figure 1 below depicts the range of factors influencing capital allocation decisions, of interest is the influence gut feel has on managerial decisions in this environment.

Figure 1: Capital allocation decision making factors



Source: Mousavi & Gigerenzer, 2014, p. 1674

Mousavi and Gigerenzer (2014) promote the idea that this awareness, and subsequent research in the field of intuitive decision making, can be used for the intuitive design of environments suitable to decision making, which enhances performance by triggering successful heuristic strategies.

It is important for managers to be cognisant of their decision making patterns and effectiveness of these to drive performance in a state of turnaround (Chng et al., 2014). There may be certain negative implications of the decision making patterns used that executives may wish to monitor more closely when in this context (Chng et al., 2014). The effects of decision contexts on decisions remains a high potential area for future research in managerial decision making (Goldfarb et al., 2012). Chng et al. (2014) allude to performance decline being an important and under-explored contextual

environment in decision making, mainly due to the pressures managers are under during this time in a firm and the potential for learning and improvement.

By responding to the call for a "research agenda expanding on the ecological rationality (contextual fit) of heuristics" (Mousavi & Gigerenzer, 2014, p. 1677), the prospective study aims to contribute to existing literature. The field study of heuristics under uncertainty is limited (Goldfarb et al., 2012) and this research aims to contribute to this by exploring the managerial application of heuristics under the context of company turnaround.

1.5 Definition of Terms

The following terms are crucial to the research conducted. To assist the foundational understanding of the subsequent research, these terms have been provided below:

- **Uncertainty** in decision making is best explained as not knowing the probabilities, consequences and possible outcomes featuring in decisions (Kokinov & Raeva, 2006; Mousavi & Gigerenzer, 2014; Pleskac & Hertwig, 2014). Some examples of decisions under uncertainty include: forecasting future variables, deciding to enter new markets and predicting customer purchasing (Gigerenzer & Gaissmaier, 2011). Sources of uncertainty in decisions include: information unreliability and availability, ambiguous information, deficits in expertise and operating environment unpredictability.
- **Company turnaround** is identified by companies that feature increased financial performance for two to three years, followed by the same period of declining performance (Velez-Castrillon & Angert, 2015). Strategic and operational turnarounds exist and vary by the actions taken by companies to return back to a state of positive performance.
- **Cognitive decision making**, features a behavioural-based approach to decision making. Individuals use cognitive models to recognise patterns between the decision at hand and past situations. The decisions made using a cognitive approach are built with experience and decision makers ground their decisions on judgement (Albar & Jetter, 2009; Maitland & Sammartino, 2015).
- **Rationality decision making** features an approach that is evidence-based or fact-based. It is heavily analytical and commonly associated with finding optimal data-driven solutions making these approaches information intensive (Albar & Jetter, 2009). Mathematical models and complex algorithms are frequently used during rational decision making.

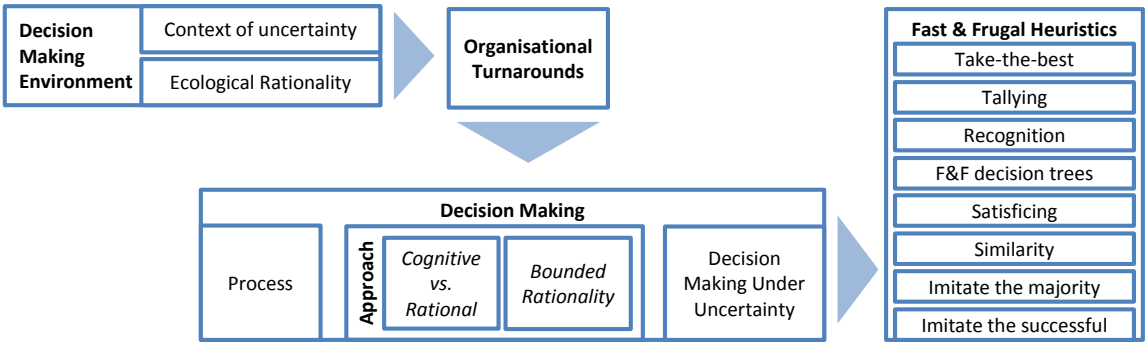
- **Heuristics** form a category of cognitive decision techniques within the concept of bounded rationality. They are mental shortcuts or simple rules of thumb that utilise repeated rules when making decisions (Dietrich, 2010). Heuristics form from experience and when applied, reduce time and effort during decision making. Focus, speed, frugality and accuracy are some benefits associated with heuristics (Maitland & Sammartino, 2015).
- **Cues and cue validity** are used to rank cues. Cues are criteria containing information that is used to distinguish between decision options or alternatives. Cue validity, a percentage often linked to cues or criteria, represents the ability of a cue or criteria to predict the correct decision (Artinger, Petersen, Gigerenzer, & Weibler, 2014). The higher the percentage, the more likely the cue or criteria is to distinguish the correct option or alternative.

CHAPTER 2: THEORY AND LITERATURE REVIEW

The preceding chapter introduced the area under study, provided a background to the research problem, uncovered and justified the research problem and demonstrated the purpose and aim of the research undertaken. The current chapter provides the basis for a theoretical contribution to the current study which is subsequently examined and reviewed.

This chapter will commence with an understanding of the context effect in decision making, in order to establish the role that a specific context of uncertainty has in managerial decision making. Subsequently, the specific context of a turnaround will be explored to demonstrate the importance of decision making within a turnaround, and to accordingly link to the predominant features of uncertainty to that of a turnaround environment. A brief discussion of the existing theory concerning decision making will then be covered to examine the behavioural impact of managerial decision making and to critique the two major approaches of behavioural vs. rational decision making. Lastly, the field of heuristics in decision making will be examined in order to explore the various techniques available. This will, in turn, be attached to a broader critique of which types of heuristics are most suitable in conditions of uncertainty. Consequentially, this will lead to an identifiable base of heuristics to be tested for in the turnaround and uncertainty environment. The flow and integration between elements of the literature surveyed can be seen in Figure 2 below.

Figure 2: High level illustration of literature review elements



Source: Authors own

2.1 Context Effect in Decision Making

The research conducted requires a review of how and why the context of a decision may feature as an influencing variable. Literature is consistent with the role context plays in decision making. Decisions cannot be made in isolation without taking due consideration of the environment that surrounds it. Boulding et al. (1994) emphasise that context influences the overall mental model of a manager; insofar that context has an effect on an individual's belief structure. Belief structures are codified into a manager's mental model which thereafter drives their decision making ability, aspiration and goals. Organisations contain unwritten rules ingrained in company culture which have been observed to individual influence decision making (Riabacke, 2006). The importance of the decision context to the factors at play, processes and decision outcome is stressed by Dietrich (2010). Tversky and Kahneman (1981, cited in Kokinov and Raeva, 2006) introduce the concept of framing in decision making, which presumes that our choice is dependent on how a situation is perceived or framed. Extending this consideration of the environment, Kokinov and Raeva (2006) note that even seemingly irrelevant details in the environment can produce contextual effects in decision making.

For the purpose of this study, decision making under uncertain and adverse conditions, the link between environment and decision is of foundational interest. This link seems to be supported in literature by the concept of ecological rationality, a structural fitting of environment and decision.

2.1.1 The context of uncertainty

How people make decisions under uncertainty is a vexing problem in behavioural and management research (Pleskac & Hertwig, 2014).The distinction of uncertainty in decision making is important as it is often married with environments under risk. Kokinov and Raeva (2006), Mousavi and Gigerenzer (2014) and Pleskac and Hertwig (2014) provide the distinction as knowing the probability of all possible outcomes and consequences. A decision maker under a situation of uncertainty will not know these probabilities and consequences, whereas one under a situation of risk will have knowledge of them. Maitland and Sammartino (2015) include the unavailability of full information as a characteristic of uncertainty in decision making. This provides the basis of the scenario of uncertainty, i.e. the inability to accurately estimate the probabilities or where the set of alternatives and consequences are not fully known.

Many managerial decisions are based in highly uncertain situations and contain numerous variables and considerations, however decision makers are presumed to base their decisions on only a few (Albar & Jetter, 2009; Mousavi & Gigerenzer, 2014). Mousavi and Gigerenzer (2014) believe that real-world decisions are depicted more by conditions of uncertainty than those of certainty.

The term VUCA (an acronym for: volatile, uncertain, complex and ambiguous), which was coined by the United States army, has been growing in popularity in the 21st century to describe the environment businesses operate and interact with (Horney et al., 2010). Horney et al. (2010) attribute the growing conditions of VUCA to a flurry of innovation, dynamic global markets (fluctuating macroeconomic conditions) and fast-moving shifts in people, process, technology and structure. CEOs of firms are increasingly facing the growing and often detrimental challenges of a VUCA world. In addition, new products, ventures and services are also seen to cause high levels of uncertainty (Artinger et al., 2014). Horney et al. (2010) suggest that this disruptive environment is commonly becoming the cause for failure in firms and inevitably requiring them to turn outwards to see how best internal management practices can interact with their environment symbiotically. Research conducted with decision makers across multiple organisations revealed that dynamic environments are considered to be a higher contributor to uncertainty creation than is complexity (Artinger et al., 2014). This highlights that business uncertainty is outpacing business or operational complexity. Leaders need to prepare their employees for a VUCA world so that they can respond in an effective manner.

The description of uncertainty vs. certain environments is akin to the illustration of small world vs. large world scenarios (Gigerenzer & Gaissmaier, 2011). Decisions in small world scenarios are made with all relevant alternatives, consequences and probabilities being known. The future is certain and optimal solutions can be found. Decisions in large world scenarios are made under circumstances of some relevant information being unknown or having to be estimated, and the future is uncertain rendering rational decision theory inapplicable (Gigerenzer & Gaissmaier, 2011).

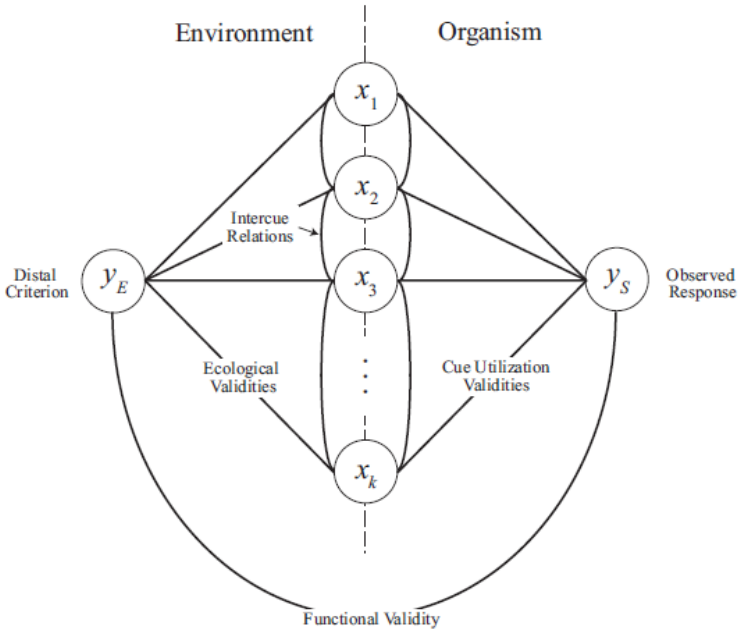
Some examples of managerial decisions under uncertainty include: difficulty to forecast and predict customer purchases, forecasting future variables, entering a new market that is not comparable to the current market, and deciding between new business models (Gigerenzer & Gaissmaier, 2011).

2.1.2 Ecological Rationality

The term ecological rationality, as described by Mousavi and Gigerenzer (2014, p. 1671), refers to "functional matches between cognition and environment" i.e. the fit with *reality*. Ecological rationality aims to address (1) how cognition exploits environmental structure and (2) how it deals with error (Gigerenzer & Gaissmaier, 2011).

A proposed way to determine how decision makers exploit ecological regulation is by using the Brunswik Lens Model (Figure 3 below) discussed by Pleskac and Hertwig (2014). Functional validity is represented by the arc between observed response and distal criterion (the criterion of interest that decision makers infer e.g. the most profitable stocks to buy) measuring the degree that the individual's response (e.g. the decision) attains the distal criterion. The model describes the reception of cues or indicators (elements in the middle of the model) from the outer environment of a decision that the decision maker may or may not choose to use. Cues are predictors for a decision that are used to distinguish between alternatives choices for our decisions e.g. *distance from the capital* might be a cue for deciding/predicting the *population of a town*. The observed response presents the final decision. A high degree of distal criterion informs that the decision maker has made careful and thorough consideration of their environment. The dynamic of certain cues being more helpful than others is also revealed by the Lens model in the form of True Cue Validity (often linked to probabilities) and this is left to be determined by the decision maker using their cognitive or rational decision making models. The relevance of the model is pertinent to this study as it links the importance of decision interaction with the environment (Pleskac & Hertwig, 2014).

Figure 3: Brunswik's lens model



Source: Pleskac & Hertwig, 2014, p. 2001

Ecological rationality is about identifying the environmental conditions in which decision making methods/techniques/models perform at their best (Mousavi & Gigerenzer, 2014). The studies conducted by Pleskac & Hertwig (2014) suggest that we cannot model the decision making process in isolation, but rather this needs to be done in conjunction to the environment which the process is adapted to. Given the insight from literature into the context of uncertainty and the influence of uncertainty in decisions, one wonders whether these findings can be transferrable to specific situations within organisations. A decision making environment that is of particular interest, under ecological rationality and the context of uncertainty, is that of organisational turnarounds. Conditions of company turnaround presumably provide a distinct contrast to prior stable conditions and allow for researching a distinguishable change in context or environment.

2.2 Organisational Turnarounds

Continuing weakness of the global economy and threat of organisational decline has made organisational turnaround processes a highly relevant concern to managers across the world (Trahms et al., 2013). Velez-Castrillon and Angert (2015) express that most companies are likely to face decline conditions at least once in their lifespan, so a crucial factor of survival can be to understand the dynamics of these circumstance and how best to confront them when faced. In a situation of turnaround, the concerns and challenges managers face are distinctly different from organisations seeking

performance improvement in a state of non-decline or stability. Trahms et al. (2013) observe that managers in firms facing turnaround conditions, largely identifiable through continuing decline in performance, are making decisions with "diminished managerial discretion" (p. 1278).

Turnarounds can be identified by companies exhibiting two to three years of increase in financial performance followed by the same period of declining financial performance (Velez-Castrillon & Angert, 2015). Velez-Castrillon and Angert (2015) identify two types of turnarounds, namely strategic and operational, the detail of which can be seen in Table 1 below. Strategic turnaround involves changing company or business unit strategies whereas operational turnarounds involve focus on financial and operational targets without changes to strategy. Trahms et al. (2013) agree that an organisation in turnaround is likely to be in a state of performance decline (due to external or internal factors) and there is general consensus that performance measures should at least be positive or above the risk free rate of return to constitute a successful recovery. However, the view of academics vary on how long the reversal of decline has to be sustained to be classified as a successful turnaround, ranging from one to three years of sustained performance (Trahms et al., 2013). Year on year variations in performance measures (e.g. sales and assets) are conditions of unpredictability, turbulence and uncertainty within a firm or industry (Miller, 2008).

Table 1: Types of turnarounds and their characteristics

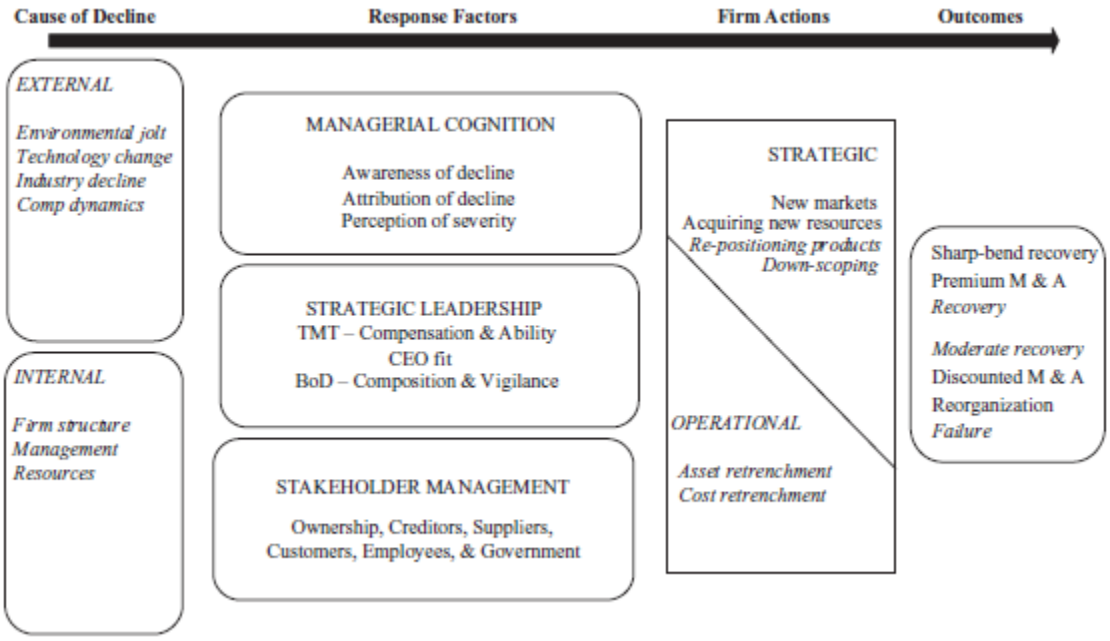
TYPE	SUBTYPE	EXAMPLE OF TACTIC
STRATEGIC or ENTREPRENEURIAL Relevant when the firm's operations are not in crisis, but it has lost its strategic position.	Concentration	• Increase investment in one or more core SBUs to dominate or improve market share. • Invest in product diversification. • Sell or spin-off non-core SBUs. • Horizontal integration.
	Diversification	• Vertical integration. • Acquire unrelated business.
OPERATIONAL Used when a firm has a moderate or strong strategic position but weak operations.	Cost-Cutting	• Collect receivables and stretch payables. • Cut inventories. • Decrease waste.
	Revenue-Generating	• Focus on the current line of products and/or reintroduce past products through reductions in prices and increases in advertising or direct sales. • Try a variety of revenue-generating actions, including selling products that the firm may not plan to sell again in the future. • Keep R&D expenditures and staffing at moderate to low levels.
	Asset-Reducing	• Sell assets that will not be used within the next 1 or 2 years. • Divest assets according to the firm's long-term potential.
	Combination	• Pursue a mix of cost-reducing, revenue-generating, and assetreducing strategies.

Source: Velez-Castrillon & Angert, 2015, p. 145

Chng et al. (2014) found that managers in firms facing performance decline and turnaround made more short term decisions and took more risks in decision making after being influenced by their environment. In a study by Velez-Castrillon and Angert (2015) on the Sony Corporation turnaround in 2011, re-evaluating the decision making process was advised as an action to elicit successful turnaround. Consequences of performance decline noted in the work of Lohrke and Bedeian (1998, cited in Francis & Desai, 2005), include shrinking resources, poor morale, sceptical stakeholders, conflict, and eventual turnover. Performance declines tended to unveil managerial decisions of risk seeking and attention characteristics as described by Chng et al. (2014).

Trahms et al. (2013) propose a model, based on empirical findings, on organisational decline and turnaround (Figure 4 below). The model depicts how various elements appearing as causes of decline, response factors and firm actions iteratively interact during states of turnaround. Important to the current study, is the acknowledgement that managerial cognition of their environment will result in outcomes that can either elevate a firm out of a period of significant decline or inversely exacerbate the firms decline (Francis & Desai, 2005; Trahms et al., 2013). Trahms et al. (2013) illustrate the importance of high quality value-adding decision making by management as being dependent on an accurate understanding of their decision and firm environment.

Figure 4: Extended model of organisational decline and turnaround



Source: Trahms et al., 2013, p1288

The descriptions of turnaround environments associate well with the conditions of complex and uncertain context within firms (as examined in section 2.1.1 above) (Francis & Desai, 2005; Miller, 2008; Trahms et al., 2013). The context of an organisational decline and turnaround provides a unique situation during which managerial actions are accentuated. The importance of managerial decision making and their impact is well emphasized (Trahms et al., 2013) concluding with the recommendation for further research.

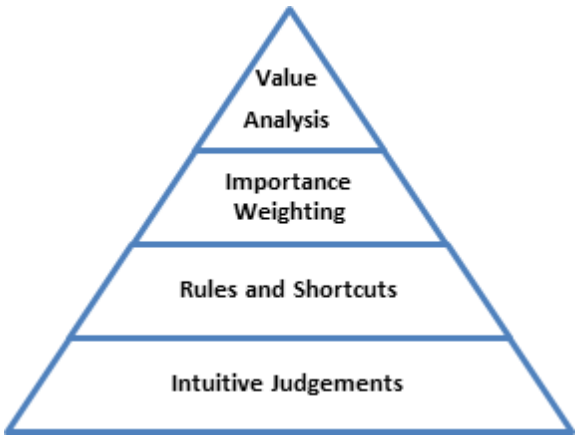
The importance of decision making in turnarounds has been highlighted in existing literature. Questions remain, however, that concern what decision making techniques are better suited to this environment, with particular regard to, which broad approaches in managerial decisions will promote or inhibit an organisations journey out of their spiral of decline? Examining the deeper components of managerial decision making will aid our understanding of how they can contribute, in relation to the environment, to successful organisational turnarounds.

2.3 Decision Making

2.3.1 Decision making approaches

Research conducted by Schoemaker and Russo (1993) indicate that there are four major approaches to decision making, spanning the spectrum of intuitive to analytical. The four main approaches include: (i) Intuition, (ii) Rules and Judgements (iii) Importance Weighting and (iv) Value Analysis. These form a tiered pyramid of decision approaches model (Figure 5 below) with the complexity, accuracy and cost of each approach increasing as you move up the pyramid.

Figure 5: Pyramid of decision making approaches



Source: Schoemaker & Russo, 1993, p.19

Intuition serves as the quickest approach and requires the least effort. The identifier of intuition is a subconscious use of decision making where individuals cannot explain their approach. Managers, often very experienced with certain situations, have an almost automatic response to decisions in those repeated situations. The downfalls of intuition are revealed as random inconsistency and systematic distortion. Inconsistent application of criteria can be due to memory failings, distractions and fatigue in different situations. Distortion can appear when people over emphasize particular pieces of information over others (Schoemaker & Russo, 1993).

Rule-based decision making is often more accurate than a purely intuitive approach (Schoemaker & Russo, 1993). They consist of quick, clever and effort-reducing ways of approximating a response. A rules-based approach distinguishes itself from intuition in the conscious application to decisions over the unconscious application found in intuition. There is a high benefit to cost rationale promoting this form of decision making. The downfall with rule-based decision making is inherent human judgement when rules are not applied judiciously or there is distortion (Schoemaker & Russo, 1993). A rules-based approach offers the foundation to heuristics. Schoemaker and Russo (1993) indicate that rules do not allow for superior performance since they do not take all information into account, which is contrary to the advocacy of heuristics by other academics (Artinger et al., 2014; Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014).

Importance weighting techniques allow users to make decisions based on factors or criteria and provide a weighting to them. Decision makers are expected to articulate and quantify the weighting they provide to factors before making the resulting decision. Scores are then determined by multiplying each weight with the individual score for each option based on specific criteria to reveal the highest scoring option. The technique of bootstrapping is often related to this approach and is derived from the experts own use of available criteria. The downfall with a weighting approach is the disregard for how factors are linked to ultimate goals and strategies (Schoemaker & Russo, 1993). Certain heuristics are found to combine a rudimentary form of importance weighting techniques with a rules-based decision making approach and anticipated to leverage benefits associated with both techniques in respective decisions (Artinger et al., 2014; Gigerenzer & Gaissmaier, 2011).

The final approach put forward by Schoemaker and Russo (1993) of value analysis is aimed to solve important and complex decisions with a more comprehensive assessment. It is a refinement of the importance weighting approach by questioning the

affect factors have on wider objectives and the value add provided by increasing ratings in factors. Value analysis focuses on the decision maker's true values and links factors in the decision to key objectives. Often, this approach incorporates the skills of trained decision analysts to assist in the decision at hand creating an approach that employs data, assumptions and value weights. An extremely high level of effort is required for value analysis.

With the advantages and disadvantages of each approach, Schoemaker and Russo (1993) allude to the idea of fit-for-purpose decision making as they classify each approach according to quality, effort and clarity (Table 2 below). Table 2 elucidates that there are certain environments which fit specific approaches. For example, the value analysis approach may not be suitable to a decision requiring timeous execution and similarly, intuition may not be ideal for high impact strategic decisions that need high levels of clarity. This leads to questioning whether specific approaches would be more suitable to the environment, conditions or state that an organisation is exposed to, in particular, an organisation in turnaround.

Table 2: Classification of decision making approaches

Method Used	Quality	Effort	Clarity
1. Intuition	Low	Low	Very Low
2. Rules	Moderate	Little	Moderate
3. Weighting	High	High/Low	Very High
4. Value Analysis	Very High	Very High	Often Low

Source: Schoemaker & Russo, 1993, p.20

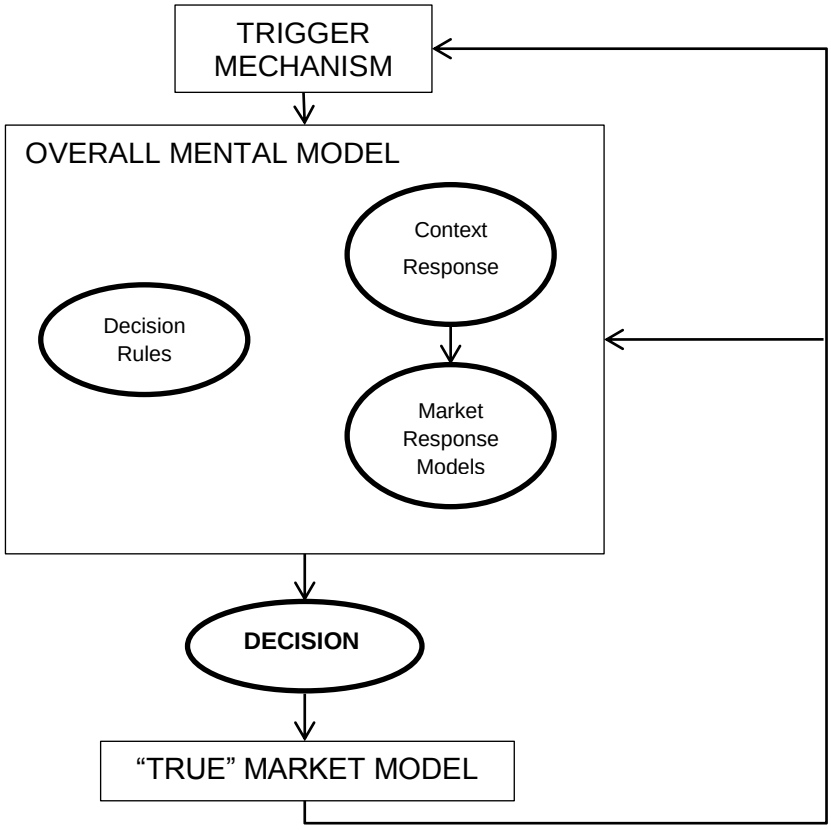
Upon critical review of Table 2, it must be acknowledged that the literature is dated and stands in contrast with more recent studies from authors who advocate for more rules-based approaches, which in their opinion, provides high quality of and high clarity in managerial decisions (Albar & Jetter, 2013; Mousavi & Gigerenzer, 2014). The sections to follow aim to further explore the views for and against rules-based decision making, which are anticipated to feature within the context of company turnaround, adverse company conditions and environments of managerial uncertainty.

2.3.2 Decision making process

When studying decision making, one cannot avoid looking at earlier research that forms the core building blocks for recent work. Boulding et al. (1994) introduce a conceptual framework for understanding how managers make decisions. The model is based on the three C's concept (customer, company and competitor) interacting within a business environment (Figure 6 below). For this study, the prevalent take away is the

acknowledgement of the context being “pervasive in the decision making process” whilst interacting with the elements of the decision trigger, mental models and final decision (Boulding et al., 1994, p. 414).. The decision rules one possesses may be used together with mental models in allowing managers to make a decision (Boulding et al., 1994).

Figure 6: A conceptual model of managerial decision making



Source: Boulding et al., 1994, p. 416

A change in the decision makers’ context (e.g. increased rate of industry change) can result in the adjustment of a managers mental model (e.g. time compression in decision making) (Boulding et al., 1994). Not all research, however, points to just one process being used. For instance, Dietrich (2010) finds that decision complexity is linked to process. Multi step approaches may be required when confronting more complex decisions. Boulding et al. (1994) and Dietrich (2010) agree, although differing in process use, that consideration of environment and decision rule selection are important criteria to decision performance.

The decision rules and overall mental model of individuals, visible in Figure 6 above, can be influenced by either cognitive/behavioural or rational decision making theory which will be explored further below. The model provides a sound platform for the

relationship and influence decision environments have on decision approach. The model (Figure 6) has not, however, been applied to the specific context of company turnaround and uncertainty. If applied to this specific decision environment, one wonders whether the process would hold true.

2.3.3 Cognitive and rational decision making

According to certain perspective, there are two major schools of theory for decision making that exist, namely, rational decision theory and cognitive/behavioural "irrational" decision theory (Albar & Jetter, 2009; Kokinov & Raeva, 2006). Rational decision theory is commonly associated with finding the optimal decision by computing with precision the results that alternatives will deliver, and thereafter deciding on the alternative that maximizes the utility function (Albar & Jetter, 2009). In contrast, behavioural/cognitive decision theory is based on the decision makers processing of information, and the behavioural judgements that they would subsequently arrive at (Albar & Jetter, 2009). Cognitive models allow individuals to recognize patterns of similarity between new and past (experienced) situations, fill in gaps, and make or update their assumptions (Albar & Jetter, 2009). In this context, individuals would rely on their ability to draw similarities between their current decision situation vis-'a-vis knowledge recalled from memory (Maitland & Sammartino, 2015).

Historically, rational decision theory has generally been understood as the predominant theoretical or conceptual basis for decision theory (Goldfarb et al., 2012). Economics research related to decision making has employed this dominant paradigm, on the overriding assumption that the choices of managers are made by full rational decision making. The subsequent economic decision models developed generally assume that managers seek to "maximize the present value of current and future earnings, solve a dynamic optimization problem, and play a Bayesian Nash Equilibrium", and is well established in rational decision theory (Goldfarb et al., 2012, p. 406). Shafir, Simonson and Tversky (1993, cited in Kokinov & Raeva, 2006) explain that rational choices are ranked in value in *a context independent* manner. This non-consideration of context reinforces the disadvantages experienced when rational decision making is applied to uncertainty.

Literature on cognitive models on decision making highlight a number of sound advantages in their simplicity and speed. These models do, however, contain certain limitations concerning mathematical precision and the limited consideration of alternatives (Albar & Jetter, 2009; Maitland & Sammartino, 2015). Dietrich (2010)

argues that cognitive bias's (thinking patterns based on generalised assumptions) may lead to memory errors, inaccurate judgments, and faulty logic and impact the success of the final decision.

Research conducted by Garbuio, Lovallo and Sibony (2015, p.362) illustrates benefits of rational decision making, concluding that robust analysis and disinterested dialogue are the "ingredients" to good decisions being made. Rational decision making models contain the mathematical prowess, and in many cases, higher accuracy. They detract, however, from key components of real decision making processes such as time frames, contexts and feedback loops (Maitland & Sammartino, 2015). Mathematical models in rational decision making have also been criticized for having limited applicability to situations (Albar & Jetter, 2009). In addition, consequences of choices remain unknown (especially in uncertain environments) and this is due to unexpected future events (Albar & Jetter, 2009).

As can be seen, cognitive and rational decision theory have been debated in existing literature, with merits for each being noted. Each house of theory has their own advantages and disadvantages promoting their use and applicability to effective decision making. However, given the justification of decision rule selection being interconnected to the environment (Boulding et al., 1994), it leads us to believe that cognitive decision making may be more appropriate for conditions of uncertainty.

2.3.4 Bounded Rationality

Progressive thinking on decision making theory has reconciled and integrated both streams of research into what is now known as bounded rationality whereby the decision makers rationality is bounded by constraints in the environment (Albar & Jetter, 2009; Goldfarb et al., 2012). Bounded rationality offers the opportunity of considering a few prevalent alternatives and looking at them consequentially rather than simultaneously (Albar & Jetter, 2009). The use of bounded rationality argues that the middle ground can be found between cognitive and rational decision making. In certain environments, rationality models cannot suffice due to constraints by limited cognitive capabilities, and similarly cognitive models cannot suffice due to their lack of mathematical modelling. Decision making techniques stemming from the concept of bounded rationality offer a more realistic approach to effective decision making in these environments.

The use of bounded rationality is embedded in the context of the decision. Simon (1955, cited in Kokinov and Raeva, 2006) suggested that decision makers would act in

a rational manner if the situation was not irrational in nature (i.e. containing resource limitations). In reality, it is more expected that decision makers need to deal with uncertainty and therefore employ techniques within the approach of bounded rationality. Camerer and Malmendier (2007, cited in Goldfarb et al., 2012) note that bounded rationality is likely to provide important value to managerial decisions when decisions do not have clear feedback, managers are not familiar with the decision type and when managers are protected from market/competition pressures (Goldfarb et al., 2012).

Bounded rationality accounts for the trade-off between accuracy of decision outcome and availability of information. From the literature, it is expressed as highly conducive to uncertain environments. Kahneman and Tversky (1974, cited in Kokinov & Raeva, 2006) suggest that decision makers utilize heuristics for judgements on probabilities of events, which is a proposition of the bounded rationality process (Kokinov & Raeva, 2006).

2.3.5 Decision making during uncertainty

The rapidly changing business landscape from certainty to uncertainty have prompted more focus on cognitive style and intuitive decision making (Albar & Jetter, 2009). Khatri and Alvin (2000, cited in Albar and Jetter, 2009) acknowledged that intuition and cognition in managers' decision making process helps improve organisational performance, especially in uncertain environments. Daly (2016) explains that managers need a response to the continual uncertainty and ambiguity, featuring in their organisational decision environment. Complexity and uncertainty in problems requires a "simple robust solution" (Mousavi & Gigerenzer, 2014, p. 1672) to navigate this environment.

Uncertainty in organisations is seen to arise from triggers of constant change. These triggers are contained throughout various factors or considerations of markets, technology, people, schedules, costs, and quality (Artinger et al., 2014). Information is used to help reduce the uncertainty in decision making. Uncertainty is not just limited to organisations, but can present itself in a wider range of real-life choice situations, often too unique to render useful data for statistical analysis (Mousavi & Gigerenzer, 2014). Many businesses find themselves in decision making environments in which all alternatives are not foreseen or unclear. This results in decisions under uncertainty relying on "search rules, aspiration levels, lexicographic rules, and other heuristic

principles" over and above rational decision making techniques alone (Mousavi & Gigerenzer, 2014, p. 1673).

Horney et al. (2010) recognise that in uncertain environments, agility is crucial. This ability creates flexibility speed and focus if one manages to anticipate change, take action when required, be open in their thinking and evaluate, monitor and adapt to results. This is extended to the decision making required in this environment containing capabilities for "fast effective decision-making at all levels" (Horney et al., 2010, p. 36). Uncertain environments are considered to be of extreme importance amongst other managerial domains (Artinger et al., 2014).

Various categories of uncertainty are expressed in literature. Recently, Artinger et al. (2014) explore two main dimensions of uncertainty in organisations, namely the simple-complex dimension (relating to the number of factors involved in the decision) and the static-dynamic dimension (relating the decision factors to their state of change over time). These dimensions express that uncertainty in decision making will be high when decisions involve many factors that change frequently, whilst low uncertainty will exist in decisions that contain fewer factors that are relatively constant.

Sources of uncertainty in managerial decisions have been explored in previous studies. As expressed in a study by Riabacke (2006), a major source of uncertainty in the decision process is the low integrity and lack of information available to managers. Daly (2016) extends this thought to an information supply and demand balance in the decision environment. Under uncertainty, this information balance is skewed and decision makers in the study leaned more on cognitive heuristic decision approaches. Daly (2016) alluded to other forms of uncertainty including: trust in source reliability, ambiguous information, deficits in expertise (experience and knowledge) and unpredictability of both the operating environment and other decision makers.

Daly (2016) suggest decision makers pursue strategies to handle uncertainty in their decision environment, namely (i) delaying action to source more information (ii) ignoring uncertainty (iii) acting on intuition or (iv) investing time and effort to assess consequences and probabilities. Questions arise from the literature to determine the responses decision makers take to uncertainty in specific company contexts.

Literature surrounding decision making has evolved over time with varying approaches being reviewed, challenged and refined. Rational and cognitive approaches have challenged each other in the differing benefits they provide decision makers under altered decision situations. In review of the process of decision making, the interaction

and influence of the environments seems to be an important guide for approach selection. The advantages of rules-based decision approaches within bounded rationality seem fitting to uncertain environments, albeit their possible limitations in accuracy and bias error. In addition, the decision environment of organisational turnaround has been indicated to provide uncertainty to decision makers. There is definite agreement that approach is influenced by environment, but does this hold true when applied to turnarounds? One wonders whether the common ground of uncertainty provides superior use of decision rule techniques in conditions of company turnaround, thereby providing a mechanism for companies to successfully return to positive performance. The decision-rule based technique of heuristics is of particular interest and has shown growing acceptance in their ability to provide successful decision during harsh conditions.

2.4 Heuristics in Decision Making

Boulding et al. (1994, p. 424) suggest that in order for one to select the right decision rules, sophistication in "what" and "how" knowledge related to the decision is imperative. Uncertainty is suggested to be navigated through the use of mental models of pragmatically applied heuristics (Pleskac & Hertwig, 2014). Heuristics can be consciously or unconsciously applied. If used unconsciously it is termed intuition (Mousavi & Gigerenzer, 2014). For the purpose of this study, both applications of heuristics will be included.

"Heuristics are mental short cuts that reduce the cognitive burden associated with decision making" (Dietrich, 2010, para.14). Throughout existing literature, these models, within the concept of bounded rationality, have been described as simple rules of thumb for solving complex problems (Albar & Jetter, 2009; Dietrich, 2010; Mousavi & Gigerenzer, 2014). Mousavi and Gigerenzer (2014, p. 1673) extend this definition, encouraging that the use of heuristics is more than a shortcut, and rather a "strategy that effectively matches the structure of information in the environment" to seek ecological rationality. Heuristics are seen to provide the link to the individual-organisational divide if they are applied successfully to a the right environment (Artinger et al., 2014).They provide a framework allowing for satisfactory decision making with speed and ease (Dietrich, 2010). Albar and Jetter (2009) recognise the importance of context in their definition of heuristics, stating that heuristics are "the general problem solving strategies that we apply for certain classes of situations" (p. 580).

The benefits of heuristics are attained from their: (1) focus of the decision makers attention on specific decision task elements or cues allowing exploiting of core cognitive capabilities, (2) frugality, (3) speed, and often (4) accuracy (Maitland & Sammartino, 2015). Heuristics exploit the capabilities of the human mind (memorizing recognition and recall memory, tracking of movements and social abilities like intuition) to make fast judgements (Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014). Reductions in effort are achieved through examining fewer criteria, alternatives and information (Shah & Oppenheimer, 2008).

Unlike statistical decision making tools, heuristics are not subject to the effort-accuracy trade-off. Mousavi and Gigerenzer (2014) believe the performance of heuristics come from their simplicity. Successfully matching heuristics with their environment can lead to greater performance in decision making (Mousavi & Gigerenzer, 2014). In a study done by Wübben and Wangenheim (2008, cited in Mousavi & Gigerenzer, 2014), the hiatus heuristic (which relies on one good reason decision making process) was found to be the same or better performing than an optimization model which integrates more information (Mousavi & Gigerenzer, 2014).

A caveat is revealed by Dietrich (2010) who explains that heuristics may unduly add elements of bias into future decisions based on past experience, and thereby not always result in the best decisions. This holds especially valid in the financial sector where past trends or performance is not always an indicator of future trends or performance. Kokinov and Raeva (2006) also caution against heuristics, eluding to strong biases leading to irrational decisions. These situations, however, were found to be rare with the majority of cases providing reasonable results. The risk of bias is hard to ignore, although a reality that Mousavi and Gigerenzer (2014) explain is that intelligent minds rely on “heuristic strategies that strike a balance between reducing error due to bias and due to oversensitivity to the specifics of the samples encountered (variance)” (p. 1675).

Maitland and Sammartino (2015) indicate that heuristics are an enabler of knowledge and skill application to differing contexts. Conversely, Garbuio et al. (2015) propose that in order to counteract the effects of uncertainty, robust analysis and engaging with experts in disinterested dialogue (a fact based discussion about the decision at hand) would be more powerful than models of heuristic cognition that contain cognitive biases and misrepresentations. This seems valid although the crucial contextual requirements of speed and limited access to information is lacking (Maitland & Sammartino, 2015)

which could pose challenges to the methods proposed by Garbuio et al. (2015) if applied to uncertainty.

Progressively over time, literature has recognized the value provided by employing heuristics as a means to make decisions (Boulding et al., 1994; Kokinov & Raeva, 2006; Maitland & Sammartino, 2015). Historically, heuristic decision models have had negative connotations attached to them, previously cited as less effective and desirable than optimization models for problem solving (Maitland & Sammartino, 2015). These arguments, however, ignored the context of uncertainty in which the downfalls of optimisation models are revealed (i.e. under conditions of limited information and where mathematical specification can "overfit past trends into very different futures") (Maitland & Sammartino, 2015, p. 1556). Albar and Jetter (2009) concur with mainstream literature in their assertion that heuristics were historically regarded as inferior and as a source of irrational behaviour, before being accepted as highly efficient and capable of competing with complex decision models in specific domains. Literature also warns that heuristics should be applied with caution as they do not guarantee an optimal solution (Albar & Jetter, 2009). Albar and Jetter (2009) propose it is acceptable to sacrifice minor quality in uncertain environments for a simpler, faster and less expensive evaluation method. In agreement to this, Mousavi and Gigerenzer (2014) support this line of reasoning insofar that decisions and actions taken under uncertainty are "for the most part based on heuristics not on statistical reasoning" (p. 1672).

In a study conducted by Maitland and Sammartino (2015) on executive heuristics that are present during decisions in an environment of political uncertainty, significant variation was found in the number and content of heuristics used, indicating that decision makers brought differing heuristics to the decision making process. In addition, they found that experts are able to adapt their cognitive resources in the decision making process to new contexts and identify the structural relationships between context and their heuristics. Maitland and Sammartino (2015) further suggest that this could possibly identify how learning is encoded in classes of heuristics.

As with most decision making techniques, development of heuristics is important in order for organisations and individuals to extract benefit through correct application and successful results. Diversity of experience in roles, countries and responsibilities aid in building better heuristics as this experience forms building blocks for new heuristics and improvement of current heuristics (Maitland & Sammartino, 2015). Exposure to dynamic as opposed to stable environments assist in feedback loops opportunities on

structural relationships and lead to development of “adaptive domain expertise” (Maitland & Sammartino, 2015, p. 1575).

Gigerenzer (2007, cited in Albar & Jetter, 2009) attributes the failing of complex decision making techniques in uncertain environments to their tendency of collecting and considering too much information and employing hindsight explanation. They emphasise that only some of the information used is valuable to the decision outcome. Intuition and heuristics provide the focus on the valuable information, whilst ignoring the rest. The simplicity of heuristics in complex environments is thought to be reached by ignoring some of the complexity of the environment to reduce estimation error and effort (Mousavi & Gigerenzer, 2014).

Pleskac and Hertwig (2014) demonstrate how heuristics can help explain observed ambiguity aversion in the decision environment. A heuristic is ecologically rational to the degree that it matches the environment (Mousavi & Gigerenzer, 2014). A pertinent question of what environments will cause heuristics to succeed or fail, can be answered by isolating an environment and observing which heuristics decision makers are utilizing to make decisions linked to positive and negative outcomes.

Organisational turnarounds by definition require firms to navigate out of a trajectory of decline. Heuristics offer firms the ability to reach adequate decisions in a fast and efficient manner, increasing the probability of survival (Kokinov & Raeva, 2006). Due to the uncertain environment conditions organisations exist in, decision making is typically thought to involve heuristics (Albar & Jetter, 2009). Limitations of heuristics can occur if there is over specification, limiting the heuristics generizability to different scenarios (Maitland & Sammartino, 2015). Additionally, cognitive biases may steer decision makers to the incorrect decision.

A variety of heuristics have been studied, developed and formalised over time as can be seen in the comparison of Table 12, Appendix 1 (Shah & Oppenheimer, 2008, p.214-215). An interesting concept from Gigerenzer and Gaissmaier (2011) is that individuals have an adaptive toolbox and choose appropriate heuristics to make fast, frugal and accurate decisions. The performance of a specific class of recently formalised heuristics, fast and frugal, has been advocated to perform especially well under conditions of uncertainty (Gigerenzer & Gaissmaier, 2011; Gigerenzer & Goldstein, 1996; Mousavi & Gigerenzer, 2014). Studies in decision making have shown that managers utilize fast and frugal heuristics successfully in highly uncertain decisions (Bauer, Schmitt, Morwitz, & Winer, 2013). Given their demonstrated value to

the context of the study, and the wide range of total heuristics existing, fast and frugal heuristics will be examined in isolation for the purpose of this research.

Heuristics have been often viewed as less effective and desirable when compared to optimization models, however, this view ignores the weakness of optimisation models when subject to unobtainable information and uncertain settings (Maitland & Sammartino, 2015). In the critical analysis of literature, it is understood that by isolating the decision environment, ecological rationality can be tested to determine which heuristics are preferred by decision makers under various conditions. The heuristic-environment fit can then be established.

2.4.1 Fast and frugal decision models

Fast and frugal decision models provide simple alternatives to full rationality analysis and are found to frequently yield better decisions than their theoretical counterparts (Albar & Jetter, 2009). They are a class of heuristics that do not look for the optimal solution, but rather seek the best solution that would satisfy the requirements of the problem. Decision makers search their memories for the relevant information and rather than integrating, pieces of information will be substituted to arrive at the best decision (Albar & Jetter, 2009). Decision making using this class of heuristics is expected to be fast because it does not involve complicated computations, and frugal because it searches for some (and not all) of the information (Mousavi & Gigerenzer, 2014). In contrast to traditional heuristics, fast and frugal heuristics apply focus on decision making within problems of uncertainty (Artinger et al., 2014).

These simple heuristics exploit structures in the environment and because of this they are ecologically rational (Albar & Jetter, 2009). In simulations and case studies they have registered performance accuracy close to that of regression systems (72% vs. 75%) but are superior in speed according to research done by Katsikopoulos and Fasolo's (2006, cited in Albar & Jetter, 2009). Studies in this heuristic class have shown that less effort can lead to more accurate decisions. Speed is achieved due to heuristic strategies using learned and evolved core capacities (e.g. memory and recall) (Mousavi & Gigerenzer, 2014).

Research on fast and frugal heuristics distinguish themselves from research into other heuristics in three ways (Artinger et al., 2014) :

- *Computational models* are used to examine heuristic strategies people actually use.
- They are based on *ecological rationality* i.e. they seek to determine the environment that a specific heuristic is superior to other strategies
- The *less-can-be-more* philosophy is followed, distinguishing between risk and uncertainty, and emphasizing that the primary advantage of heuristics is the need for less effort.

Psychological research in heuristics has identified three common building blocks applicable to all heuristics and will subsequently be used to characterise the heuristics chosen for this study (Artinger et al., 2014):

1. Search rules – directs where to look for information.
2. Stopping rules – directs when to stop looking for information.
3. Decision rules – directs how to decide once all information is gathered.

For the purpose of the study to be undertaken, the following fast and frugal heuristics were selected based on their prominence and application in existing recent literature (Artinger et al., 2014; Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014): Take-the-best (Take-the-best), Tallying, Recognition, Fast-and-frugal decision tree, Satisficing, Similarity, Imitate the Majority and Imitate the Successful heuristic.

2.4.2 Take-the-best heuristic

In a most succinct description, this heuristic follows the rule of “try to take-the-best and ignore the rest” (Albar & Jetter, 2009, p. 581). Decision makers using this heuristic will follow an algorithm treating what they know as important, ignoring what they do not know and commence by testing important cues (decision criteria). Once sufficient differentiation is found between alternatives, decision makers will stop looking for other cues and select the alternative that satisfies the test criteria (Albar & Jetter, 2009).

Cue validity is used to rank cues (criteria containing information used to distinguish between alternatives) in descending order, from most valid to predict the outcome to least valid to predict the outcome (Artinger et al., 2014). It is often expressed as a percentage.

Take-the-best ranks cues by validity and selects the alternative that has the higher cue value (i.e. selection based on validity of cue) and ignoring the other cues and alternatives even if there are dependencies (Mousavi & Gigerenzer, 2014). A crucial environmental factor to ensure ecological rationality for Take-the-best requires having cues that have unequal validities which are highly inter-correlated (Mousavi & Gigerenzer, 2014). Decision makers are able to reduce bias by ignoring interdependencies between cues in the final selection.

Gigerenzers' decision making experiments provided better results for Take-the-best heuristics than evaluating all reasons in predicting unknown criteria. On average, Take-the-best tested three cues before providing a decision and proved superior to many complex optimisation methods (Albar & Jetter, 2009). However, the inability to predict weight of cues may lead to errors in uncertainty (Mousavi & Gigerenzer, 2014). Questions therefore arise whether this shortcoming can be overcome by decision makers combining two or more heuristics together to leverage benefits.

Core building blocks of the Take-the-best heuristic (Artinger et al., 2014; Gigerenzer & Gaissmaier, 2011) include:

1. Search rules – order and search through cues in order of their validity.
2. Stopping rules – stop when first cue that discriminates between alternatives is found.
3. Decision rules – chose the alternative with the higher cue value.

2.4.3 Tallying heuristic

Tallying (and variants like 1/N) simplifies decisions by valuing all cues equally and selecting the chosen alternative containing the highest number of cues in its favour (Artinger et al., 2014; Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014). This heuristic has found to be useful in a wide range of decisions including capital allocation, share portfolio selection and forecasting. It is found especially effective when evaluating new product ideas or project evaluation (Artinger et al., 2014). The benefit of this heuristic in uncertain environments is that prediction of weights for cues are avoided, thus avoiding estimation errors in cases of small samples or uncertain future events (Mousavi & Gigerenzer, 2014).

Although the Tallying heuristic is biased, the error attributed to it is zero due to variance. No attempt is made by this heuristic to estimate parameters thereby ignoring the information in the samples (Mousavi & Gigerenzer, 2014).

Core building blocks of this heuristic (Artinger et al., 2014; Gigerenzer & Gaissmaier, 2011) include:

1. Search rules – search through cues in no particular order.
2. Stopping rules – stop search after majority of positive cues favour an alternative.
3. Decision rules – decide for the alternative with the higher tally of positive cues. If there is a draw between two alternatives one must guess.

2.4.4 Recognition heuristic

The recognition heuristic leans on user familiarity or recollection and is defined best by Goldstein and Gigerenzer (2002, cited in Gigerenzer & Gaissmaier, 2011) as, “if one of two alternatives is recognized and the other is not, then infer that the recognized alternative has the higher value with respect to the criterion” (p. 460). The aim is to make inferences about criterions and their validity based on recognition from memory. Simply put, if the decision maker is considering two options according to a criterion (e.g. which is larger?), the recognition heuristic dictates that if one of the two options is recognized and the other is not, then the decision maker should infer that the recognized object has the higher criterion value.

Goldstein and Gigerenzer (2002, cited in Gigerenzer & Gaissmaier, 2011) conducted an experiment that serves as a good demonstration of the recognition heuristic in action. German and U.S. students were required to judge which city (between San Diego and San Antonio) had the larger population. German students chose correctly 90% of the time (San Diego) and the U.S. students answered correctly 60% of the time. With the use of the recognition heuristic the German students ignored the city that was lesser known (San Antonio) and assigned a higher value to the city they recognised (San Diego).

The recognition heuristic is ecologically rational when a correlation exists between recognizing an option and the criteria for judgment (Mousavi & Gigerenzer, 2014). Experimental evidence from Gigerenzer and Goldstein demonstrated that decision makers intuitively rely on a heuristic when it is ecologically rational and less so when it is not (Mousavi & Gigerenzer, 2014). This heuristic is grounded in ecological rationality and allows decision makers to ignore strong contradictory cues during their process (Gigerenzer & Gaissmaier, 2011).

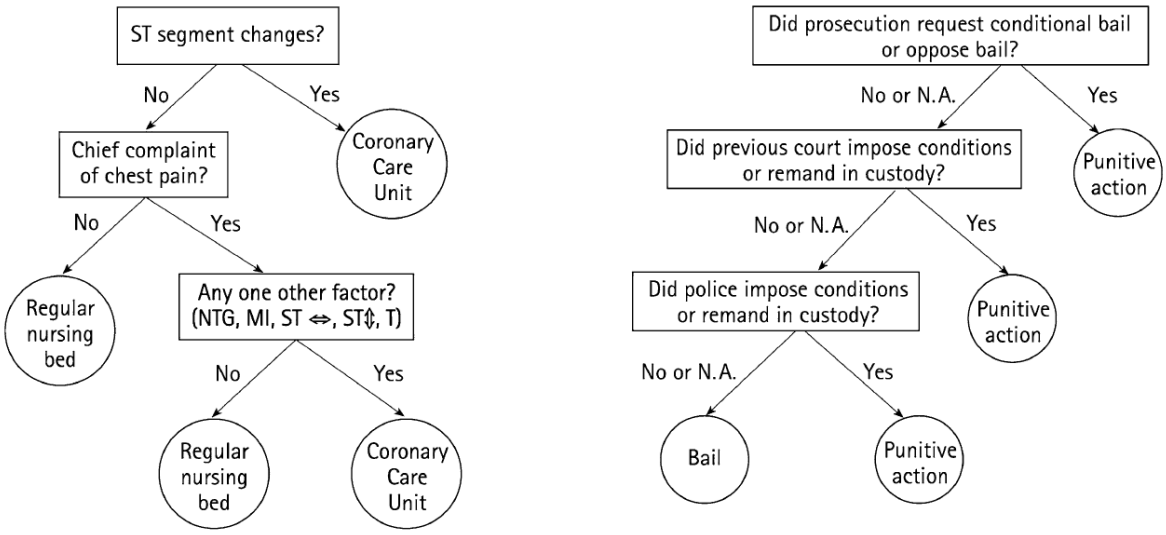
Core building blocks of this heuristic (Artinger et al., 2014; Gigerenzer & Gaissmaier, 2011) include:

1. Search rules – search for recognizable object.
2. Stopping rules – stop searching as soon as an object is recognized.
3. Decision rules – inference that the object recognized will contain the higher value in relation to the decision criterion.

2.4.5 Fast-and-frugal decision trees heuristic

This heuristic model operates on classification and is thought to be more robust than traditional decision trees which contain 2^n branches (where *n* represents the number of cues/criteria for the decision) since they only have n+1 branches (Gigerenzer & Gaissmaier, 2011). This is due to these decision trees having an exit at every cue. An illustration of a typical fast-and-frugal decision tree, being applied to emergency screening and bail decisions, can be seen in Figure 7 below.

Figure 7: Fast-and-frugal decision trees example



Source: Gigerenzer & Gaissmaier, 2011, p. 467

In a study by Dhami (2003, cited by Artinger et al., 2015) the usefulness of this heuristic has been demonstrated to have a high predictive rate (between 85% - 92%). However, the heuristic is expected to show diminishing returns in accuracy as the number of branches grows to exceptional size (i.e. over a thousand) (Gigerenzer & Gaissmaier, 2011).

Core building blocks of this heuristic (Artinger et al., 2014; Gigerenzer & Gaissmaier, 2011) include:

1. Search rules – search through cues in a determined order,
2. Stopping rules – stop when the cue leads to an exit branch.
3. Decision rules – classify the object under decision accordingly.

2.4.6 Satisficing heuristic

Satisficing acknowledges the improbability of finding optimal solutions in uncertain environments and rather seeks the realistic goal of finding a satisfactory or sufficient solution (Artinger et al., 2014). The strategy anchored in this heuristic requires decisions to be made by setting an adjustable or fixed aspiration level.

Core building blocks of this heuristic (Artinger et al., 2014) include:

1. Search rules – search through objects after setting a pre-determined aspiration level.
2. Stopping rules – end search when the first object meets the decided aspiration level.
3. Decision rules – select the object that concluded search.

Two examples can illustrate the use of Satisficing in organisations. First, marketing managers can use the heuristic to determine future purchase volume of customers. If customers have not purchased product within a fixed time interval (aspiration level), they can be classified as inactive and assumed future purchase volume set to zero. A study by Wübben and von Wangenheim (2008, cited in Artinger et al., 2014) revealed equal or better performance of the Satisficing heuristic in comparison to optimization models when applied to a similar context as the above example. The heuristic also shows applicability to pricing strategies in firms.

2.4.7 Similarity heuristic

Uncertainty in firms is often related to nascent markets or environments. To make effective managerial decisions concerning these environments managers often pull on similar contexts as an important source of knowledge (Artinger et al., 2014). The use of the Similarity heuristic suggests “identifying a source that shares central characteristics with a target” (Artinger et al., 2015, p. 43).

Core building blocks of this heuristic (Artinger et al., 2014; Gigerenzer & Gaissmaier, 2011) include:

1. Search rules – find an object that provides similarities to the target more than others.
2. Stopping rules – complete search once the most similar object is found.
3. Decision rules – infer that the identified object contains a higher criterion value than the other objects.

The key to the Similarity heuristic use is identification of the targets characteristics that might be useful to compare with other objects (alternative's that could be similar to the target). This will ensure a high validity in the match between target and object (Artinger et al., 2014).

2.4.8 Imitate the majority

This heuristic, formalised by Boyd and Richerson (2005, cited by Gigerenzer, 2008), is observed by individuals who make a decision based on the opinion of the majority of people in their peer group. The heuristic is ecologically rational when the following factors are present (1) environment is slowly or not changing, (2) information is costly or (3) information gathering is time consuming.

Core building blocks of this heuristic (Gigerenzer, 2008) include:

1. Search rules –seek out the opinion of peers.
2. Stopping rules – stop once the majority opinion is established.
3. Decision rules – imitate the opinion of the majority as your decision.

2.4.9 Imitate the successful

This heuristic, also formalised by Boyd and Richerson (2005, cited by Gigerenzer, 2008), is observed by individuals who make a decision based on the opinion of the most successful person. This may be associated with experts of highly experienced individuals. The heuristic is ecologically rational when the following factors are present (1) individual learning is slow, (2) information is costly or (3) information gathering is time consuming.

Core building blocks of this heuristic (Gigerenzer, 2008) include:

1. Search rules –seek out the most successful person in the decision field or area.
2. Stopping rules – stop once the opinion of this expert is understood.

3. Decision rules – imitate the expert in the decision required to be made.

2.4.10 Criteria for heuristics in uncertainty

The evaluation of heuristics occurs by 1) questioning whether the heuristic provides a good model for the decision being made and 2) questioning whether the heuristic performs well for a given task. One way to categorize heuristics is based on the amount information or knowledge requirements in relation to the environment they are intended to be used in (Mousavi & Gigerenzer, 2014). The level of bias and variance involved in a heuristic strategy can provide as an important selection criteria. Heuristics with a beneficial level of bias to variance are thought to be more robust and successful in prediction (Mousavi & Gigerenzer, 2014).

2.5 Conclusion

The literature review uncovered the importance of context in decision making to establish the role that a specific context of uncertainty plays in managerial decision making. This provides a base to link the context of uncertainty with that of a company in turnaround, citing similar characteristics and requirements from decision making techniques. After briefly covering decision making theory the literature review concluded by examining the applicability of heuristics to the environment of turnaround and uncertainty. Lastly the various heuristics, within the fast and frugal class, were explored due to their advocacy of superior performance under conditions of uncertainty. Although there are indications that heuristics are subject to ecological rationality (a fit of decision approach with their environment) it remains unanswered which heuristics are better associated with specific environments, and more prevalently observed in those environments.

From a critical review of the existing literature, it is understood that heuristics can serve as powerful decision making tools which are suitable for uncertain environments. The weight of evidence, although debated, has concluded that heuristics prove useful as a method of successfully navigating decision making in uncertain environments, yielding positive decision outcomes. What remains to be explored is the influence company specific contexts may have on heuristic use. There are indications that a company in turnaround is a suitable context for conditions of uncertainty, although this relationship has not been explicitly studied and needs to be further explored. By employing logical IF-THEN reasoning, one would assume the benefits of tools proven to have success in navigate uncertainty can be translated into a firm environment undergoing turnaround.

This is not, however, explicitly stated or studied in the literature and aims to be answered by this study.

The literature alludes to a gap in the research linking the heuristics to the specific environment of company turnaround with future research required in how best to navigate turnarounds through effective decision making. One wonders whether the benefit of heuristics in uncertainty can be extended to the environment of company turnaround.

Existing literature has revealed the benefits of heuristic use and factors that can motivate and inhibit their use, depending on the extent they appear in the decision environment. However, the factors identified are not specific to company contexts where they are likely to appear in varying degrees, revealing an area that existing literature is able to be furthered. The identification of factors motivating heuristic use in company environments, particularly those of turnaround, will provide insight into how to promote decision making environments conducive to heuristics, should they provide superior advantages to firm performance.

CHAPTER 3: RESEARCH QUESTIONS

The primary aim of this research is to investigate the use of heuristics during organisational turnarounds. Literature acknowledges that selection of heuristic decision techniques to match environmental conditions impacts success or performance of the decision outcome. However, the environment of organisational turnarounds has not been studied under this specific context.

Research Question 1:

Which heuristics are most prevalently used by managers during a state of turnaround and uncertainty?

From the literature, it was understood that certain heuristics are apt for environments of uncertainty (Mousavi & Gigerenzer, 2014). With the association in characteristics between uncertain and turnaround environments alluded to in literature (Francis & Desai, 2005; Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014; Trahms et al., 2013), can one expect prevalent use of the same heuristics? Or is one heuristic used more frequently than others? The elements of decision uncertainty of interest being situations in which the decision maker is unaware of all possible options, their consequences and associated probabilities (Artinger et al., 2014). The question remains whether company turnaround can be successfully linked to uncertainty, and with it, the suitability of heuristics.

Research Question 2:

Does the company context and decision environment relate to the use of heuristics?

An important acknowledgement in literature is the connection between decision making approach and environment (Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014; Pleskac & Hertwig, 2014). Literature popularises the use of an adaptive toolbox of heuristics that allows managers to select the right decision strategy for the correct decision and implies the successful use of heuristics in uncertainty (Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014). The question remains do managers adapt (or perceive to adapt) their cognitive resources in the decision making process to the turnaround context (Maitland & Sammartino, 2015). And how do variable or static elements in their environment incite the use of heuristics?

Research Question 3:

What motivates the use of certain heuristics by managers in environments of company turnaround?

Literature indicates that heuristics are used in uncertain environments due to the complexity of decisions and time or cost pressures existing in the decision environment (Albar & Jetter, 2009; Maitland & Sammartino, 2015; Mousavi & Gigerenzer, 2014). Existing literature provides a myriad of factors motivating heuristic use in broad decision environments (Albar & Jetter, 2013; Chng et al., 2014; Maitland & Sammartino, 2015; Mousavi & Gigerenzer, 2014; Shah & Oppenheimer, 2008). However, there is no direct evidence in the literature of the motives behind use of heuristics within company turnaround and the managerial perception of their value to be used in this state of the organisation. Identification of factors specific to certain company environments will provide insight into how to accurately foster environments supportive of their use, should they provide superior advantages to firm performance. Are the broader factors motivating heuristic use the same in a turnaround, or are there additional motives guiding the use of heuristics in this environment?

CHAPTER 4: RESEARCH METHODOLOGY AND DESIGN

The research proposal and design combines the theory examined with reality to illustrate why and how the intended study will be achieved. A well-defined research plan is essential to ensure that the logic of the study is sound and that the research questions are achievable. The field study research conducted required interpretations of individual perceptions and experiences to be grounded with honesty, credibility and reliability. Key assumptions forming a framework for the study were defined and justified. There is motivation by Goldfarb et al. (2012) for more field research in managerial decision making which this study aims to contribute to.

4.1 Research Scope

The scope of this research was limited to large South African organisations in a state of turnaround. The justification for this is provided in section 1.2 that illustrates the increasing imperative of organisational turnaround in emerging markets, and their influence on key socio-economic challenges of unemployment and inequality in a highly VUCA environment (George et al., 2016; Horney et al., 2010).

Only respondents from a turnaround environment were included. The research studied both the conscious and unconscious use of heuristics (this is because heuristics tend to become intuitive with experience). The managerial decisions under scrutiny were those that have a high level of uncertainty and occur in areas of a firm that are heavily interacting with their environment. These decisions were isolated to operational and tactical which are prominent in managerial decision making, whilst excluding strategic decision making.

As justified in section 2.4.1, eight heuristics from the fast and frugal heuristic class were selected for identification due to their indicated growing use and suitability for managerial decisions in literature (Artinger et al., 2014; Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014).

4.2 Proposed Research Method and Rationale

As indicated in the preceding chapters, the study focused on delving deep into respondent's reasoning, justification, and motives in their individual approach to decision making, and interpretations of the environment surrounding them.

Research methods in heuristics have been previously conducted using computer simulations, process tracing and outcome analysis, essentially complex quantitative

methods (Albar & Jetter, 2013; Bauer et al., 2013; Gigerenzer & Goldstein, 1996; Shah & Oppenheimer, 2008). However, a limitation cited by Shah and Oppenheimer (2008) indicate that they cannot prove whether people are actually using a certain heuristics. They suggest new methods are required to understand how and why people reduce efforts, particularly in different contexts.

The research questions proposed in Chapter 3 guide the research methodology to a **qualitative** research design. The research was intended to be **exploratory** in nature as it seeks to identify what heuristics are being used by managers, the role the turnaround environment has on their decision approach and the factors or motives causing managers to use these specific approaches. A qualitative approach will aid in providing the depth required to answer the identified research questions. As advocated by Saunders and Lewis (2012), a qualitative study provides richer insights and understanding for the issue and environment being studied. The rationale for qualitative was further supported by Myers (2009) who recommends qualitative studies to "understand people's motivations, their reasons, their actions, and the context of their beliefs in an in-depth way" (p. 6). In addition, the researcher employed quasi-experimental techniques, through the use of vignettes, to examine an interviewee's process of decision making. Vignettes work supportively with qualitative studies, providing a method to immerse respondents in a scenarios before eliciting a response (Jenkins, Bloor, Fischer, Berney, & Neale, 2010). Given the cognitive and behavioural nature of decision making, vignettes have been identified as a suitable supplementary research method (Jenkins et al., 2010).

An **interpretivism** philosophy was followed as this aligned to the need for a study within organisational complexity and social observations within their natural environment (Saunders & Lewis, 2012). Heuristics are built in individuals from past experiences, interactions and learning's, and as proposed by the literature, there is thought to be significant influence from the environment in which decisions are being made (Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014). The respondents in the study contained insights into their individual decision making approaches.

4.3 Population

The context of companies in turnaround is crucial to the population of the study. Within literature, there are several characteristics of companies in decline and turnaround that were identified and these have provided criteria for selecting the company under which

to conduct the research (found in section 2.2) (Velez-Castrillon & Angert, 2015). A multi-national South African petrochemical company was selected and meets the criteria of organisational turnaround, recording two consecutive financial years of increasing performance followed by two consecutive years of declining performance. The company has undergone several organisational changes between 2014 and 2016, displaying several characteristics found in both strategic and operational turnarounds (as described in Table 1). The organisation closely interacts and is influenced by several macroeconomic levers, the most prominent being the Rand-Dollar exchange rate, commodity prices and the Brent crude oil price.

For the purpose of this study on managerial decision making, the population and sampling frame was focused to managers in decision making positions who operate within an organisation in a state of turnaround. A further refinement for the study was for the managers to be in functional departments that are likely to interact more closely with the VUCA (volatile, uncertain, complex and ambiguous) environment that the company operates within. For this reason, the population was isolated to the departments of Planning & Optimisation, Sales and Marketing and Supply Chain, within the profit-generating business units.

The managerial level of the population was kept below the Vice President (VP) band due to the importance of strategy execution driving organisational turnaround and the majority of this activity being conducted below the VP level. Additionally, the study of heuristics on this managerial layer has been few in comparison to studies on the executive level where strategy setting occurs (Chng et al., 2014; Maitland & Sammartino, 2015). This intended population comprised of Senior Managers (SM) in decision making positions within the organisation. The managerial experience of managers within this band ranged from four to 20 years. Due to the finding that heuristics are experience dependent, the population was limited to managers with a minimum of 10 years of working experience.

4.4 Unit of Analysis

The sample unit of analysis was the manager as an individual. The reason for conducting the study and analysis focused on individual rather than group decision making was due to differences or similarities in individual decision making approaches intending to be revealed. This required isolation of the individual intricacies from a personal perspective as opposed to a group.

4.5 Sample and Sampling Method

A sample of 13 Senior Managers, who meet the criteria as indicated in section 4.3, was selected from the organisation under study. Due to the exploratory and qualitative nature of the study, and the intended data requirements from the study, a **purposive sampling** method was employed. In order to gain richness and depth of data, whilst aligning with the purpose of the study, managers were selected according to their current interaction with the uncertainty in the environment, their experience, and the type, frequency and importance of their decisions made. The researcher applied his judgement in selecting these sample candidates to obtain a sufficiently heterogeneous sample with substantial diversity to serve the purpose of the study (Saunders & Lewis, 2012). The objective behind this approach was to sample for relevance rather than representativeness, as expected from a probability sampling technique. The risk to credibility and worthiness of the research was carefully considered in the purposive sampling.

The sample size of 13 was deemed to be sufficient for the study. A key consideration was saturation, which would be required for satisfactory information to be gathered in a qualitative manner. It is maintained by Saunders & Lewis (2012) that most qualitative research requires establishing the sample size for interviews inductively or once data saturation is reached. Given the limitations of time and resources available, the researcher was able to conduct 13 interviews over the seven week period of data collection. Saturation was demonstrated to be reached at interview three and no substantially new insights were observed after the tenth respondent. Even though saturation was reached the depth of varying perspectives was reached from multiple interviewees. This prompted the researcher to conclude the data collection process after 13 interviews.

4.6 Measurement Instrument

The study employed the use of two measurement instruments, namely vignettes and semi-structured interviews. These two instruments are aligned with the use of a qualitative approach and the outcomes required from the research questions (Jenkins et al., 2010).

The purpose of vignettes was to immerse respondents in a various decision making situations under uncertainty that they are likely to experience in their familiar and unfamiliar operating environment, thereafter allowing them to make a decision from the provided information. The instrument tested individual decision making style and

approach to a decision, with the aim of identifying one of the eight heuristics examined in section 2.4. Three vignettes were designed for respondents depicting two scenarios grounded in uncertainty and one in stability. The characteristics of uncertainty in a turnaround organisation were incorporated into these scenarios resulting in a required decision from the respondent, contributing to Research Question 1 and Research Question 2.

Semi-structured interviews were employed as the second measuring instrument after respondents completed the vignettes. Managers were asked questions in a face-to-face interview that lead on from the vignette to provide insights into Research Questions 1 to 3. As suggested by Saunders and Lewis (2012), the use of semi-structured interviews are required when the respondents answers are not predictable, the questions asked may need to vary, or the questions asked tend to be complicated. The use of this instrument is especially relevant in the flexibility it provided to answering the research questions. Due to the unknown nature and diversity of responses, the interview was able to be guided by the researcher (rather than a set of pre-determined questions) to coax/probe the most valuable in-depth insights out of the respondents (Saunders & Lewis, 2012). The researcher ensured that the questions were steered towards contributing to certain questions without restricting the opportunity for new insights.

The semi-structured interview was split into two parts and aligned to the proposed research questions. Part one focused on seeking further insights into the respondents' heuristic-based approach and tested the differences in approach taken during turnaround and non-turnaround conditions. These questions probed and enquired into details behind the heuristics used by managers and how the environment may or may not influence the respondent's choice of heuristic. Part two of the semi-structured interview enquired into the reasons or motives behind the use of their selected decision approaches by respondents. The respondents were requested to elaborate by providing examples of past decisions and how they came to their decisions as well as the final outcome of the decisions. Additionally, the questions prompted past experiences that may have contributed to their decision making approaches. The decision to conduct the vignettes first was purposeful, intending to prompt or trigger the recollection of past decisions in preparation for the open ended questions in part two of the interview.

The total time allowance for the semi-structured interviews and the vignette's per respondent is planned to be 60 minutes. In preparation for the study, pilot interviews

were conducted with individuals outside of the company under study (to avoid bias). The purpose of the pilots were to fine tune the questions and vignettes, accustom the researcher with the interview process and to allow the researcher adequate engagement experience to ensure relevant skills are built (e.g. interpersonal skills, sensitivity, building trust, thoughtful listener) (Saunders & Lewis, 2012).

4.7 Design and Presentation of Vignettes

Vignettes were used to describe three decision making environments which respondents will immerse themselves in, namely (1) unfamiliar turnaround, (2) familiar turnaround and (3) familiar stability. After respondents were placed in each context/scenario, they were required to make a specific decision in that context. The decision required the respondent to decide between four alternatives. To assist the decision, several criteria or cues were presented to distinguish each alternative, each with associated cue validities. *Cue validity* indicates the probability of criteria to predict successful outcomes in the decisions, i.e. the usefulness of the criteria to the specific decision. In addition, an expert opinion and opinion of peers will also be provided. The information used to populate the decision tables was fictional and based on an adapted method from past studies of heuristics in decision making (Albar & Jetter, 2013; Newell, Weston, & Shanks, 2003).

The values behind each cue/criteria for each option were hidden initially by strips of card and had to be physically peeled away by the respondent, should they decide to “purchase” the information. Once information was selected (purchased) and peeled away, the respondents were able to utilize the information to distinguish between alternatives to make the decision. An example of the information table provided to respondents (with three pieces of information purchased) can be seen in Table 3 below. By timing the respondents and requesting them to purchase the information the researcher is able to simulate pressures of time and cost frequently associated to uncertain environments. This method proved successful to help simulate uncertainty in a study conducted by Bauer et al. (2013). Every 10 seconds will equate to one day for the decision. The element of time was added due to decisions in uncertain and turnaround environments not having the luxury of time and expensive analytics to determine all possible scenarios. Individuals may also value money differently in different scenarios.

Table 3: Example of information table for vignette with three criteria purchased

Cost	Cue / Criteria	Cue Validity	CUSTOMER A	CUSTOMER B	CUSTOMER C	CUSTOMER D
R 130	Riskiness of customer?	0.50	High risk	High risk	Med risk	Low risk
R 230	Profit margin of customer?	0.92				
R 150	Location of customer (near/far/local/export)?	0.58				
R 210	Customer payment behaviour?	0.83				
R 190	Customer featuring in your Long Term Strategy	0.75				
R 170	Loyalty of customer	0.67	Low	High	Low	Low
R 110	Customer Share Price	0.42	High	Medium	Medium	Low
R 90	Customer Annual Turnover	0.33				
R 70	Direct or Indirect competitor?	0.25				

The study did not seek to determine the success of a decision, but merely the decision making process followed. Respondents were asked to talk through their making approach and information purchasing rationale upon making their decision. This was identified as the best method for studying decision making by Rieskamp and Hoffrage (1999). This method allowed assessment of possible heuristic use during the decision making process (as summarised by Table 4 below) and revealed the information search, stopping rules and final decision of respondents.

To ensure integrity in the vignette design, the following actions were taken:

- Cues were presented in random order for each respondent.
- Cue validity was randomised.
- Cost of information was randomised.

Uncertainty was created in the vignette through the following ways:

- Company/Supplier/Project names kept hidden.
- Information for criteria or cues was initially hidden.
- Limited information was made available to respondents.

Table 4: Summary of heuristic identification from vignette

	Heuristic	Identifiers from the respondents decision approach
1	Take-the-best	Cues are ordered by validity and decision is made once there is discrimination between options.
2	Tallying	The option with the highest average across all cues/criteria is chosen
3	Recognition	Use criteria/cues based on recognition from experience
4	F&F Decision Tree	Evidence of decision trees scribed on paper for workings
5	Satisficing	Respondents ignore cue validity and search for the first option that exceeds an aspiration level personal to them.
6	Similarity	Respondents indicate similar criteria they identified from a similar context and select an option that outperforms others according to this criterion.
7	Imitate the successful	Prioritised the suggested solution of an expert in the field
8	Imitate the majority	Prioritised the suggested solution of the majority of managers

Upon completing three pilot interviews, feedback was provided on improvements for the interview process. Minor changes were made to the vignettes, questions and overall interview process. Several questions were rephrased to provide more clarity in the open questions section (Questions 9-14). An introductory description of heuristics was provided after the vignettes section. The peer and expert suggested decision were moved above the table of cues/criteria's (as this was missed by some of the respondents). The researcher also developed a better sense of probing for each question to ascertain the intended outcomes. The final iteration of vignettes and interview guide used in the study can be found in Appendix 3 and Appendix 4 respectively.

4.8 Data Collection and Analysis

Qualitative data can be grouped into text and non-text data components. Text data for the study included researcher notes from the interview and respondents vignette forms with notes and answers. Non-text data for the study comprised of interview audio recordings.

A form of content analysis was employed through the thematic analysis methodology. Thematic analysis, as described by Braun and Clarke (2006), is a "method for identifying, analysing and reporting patterns (themes) within data" (p. 79). The analysis

follows a six phased approach (as seen in Table 5 below) that is considered widely used through qualitative studies. Data was analysed in an iterative process of coding categorising themes, applying knowledge and determining applicability to answering the research questions.

Table 5: Phases of thematic analysis

Phase		Description of the process
1	Familiarizing yourself with your data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2	Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3	Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4	Reviewing themes	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5	Defining and naming themes	On-going analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6	Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Source: Braun & Clarke, 2006, p. 87

A mixed approach of deductive and inductive approaches to data-coding was followed as recommended by Creswell (2014). Deductive coding was followed for specific heuristic identification based on a review of the theory and identifiers in Table 4. The codes associated to the identification of each heuristic can be seen in Table 6 below. Given the exploratory nature of the study, an inductive approach was also followed to reveal new and interesting themes based on the questions. Codes created deductively were kept separate from codes that were developed inductively.

Table 6: List of deductive codes for heuristic identification

	Heuristic	Deductive Codes
1	Take-the-best	Take-the-Best *, Cue validity *, Stopping: criteria differentiated *
2	Tallying	Tallying *, Equal weight *
3	Recognition	Recognition *, Familiarity *, Criteria: experience driven selection *
4	F&F Decision Tree	F&F Trees *
5	Satisficing	Satisficing *
6	Similarity	Similarity *
7	Imitate the successful	Peer Opinion: Primary *
8	Imitate the majority	Expert Opinion: Primary *

Data from the vignettes was analysed according to the responses matching to criteria identifiable with certain heuristics. If the responses displayed characteristics of certain heuristics they were assumed to be used by the respondent. It was crucial that the criteria and characteristics of each heuristic were translated to the vignette.

Data from semi-structured interviews and vignette responses was collected and transcribed into text after the completion of each interview. Since the company under study required confidentiality, anonymity was a proviso for all interviews and had to be considered when transcribing.

Data was managed thereafter by using the Atlas.ti (2013) programme which is designed to handle large qualitative data sets in a logical manner. The programme assisted in the coding and ordering of data for subsequent analysis. The result of the analysis was to provide answers for the stipulated research questions in a meaningful and methodical manner. As suggested by Saunders and Lewis (2012), analysis was conducted by developing meaningful categories and codes to turn the data into information to provide meaningful interpretations.

4.9 Data Validity and Reliability

Validity of data and reliability of the study is required to ensure that outcomes of the research conducted (findings and conclusions) are credible (Saunders & Lewis, 2012). Principal factors are identified by Saunders and Lewis (2012) that can potentially render findings of the study invalid and unreliable. For validity these include: subject

selection, history, testing, mortality, ambiguity. For reliability these include: subject error, subject bias, observer bias, and observer error. To protect the integrity of the study (validity and reliability) some of these factors were examined and mitigating actions suggested.

The factor of subject selection was avoided since the selection method was, by intention, purposeful. By carefully defining the population and selecting according to the criteria mentioned in section 4.3, the researcher was able to reduce the risk of selecting subjects that were unrepresentative of the population.

It is acknowledged that in-company events between interviews may introduce an unequal platform for analysis between respondents. To mitigate this, the intended interviews were arranged within a seven week period ensuring minimal influence from changing factors in the organisation affect the study.

To protect integrity in the qualitative analysis, an expert in this analysis type was consulted. This limited the exposure to observer bias. Interview questions were designed to contain validating questions to ensure subject bias did not influence the honesty of the data.

The interview questions and vignettes were tested outside of the company (as afore mentioned) to ensure reliability (through repeatability) of the study and validity of the data collection process. Subjects for this pre-testing of measurement instruments were selected based on similar characteristics as the defined population. In addition, the researcher engaged with other researchers on the results, logic and interpretations to help reduce the subjective bias that may occur.

From the pilot tests that were done, it was discovered that some questions lacked clarity and were misinterpreted by respondents. Redundancy was also indicated in some of the questions posed. Misinterpreted or unclear questions were crystallised and made more concise, whilst redundant questions were either removed or merged with existing questions. In addition, minor inconsistencies in the vignette were corrected for. These improvements were incorporated into the vignettes and semi-structured interview questions.

4.10 Potential Research Limitations

Potential limitations for the study include the following:

- A respondent may be revealed as not using a heuristic due to it not being scoped within this study, i.e. within the specific class of fast and frugal heuristics. Therefore the study may be unable to identify heuristics not covered in section 2.4 even though they are being used by decision makers.
- Due to the study being limited to one specific company in South Africa, findings may not be able to be generalised or transferable across other companies globally. However it must be noted that the ultimate aim of qualitative research is not necessarily to achieve generalizability.
- Intangible inherencies within the company and researcher (e.g. culture, values and beliefs) held potential to influence the identified decision making approaches in the study conducted.
- Caution was taken in drawing definitive conclusions, acknowledging the potential for researcher bias. Due to the nature of qualitative exploratory research, conclusions may not be definitive (Saunders & Lewis, 2012). Caution was taken to avoid subjectivity associated with qualitative research.
- Non-probability sampling (purposeful) may have excluded key decision makers from providing valuable insights to the study. This might have introduced a feature of sampling bias into the study. To counteract this, the researcher has attempted to create diversity in sample selection from different departments and business units.
- Interviewees may be negatively affected (nervousness or attempt to impress) by the interview process and not reflect their true nature under these conditions (Saunders & Lewis, 2012).
- The probing applied in each interview differed to a minor extent as it was a result of respondentents responses. This might conflict with the consistency aimed to be achieved in each interview.
- Creswell (2014) indicates the importance of researchers acknowledging their potential bias and that their context will influence their findings and interpretations. Therefore, it must be disclosed that the researcher is an employee of the company chosen for the study. Having experience in the industry and being exposed to the company prior to the study may have biased interpretations provided by respondents.

CHAPTER 5: RESULTS

5.1 Introduction to Results

The chapter below presents the resulting data from the qualitative study conducted, as described in Chapter 4. The structure of this chapter aligns with the three research questions guiding the study. In addition, a review of the data analysis procedure and basic sample description is provided for insight into the research method that was applied. In many cases direct quotations from the interviews will be provided to illustrate the findings and reality of the situation studied.

Qualitative data was gathered during two sections of the interview process. Firstly, respondents were asked to make a decision in each of the three vignettes based on the environment of the decision and several pieces of supporting information (which they could choose to purchase or ignore). The three vignettes tested managerial decision making under conditions of (1) unfamiliar company turnaround, (2) familiar company turnaround and (3) familiar company stability, respectively. Semi-structured interview discussions then ensued to understand the approach respondents followed in making decisions during the vignettes and in their current environment.

5.2 Summary of the Interviews Conducted and the Interview Method

The intention of the interviews and questions asked was to seek answers to heuristics are being used by managers, the role the turnaround environment had on their decision approach and why managers are using these specific approaches. As described in section 4.5, the respondents consisted of 13 Senior Managers operating within the Chemical and Energy Business Units within a large Petrochemical company. All interviews were conducted during business hours over seven weeks from the month of July 2016. The purposive sampling employed allowed a targeted response from individuals that are in key operational and tactical decision making positions, interacting with their environment. Diversity was still achieved by interviewing respondents across business functions (Supply Chain, Sales & Marketing and Planning & Optimisation), managerial experience and work experience. Table 7 below summarises the sample, interview information and coding statistics.

Table 7: Senior manager respondents and interview statistics

#	Department	Business Unit	Word Count	Length of Interview (min)	Codes	Unique Codes	Age	Experience (years)	
								Working	Managerial
P1	Supply Chain	Chemicals	3 767	40.13	265	197	45	23	15
P2	Marketing & Sales	Chemicals	4 969	53.54	293	202	43	22	12
P3	Marketing & Sales	Chemicals	5 801	59.07	225	104	56	34	20
P4	Marketing & Sales	Chemicals	6 325	51.15	228	89	45	23	16
P5	Supply Chain	Chemicals	7 529	59.33	334	137	48	26	19
P6	Marketing & Sales	Chemicals	7 641	66.55	253	87	51	24	20
P7	Supply Chain	Energy	7 019	62.19	188	46	51	20	18
P8	Planning & Optimisation	Chemicals	8 252	67.43	217	62	35	11	8
P9	Marketing & Sales	Energy	6 063	53.33	209	60	34	12	4
P10	Marketing & Sales	Energy	5 599	71.40	234	35	44	20	12
P11	Supply Chain	Energy	7 789	58.00	235	25	47	25	10
P12	Marketing & Sales	Energy	4 760	63.46	275	15	42	22	9
P13	Supply Chain	Energy	5 729	56.12	232	9	55	28	25
AVERAGE			**6249**	**59**	**245**	**82**	**46**	**22**	**14**

It is important to note that the intention of the vignettes was not to determine the correctness of the decision or similarities between cues or criteria that respondents purchased, but rather the approach that was followed in arriving at a decision. Hence, relationships of specific cues or criteria purchased and decision outcomes for respondents were ignored for the study.

The demographics collected included age, working experience and managerial experience. These elements were seen as contributing to the study of decision making and a mature target group was achieved having an average work experience of 22 years and average managerial experience of 14 years. The average age of the sample was 46 years, thereby achieving the requirement of a matured group of Senior Managers, given the importance of experience in past studies on decision making. Respondents P8 and P9 were the youngest of the respondents. Although younger in comparison to the other respondents, they cannot be considered as second-order

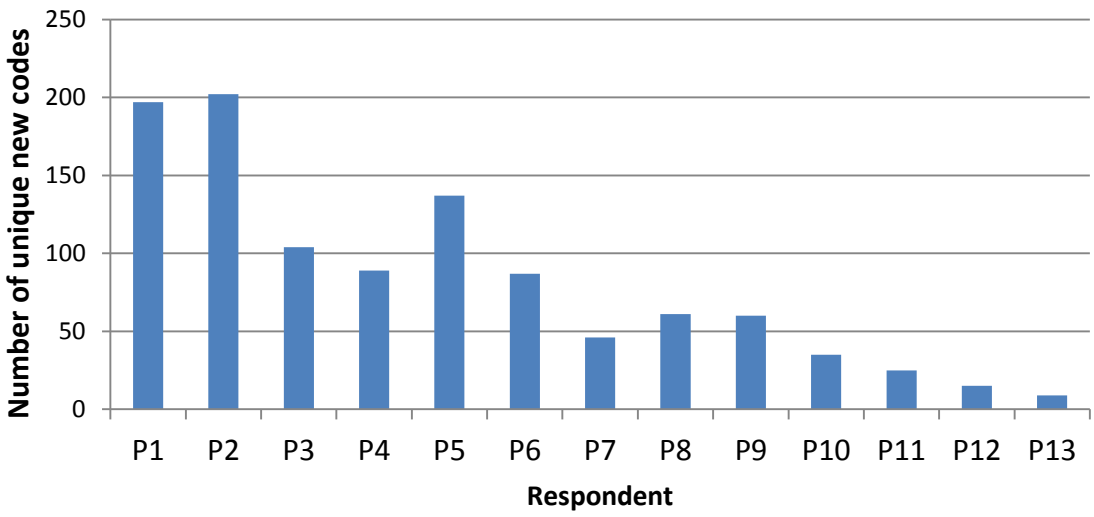
respondents due to their valuable contribution to the data richness, as seen by the quotes following in this Chapter.

The average interview time was 59 minutes which yielded on average 6249 words per transcript for the 13 interviews. The interviews were noted as “exciting” and “interesting” by many respondents with enthusiasm being shown towards the topic. Five of the interviews exceeded the planned 60 minutes due to the interviewees spending longer on earlier questions. The additional time was considered valuable and not detractive from the topic at hand. The interviews were noted as “exciting” and “interesting” by many respondents with enthusiasm being shown towards the topic. As indicated by Respondent P3, certain Senior Managers appreciated the reflectiveness of the study to contemplate on their decision making process:

> *“I enjoy thinking about these things [personal decision making] because one does not necessarily sit and think about them”.*

Coding saturation was reached at the third respondent, as seen in Figure 8 below. A spike in unique codes created was however seen after this due the richness of responses revealed by respondent P5 in his interview.

Figure 8: Unique code creation per respondent



5.3 Findings from the Data Analysis Approach

The interviews were conducted in seven weeks and several re-scheduling of appointments occurred due to an unplanned strike in the petrochemical sector occurring in August 2016. This event was not seen as a detractor from the study, but

rather as a sound example of the instability and uncertainty faced by the company during their turnaround.

5.3.1 Coding of interviews

Each interview was voice recorded and transcribed to form text data. Once all transcripts were completed, they were then uploaded into Atlas.ti, a qualitative data analysis software. The decision to use of Atlas.ti over other less robust contextual analysis methods ensures credibility and dependability in the data and results verification in the thematic analysis (Table 5). Inductive and deductive coding was then conducted on each primary document (transcript). The deductive coding was completed using the list of predetermined codes based on literature (Table 6) and the inductive coding was coded *in-vivo* (as they appeared) as the researcher progressed through the content. For the inductive coding, the researcher ensured that no established ideas were specifically enforced, to allow for richness of exploratory results. Each code, associated to a thought or comment by interview respondents was assigned to describe identified observations. The approach to the coding was firstly to identify relevant terms to the research questions or objectives, and secondly to identify reoccurring concepts or themes that were thought to be meaningful to the current study. Since some of the interview content was common between the deductive and inductive codes, integration into logical groups (families and super families) was possible.

Two initial passes of the transcripts was performed to ensure through coding was done to ensure the deductive codes and inductive codes represented the key ideas, thoughts, explanations and answers to questions in each interview. The thoroughness of the initial coding can be demonstrated by the list of 1005 codes that were created. A clean-up of the codes was conducted thereafter to merge similar codes and remove duplicate codes, resulting in a final list of codes amounting to 742 codes (Appendix 5). Code quotations were reviewed to ensure consistency across interviews. The researcher decided to follow a granular approach to the coding (creating more codes) to ensure thoroughness in insight, concept, and theme identification.

5.3.2 Code families and super code families

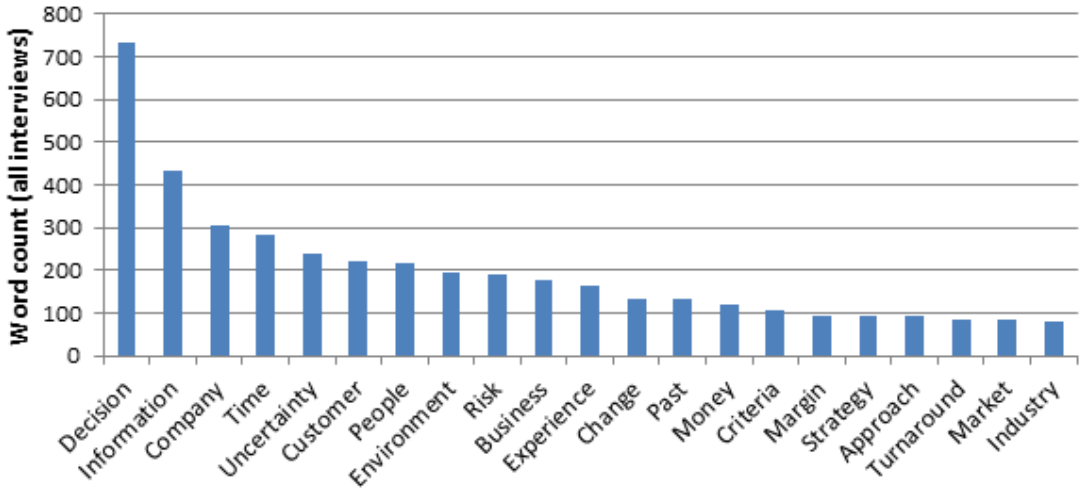
Open codes were grouped into 13 code families (illustrated in Appendix 6) upon completion of the code list. This was done by associating codes to identified patterns and emerging themes that were continuously interpreted from the coding exercise, across the 13 interviews. Code families were then grouped into super code families to

identify concepts relating to the study. The super code families were directly related to the three research questions and research objectives, contributing to the final findings.

5.3.3 Word-frequency count

An output of the Atlas.ti module provided a frequency of all words appearing in the uploaded interview transcripts. The graphical representation of the top 21 most frequently occurring words can be seen in Figure 9 below. The words appearing as most frequent provide an indication (or a secondary check) of the key areas of discussion across the 13 interviews. It is demonstrated by the word-frequency count that the interviews captured the essence of the study, citing key reoccurring words of decision, uncertainty, turnaround, approach, criteria, environment and information, in the discussion with respondents.

Figure 9: Word frequency count of interviews



5.4 Research Question 1 Results

Which heuristics are most prevalently used by managers during a state of turnaround and uncertainty?

To determine the use of heuristics in a turnaround situation, responses for vignette 1 and vignette 2 were examined. The deductive coding method and identified responses that co-occurred provided an indication for heuristic use in the fast and frugal heuristics class.

5.4.1 Vignette results

The designed vignettes aimed to test the sample respondents approach to decisions in companies under turnaround. As indicated in section 4.7, vignette 1 contextualised a situation of unfamiliar turnaround, describing an electronics company in a state of turnaround. Vignette 2 described a scenario of familiar turnaround, attempting to replicate the current state of the company. Vignette 3 described familiar stability, also based in the company prior to their turnaround being initiated. A summary of the results of cues/criteria chosen and time to complete decisions can be seen in Table 8 below. The results, on averages, draw observations to the respondents requiring less information (criteria or cues) and taking a shorter time to decide from vignette 1 (unfamiliar turnaround) to vignette 2 (familiar turnaround). However, further context from the semi-structured interviews was required to explain the reason behind this observation.

Table 8: Summary of vignette results

	VIGNETTE 1			VIGNETTE 2			VIGNETTE 3	
	Criteria Used	Time Taken (m)	Final Decision	Criteria Used	Time Taken (m)	Final Decision	Criteria Used	Final Decision
P1	6	3.56	3	5	4.08	A	9	4
P2	4	6.00	2	6	5.00	A	7	1
P3	5	5.19	3	4	3.03	A	9	1
P4	7	3.49	2	6	2.51	B	6	1
P5	5	2.26	2	3	2.20	A	4	4
P6	2	2.36	2	3	2.15	D	3	1
P7	4	5.03	2	5	5.30	A	9	1
P8	4	3.24	2	3	2.52	B	2	1
P9	5	4.30	3	3	2.04	B	4	1
P10	6	8.05	2	5	5.27	D	7	1
P11	4	6.05	3	3	3.36	B	5	1
P12	6	3.29	2	5	4.01	A	6	1
P13	4	1.39	2	4	2.15	B	3	1
AVERAGE	**5**	**4.17**		**4**	**3.36**		**6**	

An analysis of the deductive heuristics codes was conducted to determine which heuristics in the adaptive toolbox were exposed by responses across their decision making approaches to vignette 1 to 3, seen in Table 9 below. The resulting analysis indicates that four of the heuristics (F&F trees, Similarity, Imitating the successful and Imitating the majority) under study were not utilized by respondents as no indicators were observed. There were however indications of the heuristics Take-the-best, Tallying, Recognition and Satisficing being used by respondents in varying degrees.

For the purpose of research question 1, vignettes 1 and 2 were focused upon due to their scenarios representing companies in a state of turnaround. For these vignettes, decisions made by respondents indicated a use of Take-the-best and Satisficing, Recognition, and to a lesser degree, Tallying. Although usage was observed, there was no clear indicator that all respondents were using these heuristics and therefore it cannot be concluded that a specific heuristic is dominantly used in the decision making process under turnaround. The observation of these heuristics being applied in all three vignettes also provides strong indications that a specific heuristic is not dominant in just turnaround situations. However, it is evident that there were heuristics in some manner or form being used by decision makers under the context of company turnaround.

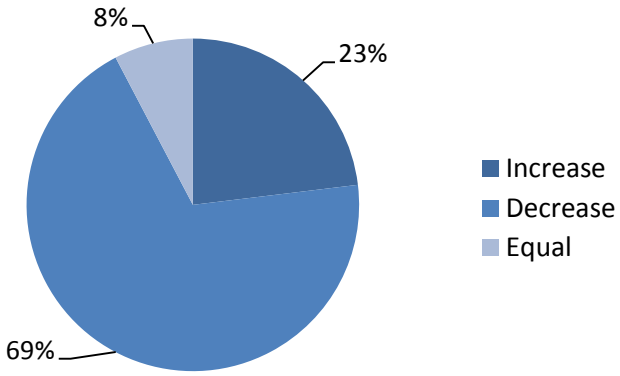
Table 9: Frequency of deductive codes relating to heuristic use

Heuristic	CODE(s)	Frequency in Vignettes		
		V1	V2	V3
Take-the-best	Take-the-best *	3	3	4
	Cue validity *	6	1	0
	Stopping: criteria differentiated *	1	0	0
Tallying	Tallying *	0	1	1
	Equal weight *	0	0	0
Recognition	Recognition *	0	1	0
	Familiarity *	0	0	1
	Criteria: experience driven selection *	11	4	4
F&F Trees	F&F Trees *	0	0	0
Satisficing	Satisficing *	5	5	3
Similarity	Similarity *	0	0	0
Imitate the successful	Expert Opinion: primary *	0	0	0
Imitate the majority	Peer Opinion: primary *	0	0	0

5.4.2 Frugal purchasing and selection of information

From Table 8 there was an observed trend of decreasing cue/criteria purchases between decisions made in the unfamiliar turnaround scenario (vignette 1) to the familiar turnaround scenario (vignette 2). It can be seen that the number of cue's purchased decreased in 69% of respondent's decision making process (Figure 10 below). Interpreting this indicates that the respondents were more comfortable purchasing fewer cues/criteria to make their decision in familiar turnaround than unfamiliar turnaround.

Figure 10: Criteria purchase trends from vignette 1 to vignette 2



Respondents selecting cues or criteria in the company turnaround scenarios tended to be frugal in their nature of purchasing information. A frequently noticeable strategy seen to be employed by many of the respondents was to purchase less information and rather infer information on unselected criteria from the criteria they selected. As indicated by Respondent P11 and P12 respectively:

> *"The location of the customer near, far, local, export you know, that is a component that gets taken into profit margin [a separate criteria] consideration for me".*

> *"I'll tell you why I never chose certain things. Size of the company doesn't matter. Market perception and partner, that goes to reliability. So I linked certain information. And I said if I got that with my budget it goes to show that the other one [criteria] will be fine".*

It must be noted that every respondent in vignette 1 and vignette 2 chose not to purchase all available information, even though they were provided with sufficient budget to do so. This indicates again the frugal nature of purchasing and selection of information during turnaround situations. This provided an important observation of contextual decision behaviour. On average, respondents for vignette 1 and vignette 2 purchased half of the information available to them to make their decision, as seen in Table 8. Respondent P12 supports this by expressing:

> *"If I had to do it again. I would purchase exactly the same information. Sometimes too much information is also not too good. You do not land on a decision. You solicit too many different views. You have to narrow it down to what is relevant to you in the current environment you are operating in".*

Many respondents made mention that they required not all, but just enough information to make their decision, *"I think that was enough to make my decision"* (Respondent

P13). Respondent P5 illustrated the need for sufficient information when deciding optimally under cost and time constraints in turnarounds:

> *"I'm not saying get all the information but sufficient information to minimise the risk and you get the optimal return for that money that you want to invest or the decision you need to make".*

The selection of optimal amounts of information for decisions was observed to be a highly personal and subjective choice for respondents. Respondent P7 and P12 respectively supported this by notion by revealing that there is a personal limit for information during the decision making process.

> *"My thinking there was that I needed enough information for me to take the decision. That was it. Just enough information to take the decision".*

> *"And in any decision making you can't dot all your i's and cross all your t's. Sometimes you have to go with the information you have at hand and I thought this was sufficient information".*

The selection of and deciding between criteria played an important role in the decision making process to distinguish which heuristics were used. The frugal selection of a few criteria provides strong indications that fast and frugal heuristics are indeed being applied in some form during decisions relating to turnaround.

As important to choosing criteria was the decision made by respondents to ignore irrelevant criteria. The majority of respondents followed an approach of reviewing the criteria available, determining which criteria were key or crucial to the decision being faced in turnaround and ignoring the remaining criteria, often referring to them as irrelevant or unimportant to the decision. Respondent P1 explains:

> *"You look at what are the key crucial things I have to look at and then just drive on those and make a decision from that".*

Key criteria were often referred to as non-negotiable decision criteria, and information that one could not compromise on. As explained by Respondent P12, "*once again, to me, the non-negotiable was where the customer fits into my long term strategy*". Respondent P10 and P3 respectively further illustrated the idea of non-negotiables.

> *"I first started by not looking at the criteria but rather thinking what is the key criteria which I will never compromise. They were non-negotiables. Why do it if they are going to compromise your values or the key things valued to go into business".*

"The question is if I had bought more information would I have made a different choice, no, I don't think so, I don't think so. If I look at this then no, I would not have".

5.4.3 Take-the-best heuristic

The Take-the-best heuristic was observed in six of the interviews, demonstrated through approaches to the vignette decisions. Certain key indicators revealed themselves during the interviews for the search rules, stopping rules and decision rules. Many respondents explained that they used the rule of taking the next best criteria when they reached a tie-breaker situation in which a key criteria was tied for two alternatives (e.g. suppliers or customers) they were required to decide between. When faced with tied alternatives, respondents proceeded to use the next best criteria to differentiate between the alternatives that had been effectively shortlisted in their mind. Respondent P6 demonstrates this through his explained approach when alternatives were tied:

"For me that combination of low risk and high return on investment swung my decision. That's the best project that you can have".

Respondent P9 used a form of the Take-the-best heuristic when deciding to purchase more information. Once he concluded that his initial criteria was insufficient to separate the alternatives he was deciding between, he proceeded to purchase more information

"That being said when I looked at the BBBEE certification your supplier two which had a very high quality and very high liability had a very low compliance from a BBBEE point of view which made me want to look at the customer service and past performance".

Similarly, respondent 10 used the Take-the-Best heuristic combined with a ranking system to make his final decision. He ranked criteria (based on their importance to him) in his mind and started from most important to least important until alternatives were able to be separated. His highest ranked criteria revealed a "high" value for three of the alternatives, so he moved on to his next best criteria to distinguish between the alternatives:

"So I know the ranking for my criteria at this point. So I started looking at which supplier was ranked the highest according to my first criteria. Supplier two came first and came with reliability. Then I looked at the other guys, these two were high and the others were not. When it came to BEE I weighted it lowest. And similarly, with the suppliers I noticed they were low on BEE but they gave me higher values for the other more important criteria".

"I was not sure between customer B and D. But then, when I peeled that information I realised they didn't differentiate. There was a tie. And then I looked at the other ones for more information".

5.4.4 Satisficing heuristic & threshold values

The usage of the satisficing heuristic was observed in ten of the respondents decision making approaches for vignette 1 and 2 during a situation of turnaround. It was evident that satisficing was important for these decision makers both in the vignettes and in their current reality. Respondent P1 indicated satisficing in his past experience at product design:

"And if you are designing something, you can't always design 100%, you've got to take into account that there could be changes that will affect the outcome. You have to build in a variability element into your decision".

Many of the respondents demonstrated this heuristic use by explaining that an optimal solution is not always achievable in turnaround decision making environments. Respondent P10 expressed that there are times during project selection when "*you are not going to get everything you want in a project",* illustrating how decision makers satisfice on fulfilling key criteria and sacrificing on non-key criteria. When contemplating the profit margin criteria for various customers, Respondent P6 noted that he was *"prepared to settle for not the highest margin"* as a means to sacrifice that criteria for other more important criteria. Respondent P2 explained that there were certain low weighted criteria he was willing to satisfice on and this was understood as a personal preference:

"Then I started to check between great vs. average vs. poor. I will not consider certain of those [criteria] with high weight factors. Poor is a no go, I can live with medium".

As can be inferred by the response above of Respondent P2, there are certain weights and limits that are held for criteria. This relates to the satisficing heuristic use by the weighting placed to certain criteria over others, and thereafter sacrificing on lower weighted criteria. Combined to this weighting of criteria, it was observed that many respondents held a "*threshold*" to criteria values. This threshold was based predominantly on experience, familiarity and past successes with the criteria usage in previous decisions. What was noticed across respondents was the relationship between weighting and threshold values of criteria. This relationship can best be explained by higher weighted criteria having a higher threshold with a tight region of

acceptance, and conversely, lower weighted criteria having a lower threshold with a wider region of acceptance. Respondent P5 explained this satisficing as:

> *"It's above a certain threshold, I mean it doesn't have to be fantastic, it doesn't always have to at the top but the few key criteria that I've gotten in the decision making process are high to medium and I'm comfortable with that process".*

Finding the middle ground between criteria's was important to respondents. The concept of comfort was examined by many to rationalise their final decision. Having threshold values for lower weighted criteria allowed respondents to be comfortable with their decisions when their decision, using limited criteria, was not optimal but sufficient to provide comfort. Respondent P7 explains this with his use of the customer relationship criteria:

> *"In terms of relationship with customers they are not too poor, they are not the worst that's what I say and I was comfortable with that sort of relationship as long as they had that big two. What I have also seen is that they are not a small company but they are not too large either".*

5.4.5 Recognition heuristic

The recognition heuristic was seen to be demonstrated across all three vignettes and not purely specific to turnaround. However, there was a clear increase in use during the unfamiliar turnaround scenario (vignette 1). This could provide indication that recognition is leaned upon more in decision contexts that are unfamiliar to the decision maker.

The major deductive code for identifying the recognition heuristic was the use of experience in the selection of criteria. Using the experience of past decisions helped respondents recognise elements in the criteria available to guide their selection. Respondent P10 elaborates on his choice using recognition:

> *"Yes. It is based on experience. Past experience. Exactly the same as the customer one where I had to choose a customer – it's linked to my time when I did a project with the logistics centre".*

In the context of turnaround, the recognition heuristic was referred to by matured respondents who had experienced past restructurings and turnaround initiatives in the company before. Having past experience in similar situations also provided comfort in their current decision making. Respondent P7 explains how his current reality helped with selection of criteria in the vignette, leveraging off recognition:

"I think that the environment that we are in really was very helpful in that sort of decision making, I think that your experience helps you in taking decisions I have been through a volatile environment; been through restructuring two or three times, new entrants or disruptive technologies for me that experience is similar to new entrance into the market so I think that my prior experience really assisted it had some commonalities in terms of taking these decisions and also budgetary constraints I had enough experience with and I still do it".

5.4.6 Cost awareness in heuristics

Another emerging theme from the two vignettes grounded in turnaround, was the astute awareness to cost that respondents demonstrated. In the vignettes, there was a confirmed awareness of the budget offered for purchase of information. Some respondents were more cost conscious than others. For some, the budget drove the selection of their criteria, as observed by Respondent P5:

"For me the cost is important, specifically in terms of what your budget is, specifically in the first two where it's about turn around and finding the best fit for your company".

Respondent P2 examined his budget consciousness in retrospect to his decision and information purchased. This respondent expressed that a smaller budget would have driven deeper consideration for the information purchased, *"If I was running out of budget, some of these I would have not purchased".*

The consideration of costs and spending provided a deeper insight into how people valued money in their current environment of turnaround. The ability to curb or reduce spending was perceived by respondents as advantageous and counters the norm of utilizing the entire budget. Respondent P11 expresses that he *"could do something different with the balance of the money"* in an attempt to divert budget resources to aid other areas of the turnaround. Respondent P7 contributed by indicating efficiency between cost and value of information purchased, *"it was also cheap so it was worthwhile information at a good cost"*. In addition, Respondent P8 explains:

I'm also conscious of not spending. Just because I have the budget I'm not going to spend it. A lot of people would say well I have 1350 how much can I get of that and spend their time going through that buying five or six [industry] reports".

Respondent P6 also showed awareness for costs due to circumstances in the company, relating company conditions to usage of information in decisions:

"And I also had budget constraints. As you can see the company is in trouble, so I'm trying to save costs as well when using consultants and buying exports".

For other respondents however, the budget was less emphasised as they placed higher value on having their key criteria available for their decision at any costs. Respondent P10 explains this as:

> *"The criteria came first. So the ones that I will not compromise I will peel them off and then I will calculate if I exceeded the budget. So yes, it played a role to determine if I select other information. But the core criteria I will always select first regardless and check if it exceeds the budget. But the other stuff which I think is not worth purchasing I won't purchase …. Once I looked at those criteria, and I saw that this guy [supplier 2] was outstanding, I didn't need to go spend money unnecessarily on those other things".*

This acknowledgment of the reduced value placed on information cost was confirmed by respondent P5 when he expressed, "*I think for me the choice of an organisation as a new partner or new supplier is not only about cost, cost is important but it is not that important".*

In the case of just Respondent P13, there was evident awareness of the budget but it did not provide a constraint in their decision during turnaround. The budget was thought of as something that was malleable with the ability to be exceeded if required. The mention of building a business case for purchasing information that may exceed budgets demonstrates that careful consideration must be given to the cost and benefit trade-off for information in decisions:

> *"If you have a budget and you need to exceed the budget to obtain that type of information to make a sound business decision, you can build a business case for a budget to be upped".*

Seven of the respondents made reference to the idea of reviewing cost versus benefit of information prior to usage in turnaround decisions. This was best expressed by respondent P2 as:

> *"You can ask yourself whether it is better to spend that 5% extra, that last little push over the line. Rather than still having that low probability in your mind and being uncertain. You don't need 90% probability to make a call".*

Lastly, a profound thought by Respondent P13 relating to satisfactory solutions and cost awareness explored the idea of high expenditure on information providing incremental increases in decision accuracy. He also alluded to high budget expenditure for information not being directly proportional to decision outcome:

> *"I mean you can walk the whole way and do everything but if you feel you have enough information to make a sound decision why go all the way spend all the*

money if it's not necessary? Because if you've spent the whole budget it's not to say that you've made a good best decision".

5.4.7 Time as a heuristics influence

The element of time featured in the vignette decisions and responses uncovering heuristic use during turnarounds. In vignette 1 and 2, the respondents were timed in an attempt to create the scenario of decisions under high pressure, often found in turnarounds. They were however in no way requested to make the decision as fast as they could. The impact of timing in the vignettes was successful in creating pressure in the decision making process, confirmed by Respondent P6, *"I was being timed so I felt that I was a little pressurised"*. As indicated by Table 8, there was on average a decrease in time taken for respondents to make decisions in unfamiliar turnaround to familiar turnaround scenarios. With the negative impact of pressure (often inherent in the environments of turnaround) being felt by many, Respondent P6 and P3 respectively contrasted this by indicating that pressure can be beneficial to decision makers by create focus during decision making:

"So I think the time pressure kind of focused me more than if you told me you've got more time".

"If you are pressurised to make a decision, you make it and I have found it is useful in the past because you get to a decision quicker and a lot the times it was a good decision, so again coming back to that intuition, gut feel, experience side of things and one underestimate the value of it, you can sometimes make a decision quicker."

There was an awareness, appreciation and even concern for time in respondents decisions that was seen to influence their decision making approach. Personal appreciation for time constraints and the requirement of quick deliberate and accurate decisions were revealed. When questioned on the applicability to their current working environment, Respondent P5 stated:

"In times of crisis and times of difficulties we are often too critical in our decision making process, we take too long to make decisions because we had way too many criteria …. You have to make decisions on the cuff here. I would like to find a person that says you have to make a decision in one week! ….. Rather make a faster decision based on some key factors that I can work with and that I am sure of and then the rest will follow. You can manage the rest out".

The preferred rational style of decision making with large amounts of information and analysis is often not available given the time constraints of decisions in turnaround and

so heuristic-based decisions need to be leveraged upon to adhere to all environmental constraints. Respondent P6 best summarises this as:

> *"My observation is also that there was a lot of information that is available that you could access and one should access it but the time pressure, the environment that we work in often doesn't allow us to access or analyse all the information that we need and we should but it's often practically not possible so you will see I deliberately did not peel off a whole lot of information".*

The time horizon impact on decision implementation was provided by Respondent P13 to cement the importance of time and lack thereof in the current environment:

> *"Unfortunately when you're in a tight spot like we are at the moment time is of the essence you don't have sometimes you have to implement things within call it twelve months you don't have two and three years to investigate and to so you haven't got always the luxury of time".*

Regret of double-checking was elaborated on by Respondent P9, indicating that often we waste precious time by second guessing or double checking ourselves from quick initially made decisions:

> *"In retrospect I think I took quite a bit of time on first one just to get into it I probably would have and a lot of it was just double checking my logic".*

5.4.8 Justifying low criteria values

Respondents tended to create mitigation plans to resolving any non-core criteria that scored low on their final decision (selected alternative). A rare phenomenon was the common occurrence among managerial decision makers to state how they were going to mitigate the risk in their decisions (low criteria values for that selected alternative). There were 25 occurrences of codes to this nature for questions assigned to research question 1. Some examples of this provided by Respondents P5, P6, P9, P10 and P12 respectively include:

> *"I tick the boxes, as soon as it's met it's done, the rest you can teach people or they can teach you or you have to change but find those four/five key issues that you need to look at, if all the lights are on that's a go" .*

> *"I must remember that the competitor or whatever it is it needs to be managed and mitigated, it is a compliance issue so it can be dealt with but it wouldn't swing my decision".*

> *"And even though the customer service was rated as poor for supplier three, as part of our supplier development program we could potentially work on that because it is more of a communication based criteria".*

> *"And obviously in South Africa BEE plays a role, but I don't think it's a killer concern for me because if supplier x can meet these criteria, I can then work with them to make sure they get BEE compliant…. It was not a barrier to me I mean BEE compliance you can fix".*

> *"As part of my plans going forward, there were some things that could be fixed and there were also non-negotiable's as well, values, reliability and the quality. And the rest were things I could work with".*

This observation demonstrated how respondents rationalise their decision and gain more comfort by anticipating potential issues with non-optimal decisions and placing corrective actions to resolve those issues prior to their occurrence.

5.4.9 Role of experience in decision making during turnaround

Experience formed a pivotal topic in the responses of all interviewed respondents. Cue validities (a value indicating the usefulness of criteria to the decision) were largely avoided by respondents in the selection of their decision criteria. Only one respondent actively utilized the cue validities in their decisions, whilst the remaining 12 employed an experience driven selection of criteria and, at most, used cue validities as a secondary check. As explained by Respondent P1, P2 and P9 respectively:

> *"So based on experience, if I look at these things, I think that profitability is important, and the other ones are not that critical to making a decision…. I think for me it is recognising elements that may help from the past. It directs what more information I should ask for".*

> *"But I didn't really bother firstly with the cue validity. It was my own way, or the way I would add weight if I can call it that. And that's maybe why I asked you the second question. My first thinking was not to just focus on the cue validity…. I only selected that one [criteria], once again, because of my experience at our company".*

> *"The approach here was also much based on experience as well because from a customer point of view the two biggest drivers".*

An interesting code co-occurrence between gut feel and experience was observed seven times. Respondents indicated that gut feel, a more rudimentary form of heuristics, is built up over time with experience. They expressed that gut feel has featured more frequently in their decisions as their careers progressed and contrasted the negative perception behind it with positive personal sentiment. The dangers of gut feel were also explored, with respondents indicating that use of gut feel by inexperienced individuals could be detrimental. Respondent P2, P3 and P4 respectively express their thoughts on gut feel:

> *"If you have a lot of experience in the business you get to a point where you have a gut feel.… Now I got to a point where I do not even have to pick up my calculator and use it and I will give you a number and I will maybe miss you by 5%".*

> *"However, it's dangerous. And I don't want to preach to anyone. For example, your gut feel at 25 is very different to your gut feel at 40. Some guys gut feel can be to a level of arrogance as well. I want to be perceived as someone who knows the full picture and make quick decisions".*

> *"Your gut feel becomes better with experience so therefore for me gut feel is more important than what most people would think because sometimes you just have a feeling on something and again it's not really based on information, it's based on experience".*

> *"Your past experience kind of influences the way you make decisions, a lot of people say gut feel, but that gut feel is built up. You can't take a newbie in the industry and say go and make a gut feel decision because he won't have any basis to make it on … He doesn't have it; only after 20 years do you get a gut feel".*

Respondents were also found to link the scenarios with areas of their past experience in order to form recognition patterns and select criteria based on those recognition patterns. There was a clear affinity towards the criteria that they recognised from past successful use. Often, respondents justified their choice of criteria by explaining the importance of that criteria in past decisions. Respondent P2 applied past experience to his justification for selecting the supplier relationship criteria:

> *"When you are running out of stock or your original demand is exceeding you forecast to the supplier that guy with that excellent relationship, will assist you in difficult periods where there's a mismatch between demand and supply".*

Respondent P5 explained his use of a filtering system that decisions traversed through. This system is experience based and helps select appropriate criteria relevant to the decision at hand. The filtering of decisions was also observed in the criteria selection approach followed by other respondents, although not as distinct as Respondent P5.The filtering system can be understood as a form of heuristics, done consciously and based on rules built up over time with experience:

> *"One builds up a filtering system that you put thought through and relate to past experience and you relate to similar decisions that colleagues have taken in similar situations if you can remember them and you use that as your filter to get this thing out the other side and make the decision".*

5.4.10 Blended approach to decision making in turnaround

A hybrid or combined approach to decision making in turnarounds was observed to be the preferred approach by certain respondents. Six respondents were positively identified as promoting a *balanced* or *combined* use of rational and heuristic decision making. The major driver for using this approach was the need for an analytical backing to decisions made using heuristics or shortcuts. A trend of caution arouse between these respondents, who coupled the benefits of heuristics with the warning that they may be used incorrectly. Respondent P6 advises:

> *"There is no question about it you have to use data you cannot just use intuition, it's dangerous it can be quite dangerous, it might be informed by your old prejudices or biases about how business gets done and so on, so it has to be tested against analytic relativism but the problem about analytics is that they are not predictive they tend to be historical".*

The respondents suggested the speed and agility of heuristics need to be balanced with analytical reasoning. This would in turn provide confidence in decisions and ground heuristics in fact. As stated by Respondent P2 and P3 respectively:

> *"There needs to be a balance. I can tell you now the shortcut decision is sometimes taken under pressure because you are in the corner, but 90% of the time it's the wrong one".*

> *"I still believe that you would still do your analysis maybe not so much paralysis with that, but having the confidence to make a decision".*

Experiential learning featured as an important contributor to this blended approach to decision making. A prominent feature from the overall responses was the linkage between experience and heuristics as well as rational decision making and experience. There was inference to rational decision making being required to build experience, and in turn experience building heuristics. As indicated by Respondent P5:

> *"Go and look for the facts, the ones that you can find and then use them in a structured manner to make a decision and then you relate it to experience".*

Relating to the balance of experience and rational decision was the observation of rules-based decision making from eight of the respondents. These respondents indicated that some form of rules-based approach was used when making their decisions during the vignettes and in their reality of turnaround. Rules-based decision making provides an indicator of heuristic usage as this process or mechanism drives the shortcuts formed and used during quick decisions. One such rule was the Pareto

rule used by three respondents. Some examples of the rules-based approaches were provided by Respondents P6, P7, P10, P12 and P13 respectively:

> *"We make rules for ourselves and sooner or later the rules tell us everything that we need to do but often I think we need to step outside of the rules or question whether the rules are still valid for a particular situation".*

> *"You build and you get heuristics through years and years of experience to make a decision and then you get those basically rules of thumb such as gut feel or intuition".*

> *"I know if it is winter in the northern hemisphere what your margins will be. I know if it is summer directionally this is what's going to go on and what the supply demand balances are going to be".*

> *"You figure it out. It's the business acumen. It's the entrepreneurial spirit. You are thinking on that level unknowingly. In your head you are already testing the practicalities and testing with people. It's difficult to explain".*

> *"Well I applied the Pareto principal, the 20 percent, that would make my decision effective. Not that the others are not so important ".*

Respondent P9 utilized a rules-based approach to navigate the recent strike in 2016. The respondent agreed a list of prioritised customers to allocate product to, based on defined rules incorporating criteria (similar to those in vignettes 2). This was then published as a document for individuals in the respondents department to use. During the strike the document, serving effectively as a heuristic, was reviewed and revised depending on the outcome.

> *"We tried to envision ahead of time some scenarios. And during the process on two occasions we had to relook at it. So we had to see where this heuristic wasn't working in cases and where the heuristic would have worked perfectly for a two day or a three day strike … But theoretically, you do use this all over business because you have got business rules for processing and standard operation procedure which in essence s a type of decision making criteria that you go through".*

Conclusion: *Which heuristics are most prevalently used by managers during a state of turnaround and uncertainty?*

From the vignette results, evidence of reduced criteria (information) usage in decisions was found for scenarios of familiar turnaround in contrast to unfamiliar turnaround. An implied frugal nature in purchasing was observed by respondents within the company, purchasing on average half of the information available to them to make their decision.

Four heuristics (F&F trees, Similarity, Imitating the successful and Imitating the majority) were not used by any of the respondents. There was however indications of the Take-the-best, Tallying, Recognition and Satisficing heuristic being using in a state of turnaround and uncertainty. The prevalent use of a single heuristic for turnaround environments was not concluded, but rather a combination of many heuristics. The ideal approach to decisions in turnaround and uncertainty was explained to be a blended approach of rational and heuristic decision making.

Noticeable observations from the use of heuristics include (i) only purchasing more information to break tied alternatives, (ii) selection of a few key criteria and anchoring decisions to these, (iii) assigning thresholds to criteria in order of their importance and being satisfied with lower values for lower ranked criteria and (iv) the importance of past experience for recognition of key criteria in uncertain decision environments.

Cost and time were provided as key drivers for the selection of heuristics in the company environment of turnaround and uncertainty, with acknowledgement of the constraint of these decision resources during this company state. Quick decision making, experience and acceptance of situational constraints were used to combat the limited resources in this context.

5.5 Research Question 2 Results

Does the company context and decision environment relate to the use of heuristics?

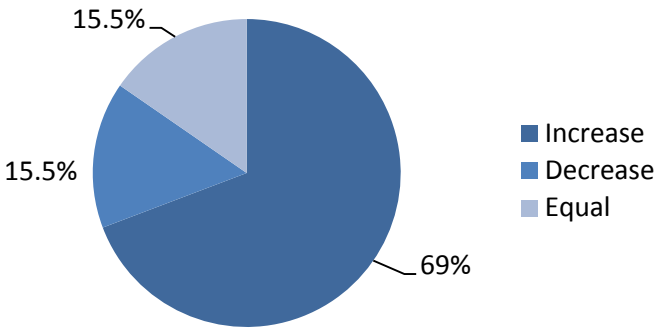
5.5.1 Vignette results

The approach for decisions in vignette 1 and vignette 2 (context of company turnaround) in comparison to vignette 3 (context of company stability) provided a base for understanding whether the context and decision environment related to heuristics being used. The scenario of vignette 3 aimed to replicate a stable familiar company environment. Stability was created by extending the budget significantly and not timing respondents. Familiarity was created by grounding the company in the scenario to the respondent's current company. There were three main areas that were investigated, namely purchasing information, use of heuristics and decision making approach.

A mix of purchasing approaches was used by respondents in vignette 3. As can be seen in Figure 11 below, 69% of respondents showed an increase in the number of criteria purchased from company turnaround to company stability. The decision to

purchase more information to make decisions in stability demonstrated that respondents were comfortable reaching decisions with a greater amount of information. This provided an early indication that purchasing habit and information required for decisions differed by context.

Figure 11: Criteria purchase trends from vignette 2 to vignette 3



Seemingly frugal decision makers exhibited either a decrease or equal number of criteria purchased. Respondents purchasing a limited and equal number of criteria in turnaround and stable scenarios indicated that there were decision makers who consistently purchased minimal information, regardless of the context. Respondent P4 and P6 exhibited this behaviour. It is also important to note that three respondents purchased the complete criteria available. Respondents P1, P3 and P7 exhibited this behaviour. When questioned on the reasoning, the combination of a larger budget, lack of time constraints and the comfort of the stable scenario to allow for risk and poor decisions were cited as common responses. As Respondent P7 and Respondent P3 respectively explain:

> *"I thought okay, I have got a big budget and I can take as much information as I require in order making the decision and also when you don't have cost issues and challenges like those you have got time on your hands".*

> *"Because I had all this money and I had all this time, to me it just made sense to say well look at everything".*

Seven of the respondents were noticed to have purchased but not used certain criteria in their decisions. They rather considered a few key criteria and non-negotiables, before anchoring their decision to these core criteria. This provides an indication that, in stable environments, decision makers tend to request more information than actually required to make their decision. As described by Respondent P2:

"Like the first one [criteria] for instance. I think the only one that I pulled extra that was not really necessary for me was the first one. I was happy with all the others".

It was observed that respondents who purchased large amounts of information expressed regret in their purchasing decisions and indicated that, should the decision be repeated, they would have purchased less and come to the same conclusion. Two examples of regret expressed were provided by Respondent P4 and P10 respectively:

"I could have bought less information; no I would have bought less information".

"Actually, I could have stopped there but when I looked at the other criteria, I was curious, if I go with this project what is the payback period".

There were no clear indications of one specific heuristic being used by all respondents in the vignette. However, there were indications of the Take-the-best, Satisficing and Recognition heuristic being used. A form of the Tallying heuristic was used by only Respondent P5 who indicated that criteria were "*balanced*".

For all the vignettes, it was clear that all thirteen respondents immersed themselves into the scenarios depicted and used the situation that the company was in to guide their selection of criteria. The respondents often echoed elements of the scenario in their justification for selecting certain criteria, their inferences, their assumptions and their eventual decision. The vignette depiction of a company in turnaround or a stable thriving environment was observed to influence the approach to decision making and the use of heuristic. Some indications of immersion and deep consideration for the environment were provided by Respondents P5, P7, P12 and P13 respectively:

"Quality is an issue if we're manufacturing electronic equipment, you want to get high quality first time right and a company that's in a turnaround has to get their scrap levels reduced, so you can't go and waste money on substandard quality items".

"The scenarios actually give you the basis of your decision making, your constraints or how do you say it, the situation of where you come from or where the company is".

"Because of where we are [the company in the vignette 3] I felt even if it fails later on I will be ok, but if it is great I will get my uniqueness. It's not a turnaround strategy that I have to deliver immediately on. If it was a turnaround strategy it would have been different. I would have gone with something safer and much higher on feasibility. Here I felt I could afford to take risk".

"You're in an economy that everything is going well so you go again for profits high, risk is very low, and the return on investment is also fairly high….when you're

in a thriving economy and everything is going well you will approach it a little differently than when you're in a struggling economy".

5.5.2 Uncertainty in company turnaround

Respondents were questioned on whether there was uncertainty in their current environment of turnaround and in what form they experienced it. The theme of uncertainty featured in responses across the semi-structured questions and vignettes, with respondents spending on average 8% (ranging from 5% to 13%) of their interview discussing uncertainty. This proved significant in comparison to other themes. There was indication from 92% of respondents that the turnaround created uncertainty in their company environment.

Table 10: Analysis of the "uncertainty" code by share of voice

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	TOTAL
Uncertainty	491	524	536	943	900	725	654	1106	425	376	692	852	695	8919
Accum. Wordcount	491	524	536	943	900	725	654	1106	425	376	692	852	695	8919
Total Wordcount	4548	6162	7514	8114	9239	9436	8480	10083	7289	7094	10212	6224	7384	101779
Relative Count (%)	10%	8%	7%	11%	9%	7%	7%	10%	5%	5%	6%	13%	9%	8%

Nine of the respondents indicated that there is a high level of uncertainty in their current operating environment. This uncertainty was explained to be caused by a myriad of factors loosely classified as internal and external to the environment of the respondents. Such expressions of uncertainty were emitted by Respondent P5, P6 and P8 respectively:

"It's complex, there's a lot of complexity out there, there's a lot of uncertainty now especially given the oil prices at $43".

"I think in our business we have high levels of uncertainty we are dealing in a very volatile environment with many parameters changing all the time".

"It sounds a bit cliché but the only certainty I have is the fact that there is this uncertainty".

The origins of uncertainty externally were predominantly expressed as macroeconomic forces. Adverse market conditions dominated the sources of external uncertainty featuring as fluctuating chemical commodity prices, lower for longer crude oil prices, customer and competitor unpredictability, industry cycles and economic instability. This was supplemented by political uncertainty in South Africa. Respondent P5 provided a glimpse of this uncertainty:

> *"I think every morning you wake up and we look at the oil prices and we think what's the next thing we going to have to do to save money, what's the net change we going to have to make to sustain this business".*

In the internal environment the major contributors to uncertainty were resultant of the recent restructuring and included: changed leadership, the new operating mode, job security, culture, unclear roles or responsibilities and structural uncertainty. Concern was also placed for uncertainty of the future, relating to unpredictability. Respondents P6 and P7 respectively noted several changes internally that impacted the decision making environment:

> *"It's a new business model, it's a new structure, it's a new system, it's a new business process so it is new to all of us and that inherently brings uncertainty because we all have to figure out how is this going to work".*

> *"Well internally of course, firstly your restructuring those changes, people just change their decision making mechanism because some people appeal to certain things and with the new operating model the decision making environment and the approved decision making authority is changed".*

Respondent P13 provided an example of the shift in people causing uncertainty in decision making due to the changes in decision makers and contributors to decisions within the company environment:

> *"I mean in these days the changing environment, the changing economy and the company going places, cause people to not remain for a long time in the same job. They move. So you have to adapt to that as well … In my current job, in my current scenario, I would say there is a very high level of uncertainty".*

An interesting observation made by four respondents identified that internal uncertainty is actually driven by external uncertainty. Respondent P3 indicated, *"now the external stuff is impacting the internal as it is, so it creates more uncertainty"*. This alludes to internal company changes being driven by uncertainty in their external environment. For example, adverse macroeconomic changes causing the company to enter turnaround and undergo a restructuring and thereby creating internal uncertainty.

Respondent P12 contrasted the dominant view of uncertainty sources by stating that our *"decision making has changed more as a result of changes in competition, governance and compliance".* This source of uncertainty can also cause companies to enter turnaround conditions with new competitors eroding the industry market share or extreme and unpredictable governance and compliance policies being instituted.

Seven of the respondents discussed the impact of uncertainty in their decisions. An interesting observation was that uncertainty creates doubt within the company decision makers during turnaround. As respondent P3 explains with reference to pricing:

> *"You start doubting your prices in the market partly because the customer is creating or instilling a lot of uncertainty".*

Respondent P4 expresses the complexity of multiple stakeholders and the difficulties during turnaround of attempting to satisfy all stakeholders. The impact of a new operating model created uncertainty and new ways of working within the organisation, hampering decision making and creating unclear priorities. It was found that the expectations of stakeholders changed and catering for those in decisions became challenging:

> *"There are multiple stakeholders, you have got customers; you have got internal stakeholders; you have got external stakeholders. I mean the decision that you make impacts many stakeholders so there is never 100% certainty".*

Given the appearance of uncertainty during turnarounds, six of the respondents suggested means to dealing with this in decisions being made. The respondents advised that uncertainty will be inherent in the current environment and for it to not impact decisions negatively one should accept uncertainty, become comfortable with it and build up a tolerance to it over time. As expressed by Respondent P7 and P8 respectively:

> *"Yes as I say the external environment is uncertain but most of the time you can't change it you can only understand it and you need to find ways to ensure that it can't totally change".*

> *"I would so you have to get comfortable with that uncertainty. Our company here is being part of it, we can't influence the oil price, you can't change the exchange rate … you realise you can't change this stuff, you can either get really worked up or frustrated about it or you find a way to move with it".*

Alternatively, one could try to remove or reduce uncertainty in the environment. Respondent P9 suggests decision makers should "*leverage knowledge sharing systems quite heavily*". However, this can often take time and effort, resources that are not in stark abundance during turnarounds. Respondent P5 illustrated this by stating:

> *"If you had to remove all uncertainty, you would probably take ten times as long to make a decision by which time things have changed again and there will be more uncertainty".*

Heuristics were seemingly useful to combat uncertainty. Due to the frugal nature, limited information required and speed employed, respondents indicated their suitability to the environment. Respondent P5 and P6 respectively explain:

> *"Uncertainty, the nature of the word says that you don't have all of the information, it is uncertain so go with your gut feeling".*

> *'…huge uncertainty and I made the call I said this is what we are going to do, we are going to take out the following grades, we are going to reduce the loading on the plant and we are going to become more reliable on fewer grades and simplify our mix. I had no idea how the market was going to respond".*

An overall high level of uncertainty was felt by the majority of respondents, with the minority of four respondents indicating a medium or low uncertainty. There were various driving forces behind the uncertainty mostly either internal or externally experienced. The common trend behind these forces of uncertainty was the turnaround situation. The event of company turnaround was expressed to be caused by uncertainty in the external environment, thereafter driving uncertainty internally within the company.

5.5.3 Accountability

Decision makers in the company under study indicated that accountability was an influencer of decision making in a changing environment. As the company moved from stability to turnaround, the decision making accountability also changed. Codes relating to accountability were mentioned 29 times across all the respondents. Respondent P13 captured the change as:

> *"In the past there was a committee that took accountability now it's more the individual you have to when you make a decision you have to take accountability for that decision".*

Respondents described the decision making landscape moving from group (collective) to individual accountability. This personal accountability for decisions has guided respondents to move away from the Imitate the majority and Imitate the successful heuristics, as was observed during the vignettes. Respondent P1 indicates:

> *"If you take our environment again, there was a time when you couldn't take an individual decision it was WE make the decision. And now we are YOU make the decision".*

Respondent P5 and Respondent P13 respectively explored the importance of personal accountability in decisions and the negative connotation behind using the Imitate the majority and Imitate the successful heuristics:

> *"I think that's important the buck stops with you in this vignette, it's not your mates have chosen it so you can hide behind what your fellow colleagues have chosen, you make the decision so you use the criteria that's important to you … there's no place to hide in management these days".*

> *"You take it into consideration [peer & expert opinion] but at the end of the day you have to make the decision because you have to implement it and do the explaining when it goes wrong".*

Respondents indicated that the introduction of organisational changes and new decision policies during the turnaround created difficulties in operational and tactical decision making. After these changes were implemented, there was a period of confusion. It was explained that even though the policies aimed to empower decision making, the opposite occurred. Certain managers indicated their ability to make quick decisions became thwarted by policy changes, making it harder to take personal accountability. As respondent P7, P9 and P10 explain respectively:

> *"With the new operating model the decision making environment and the approved decision making authority is changed".*

> *"I find that coming into the operational environment, it's difficult for people to take accountability for their decisions because of the organizational changes and the personal uncertainty that they experience in their environment".*

> *"Your manager approvals are required [for decisions] and there are more layers, so you have a delay in decision making".*

Respondent P10 explained that the intentions of the new operating model were actually contradicted and in some departments, created more bureaucracy in the decision process. This event in turnarounds can hamper heuristic usage:

> *"We found was that we actually had more committees. And this is what we were fighting against. We said guys, the objective of the new operating model was to empower us to make decisions but I find that we went the other way around".*

There is a negative impact of bureaucracy and red-tape on decision making appearing in the form of delays and reduced agility. During turnarounds, these internal processes can either enable or disable respondent's choices in using of heuristics. Respondents P5 and P9 respectively expressed disappointment with the policies in disabling agility:

> *"It became a very cumbersome business which eventually ends up in decision making that's extremely long, a lot of red tape and all sort of nonsense and that just talks about agility - you are not agile enough".*

> *"it's very difficult to get anyone to make a decision and commit to it in normal day to day operations, it is twice three times the amount of change management that required of lobbying of additional meetings with all stakeholders, it is taking a lot more".*

It was therefore observed that changes in the company environment can change the decision making mandate within a company. This mandate changes the decision making accountability which influences the process and time taken to make decisions in the organisation. Inevitably, these changes influence the heuristics choice of individuals and may negatively hamper the use of heuristics in totality.

5.5.4 Approach changes in turnarounds vs. stability

During the company turnaround there were several variables that were indicate to change, from the previous state of company stability, and proceed to influence approaches to decisions. Changing variables mentioned by respondents include: access to information, decision making time, uncertainty vs. predictability, fear, pressure, comfort level. Within the decision context and environment of turnaround, the respondents explained how these variables different and influenced their decision making.

A mixed approach was observed from the vignettes when examining the respondent's decision making behaviour. It was noted that certain decision makers applied a consistent frugal approach throughout with justified reasons for their selection of few criteria's, whilst others took advantage of the more opulent budgets in the stable company scenarios.

Eleven of the respondents confirmed that their approach to decision making changes with changes in the company environment. Respondents P1, P5, P6 and P7 respectively confirm this in their responses:

> *"So there has been a change in how we are influenced and effected how we make the decision".*

> *"I think when the company made buckets load of money I think some decisions were made easier and we were more open to taking risks. Whereas now obviously the money is not as freely available and you really have to get sufficient information".*

"It is a yoyo affect, so decisions and our approach changes quite a lot I suppose maybe it is human nature when there is more profit we spend more".

"It changes based on your vantage point and where you are in the state of the company, profitability and external and internal environment".

5.5.4.1 Time

Decision time was a powerful variable that was apparent to change from company conditions of stability and certainty to turnaround and uncertainty. Twelve respondents indicated the change, importance and pressure associated with time as codes for this theme. Turnarounds were frequently associated with periods of crisis by respondents. Rational decision making was expressed to be unsuitable for turnarounds since *"in a crisis there is no time to go and run stats and check stats"* as explained by Respondent 4.

Respondent P10 illustrates an example to illustrate pressure in turnaround prompting the successful use of experience based heuristics:

"A classic example is working capital, when we were stable, there was no pressure. But now, because we are in a squeeze position we challenge our assumptions. We have moved to a five day position. People ask us how we arrived at the five days. We didn't do too much analysis paralysis, proper calculations or take many things into considerations".

Further to this, Respondent P10 indicates that time is influenced by changes in the environment that creep into the organisation, inevitably causing a change in decision making approach to match the change in the environment:

"I think in the beginning you had time on your side. Now you have to make more informed quicker decisions because everything around you like the economy, the government, everything, has changed so radically. It is more unstable than it used to be if I can call it that; unstable or unpredictable".

Company conditions of stability were expressed to have an excess of time for decision making that caused decision makers to relax and employ rational decision making, often to their detriment. The responses refer to heuristics being more useful in these conditions. Respondent P5 and P9 explain:

"In times of crisis and times of difficulties we are often too critical in our decision making process, we take too long to make decisions because we had way too many criteria".

"What I find is sometimes we make the mistake, we spend too much money too early on and then we actually waste money in a sense".

An observation made by Respondent P3, when questioned on repeating the decision in turnaround, acknowledged the requirement for quick decisions in conditions of turnaround and uncertainty. The guiding approach of gut feel was intended to be the means of achieving quicker decisions:

> *"So yes I would most probably make a decision quicker, most probably make a decision based on gut feel, but there's also some method in that madness in the sense that I would guestimate and then based on that make a decision".*

5.5.4.2 Usage of Information

In times of stability respondents noted that there is often an abundance of information and that usage of information is might higher. Information was understood to hold costs of time and money, with these resources being more accessible during conditions of company stability. During turnarounds however, the amount of information available, given time and monetary constraints, is far less.

There were mixed views on the amount of information required to be comfortable in decisions during turnaround. However, the trend of limited information in turnarounds resulting in a changed approach was confirmed by the majority of respondents. This contextual impact of turnarounds on decision making approach was confirmed. Respondent P3 supports this as:

> *"You will alter it [decision approach] as you've got less information, so in a changing environment you might have a situation where you've haven't got all the information that you need".*

Some respondents expressed the negative effects of abundant information in decision making, implying that too much information detracts from the speed of the decision and often creates unnecessary confusion. Respondents P6, P7 and P10 respectively explain this:

> *"You can drown yourself in information and you can go into analysis paralysis and you can actually cloud the whole thing so I mean it did say here that the industry is fairly predictable, we are making money and there is very little deviation from focus and expectations".*

> *"If you have too much information it also confuses the decision that doesn't mean that you would Take-the-best decision by having too much information".*

> *"In a stable environment you will use them less [heuristics]. There is too much analysis paralysis. But if there is this uncertainty and you are chasing for those Rands and cents, yes you are going to use them lots".*

This lack of information extended to a promotion for "*good enough decisions*" in company turnaround. Respondents appreciated that in a turnaround, with a lack of information, they were not able to make the extremely accurate decisions made with abundant information in past stable company environments. Instead, they settled for decisions that were good enough. An explanation that in times of crisis, it would be more beneficial to finally make a decision (although not optimal) as opposed to deferring the decision, which would be more costly to the company. Good enough decisions are aligned to heuristics which seek to use limited resources to make quick and sometimes non-optimal decisions, sacrificing minor advances in accuracy for speed. Respondents P3 and P13 respectively express this sentiment:

> *"It might not be 100%, but it might be good enough, sometimes one has to build that into it because sometimes it is good enough".*

> *"in a crisis you have to make quick decisions which is not always fit for purpose decision but it's close to where you want to be I mean so can you ever be sure can one ever be sure the decision that you made is one hundred percent correct at the time of making the decision I don't think so".*

Conclusion: *Does the company context and decision environment relate to the use of heuristics?*

The company context and decision environment was found to have an influence on decision maker's use of heuristics. The vignettes provided a comparison of decision making in turnaround and stable scenarios. It was found that 69% of respondents increased their information purchased from turnaround to stable decision contexts. The majority response attributed this to stable scenarios containing larger budgets, lack of time constraints, a higher level of comfort and the environment allowing for recovery from poor decision outcomes.

Many responses attributed the uncertainty in turnarounds to forces originating in the external environment (negative macroeconomic conditions, commodity cycles, competitor and customer unpredictability, and political instability) thereafter driving uncertainty internal to the company (restructuring, changing operating model, leadership change, role uncertainty and culture changes). These forces create uncertainty in decision making, providing ideal conditions for heuristics. A great means for dealing with uncertainty was noted as accepting uncertainty and building a tolerance for it over time. Once accepted, rational decision approaches can be substituted with heuristic decision making.

Major contributors of decision approach changes in the two contrasting environments (stability and turnaround) were time and information. These decision context attributes were expressed by respondents to change with company environment, and inevitably guide the decision approach. Heuristics was understood to be more effective in turnarounds than stable company conditions based on the extent these attributes appeared in the respective environments. However, certain respondents indicated the need for frugal heuristic decision making to continue even in stable thriving company conditions, post-turnaround.

5.6 Research Question 3 Results

What motivates the use of certain heuristics by managers in environments of company turnaround?

5.6.1 Heuristic factors (direct)

During the interviews, respondents were questioned on what factors motivate the use of heuristics in their current environment. A variety of codes associated with heuristic motivators were identified, as seen in Table 11 below. Re-occurring codes over many respondents provide strong indications for how prominent these factors are to managers in the company. Some of these motivators will be explored further.

Table 11: Heuristic motivators coding results

Heuristics Factor	Code Reoccurrence	Number of Respondents	Ideal conditions for Heuristic use
Risk	7	6	Low risk
Comfort Level	5	5	High comfort
Decision Impact	5	5	Low impact
Urgency	5	3	High urgency
Decision Horizon	4	4	Short term decisions
Experience	4	4	Past experience
Familiarity	4	4	High familiarity
Information Availability	4	4	Limited information
Pressure	3	3	High pressure
Strategic importance	3	3	Non-strategic
Time	3	2	Limited time
Uncertainty	2	2	High uncertainty

Respondents indicated that their use of heuristics was situational, with factors defining the situation sometimes providing the stimulus for application of shortcuts. A prominent factor among respondents was the risk associated to the decision required. High risk decisions were less likely to feature a use of heuristics than low risk decisions. Decision attributes of low risk and the variable of riskiness in the decision contributed to the use of heuristics. Respondent P3 explains:

> *"It depends on how risky the decision is, because if it is high risk I would not do it [use heuristics], if it's a low risk I'll take my chances sometimes and therefore make a very spur of the moment type of decision".*

Comfort level was expressed as a feeling that individuals would require for heuristics to be used. It was expressed that decision makers would need to be comfortable with aspects of the decision, the risks and consequences involved. This is closely related to familiarity with the decision. Respondents more familiar with the decisions, from past similar and successful decisions, would be more likely to employ heuristics in their approach. As Respondent P10 explains this by:

> *"Where I have experience I can easily use them [heuristics]. Experience is also a motivating factor. It may be difficult in unfamiliar environments because I don't know what the repercussions are. I may do use too much analysis with those".*

Decision impact and urgency featured highly amongst respondents, mentioned by five and three respondents respectively. It was observed that low impact decisions created a preferred environment for heuristics use than decisions featuring high impact. This outcome indicates that some respondents are still apprehensive towards heuristics. They also acknowledge that a level of inaccuracy is coupled to the benefits of heuristics, which may amplify the negative consequences of high impact decisions. Urgent decisions and decisions under high pressure are two interrelated factors that respondents suggested would prove suitable for heuristics. Pressure can appear in the form of "*time or cost constraints"* as indicated by Respondent P3. Having pressure limits the amount of time for decision making, which is where heuristics are advantageous over rational decision approaches. Respondent P3 explains this as:

> *"It's pressure most of the time I would think [motivating heuristics], the time that you have to make such a decision. I am sometimes a procrastinator that needs to look over things over and over again without making decisions, sometimes you have to take that out of the equation [by using heuristics]".*

A finding of interest was noticed when Respondent P3 indicated the benefits of pressure to decision making, suggesting that decisions should contain pressure to be

more effective, "*we must sometimes do that more often and put a lot more people under that pressure to make a quick decision, we just sometimes take forever to make decisions".*

The strategic importance and decision horizon of the decision is another pair of factors that featured in responses. It was found that respondents preferred not to use heuristics for strategic, long term decisions and rather favoured utilizing them for operational short term decisions. Respondent 12 explains alludes to this:

> *"Not all decisions are the same. Some are very operational. And that's quick quick. That requires shortcuts. You do it and then you write the paper about it. And other decisions are much longer, have much longer bigger consequences and impact of the decision. Based on that you tend to allocate time and resources".*

Lastly, the amount of information available played a role in respondents deciding to use heuristics. Decisions containing limited but sufficient information were found to be more suited to heuristics. The inverse, decisions containing abundant information, are likely to be more prone to rational decisions. Respondent P5 explains that the conditions of uncertainty, volatility and incomplete information are befitting of heuristics:

> *"When information is incomplete and the situation for which I am making a decision is uncertain and volatile I think those are the factors that lead to making shortcut decisions."*

In addition to the decision situation factors explored above, it was also observed that there are certain personality approaches that promote or detract from the use of heuristics in decisions. Personality traits were coupled with the decision risk factor. Respondent P4 indicated that risk averse individuals would likely opt for more rational decision tools than risk-taking individuals, "*risk adverse people would generally want to confirm their thinking and make sure all the I's are dotted and the T's are crossed".* Respondent P13 accepted that not all decisions can be made using rational optimal seeking approaches, indicating that in order to continue utilizing heuristics in higher risk decisions, one would have to reduce the level of risk by conducting a risk analysis:

> *"That's where you can look at the risk analysis you have to determine the risk, the risk associated with that decision. I mean in any decision can you be one hundred percent sure that is the right decision".*

5.6.2 Organisational influences (indirect)

Within the organisation there were facets inherent to the environment and company makeup that were observed to influence the use of heuristics by managers. These influencing elements comprise of the perception of heuristics, organisational decision making approach, the leadership personality, uncertainty and organisational culture.

5.6.2.1 Perception of heuristics

In the company under study, the managerial layer perception of heuristics was understood through the responses of the managers interviewed. An individual's negative perception of heuristics was indicated to be quite dangerous and hamper the future use or promotion of heuristics within the organisation. From the responses provided, it was observed that perception is predominantly driven by heuristic outcome. A negative perception of heuristics was indicated by respondents to be created by unsuccessful outcomes caused by, amongst others, forced heuristics, irresponsible use, and a false sense of heuristic ability. Respondent P9 and P7 respectively explain this as:

> *"Sometimes we are irresponsible. I think when you are very experienced or at a very high level, sometimes maybe you have a false sense of knowledge or heuristic ability".*

> *"People create their own pressure situations. And now that it is crunch, time you have to make it. But most of the time you know what is coming you can be proactive and plan accordingly".*

In contrast, the correct use of heuristics, with a backing of historically successful outcomes, can motivate future use within the organisation of teams. Respondent P3 expresses this sentiment in his continued, frequent and successful use of heuristics:

> *"When I have been following my gut, I have been right more times than I have been wrong, so that's why for me gut feel is important in a situation where there is uncertainty or where there is not a lot of information available, you've got to make a decision, so what do you base it on then and then we've got to rely on your sixth sense really".*

5.6.2.2 Consultative approach and policies

The organisational approach to consultation can impact the use of heuristics. Respondents warned against the consultative nature prevalent in the leadership of the company. External and internal consultation was provided as a decision making approach that would impede the use of heuristics. Some respondents indicated that

their decisions involved an initial use of heuristics, followed by a consultative approach, often arriving at the same conclusion as their initial heuristic outcome.

Eight respondents displayed great negativity in the companies continued use of external consultants in the decision making process. This decision making process takes time, is less agile and creates a sense of distrust or low confidence of internal capabilities within the organisation. Respondent P1 and P4 respectively express this sentiment:

> *"The consultants have still got to consult 20 other people before they can actually give you a proposal whereas based on the gut or experience you will know sooner".*

> *"I hate consultants to be honest with you because you pay consultants to come and tell you what you already know".*

However, it was observed that internal consultation, between peers, teams and subject matter experts, was an effective use of consultation and often used as an additional resource for information, especially important in limited information or ambiguous decision environments. Respondents P5 and P12 respectively explain:

> *"So I use the information at hand and I try and get some additional information, I would consult from time to time with, let's call them knowledgeable people, that understand the situation as well as getting some consensus from one or two of my peers".*

> *"I bounce it off people. But as long as I get a landing. We can't debate something forever. Time is important. You can suss out when you can take the decision. If you have time, use it. Use the time wisely".*

5.6.2.3 Organisational culture

An emergent theme was that of culture which respondents indicated affects the decision making approach and use of heuristics. Given responses on the current organisational turnaround and recent restructuring, it was observed that the company culture is currently in a state of flux. Key codes of trust and culture co-occurred across the collective interviews. A lack of trust filters into decision making approaches. In particular, it was understood to hinder the use of heuristics in managerial decisions. Additionally, if the organisational culture is not one that fosters a safe environment for mistakes and learning, it will prevent heuristics from being employed by decision makers. This is especially true for in-experienced managers who are in the process of building heuristics: Respondent P4 and P8 respectively describe the cultural influence within the organisation:

> *"But that's a cultural difference, culture kind of punishes people that makes mistakes and nobody wants to do that so everybody wants to consult and run models and check everything, make sure that everything is but in any business there is no 100%".*

> *"The company itself has gone through an identity shift, what is the next identity going to be, is it going to be the that company that families work at, it is generational almost in the changes … it's a loss of familiarity that people are battling with".*

Due to the current state of cost containment in the turnaround, company culture was also found to impose that there always has to be long term financial benefit even for the menial short term decisions. This was found to detract decision makers from using heuristics in certain instances, as explained by Respondent P4:

> *"In our business you can't say it is fine in the short time you lose a little bit of money but in the long term, well the long term we will all be dead so no, our company wants it both ways short term and long term. There isn't a high tolerance".*

Emotional uncertainty in the organisation can hamper the use of heuristics. Respondent P2 expressed the drawbacks of *"emotional decision making"* and we can infer that should heuristics be used unsuccessfully during this state, it could prevent future use and taint this decision making approach for the individual in question:

> *"If you are very emotional about your work or business. They don't want to let go. They are so attached. You have to be in a position where there is no emotional thinking and are objective. Emotional baggage can prevent you from good decision making … What I've seen in my history at the company is that the internal guys will have little information to make a call. But we don't trust our people and in this state we are going to bring a consultant to tell us what to do".*

5.6.3 Heuristics development

Throughout the interviews it was understood that the company's efforts (or lack thereof) to create an environment enabling heuristic development will provide motives for future use by managers. Respondents indicated some ways that the company could promote heuristics development, thereby encouraging their use.

There were five respondents that contributed to the idea of developing heuristics through learning from mistakes. The current perception was that the company does not foster this development as there is a feeling that there will be harsh repercussions for poor decision outcomes. Respondents indicated that mistakes are bound to occur in unfamiliar areas during a state of turnaround uncertainty; however, by learning from

mistakes we can build better, more informed heuristics. Respondents P5 and P12 respectively capture these sentiments in their responses:

> *"Sometimes you are going to make mistakes because you haven't got all the information that's fine, so you learn from it you go forward".*

> *"In your job you are going to make mistakes. If you are not allowed to make mistakes you are never going to learn. You are always going to take directions from someone and that person is going to get all the learning's".*

A combined approach of reviewing, challenging and adjusting assumptions or heuristic rules was indicated frequently by seven respondents. This process was suggested to ensure heuristics are refined over time. Using the same heuristic, with continuous negative outcomes is seen as counter-productive to development. Reviewing and adjusting to correct negative outcomes to positive creates true value to heuristic development and promotes future use. Respondent P2 explains this process:

> *"All the assumptions that you have built up is actually fading now. But you also need to learn from your mistake. If you make the same mistake over and over, somewhere one of your assumptions is so skew and you better correct it so it doesn't negatively influence your decisions".*

The importance of decision-rule self-awareness and objective decision making was also mentioned as a contribution to heuristic development by Respondent P9 and P10 respectively. By being aware of your personal heuristics and being objective in the decision process will help further development of personal heuristics:

> *"Heuristics is a word that I think should bring about being more conscious of what your base of decision making is. Like internal self-consciousness, then knowing your set of heuristics that's available. I think it's probably worth it for people to just understand how they making their decisions".*

> *"Surprisingly, when I saw the managers and expert opinions, I said I don't want to be contaminated in my mind. Let me apply my rules".*

Lastly, respondents mentioned that there should be an astute openness to learning from others. Some respondents indicated that using others as a decision resource is important in contexts of limited available information. Learning's from others can also help build new heuristics or refine existing heuristics faster than continuous self-application. Respondent P7 maintains that "*you can learn it [heuristics] through other people*". Respondent P12 suggested a learning register as a tool for widening and expediting the development:

> *"I instil a learning register here. I told the guys to note decisions they make and let's share it with the rest of the team. It might be applicable to other departments as well. We always tend to focus on the negative decisions. But when things go well it is just as important to unpack it and understand why it went so well. What were the different thinking's that went in there? And you can use that later".*

The context of stability versus turnaround was also indicated to impact the level of heuristic development, inevitably influencing the motive for use. Respondent P12 explains this phenomenon:

> *"When things are good you tend to learn less. Because you jump on the band wagon and it's a consultative decision making. Everybody wants to support each other and every one feels good. In a crisis you get the cream rising to the top".*

Conclusion: Heuristic motivators observed from managerial responses included factors of risk, comfort level, decision impact, urgency, decision horizon, experience, familiarity, information availability, pressure, strategic importance, time and uncertainty. These motivating factors were situational based and most were provided in a decision environment example, each containing an ideal condition for heuristic use.

In addition, organisational influences of individual perception of heuristics, company driven consultative approaches and decision making policies, and organisational culture were found to promote or detract from the use of heuristics by the managerial layer. The development, or lack thereof, of heuristics by managers was also found to motivate their use in decisions. A company environment promoting learning from mistakes and experiential decision making could expedite the building, reviewing and refining of decision rules, core to heuristics. In contrast, companies that repress heuristic development and view them under a negative connotation can stifle future successful use.

CHAPTER 6: DISCUSSION

6.1 Introduction

In the preceding chapters, the quasi experimental and exploratory qualitative approach was discussed and conducted through vignettes and semi-structured interviews with the 13 managerial decision makers, within a petrochemical company in South Africa. The results were presented in Chapter 5. The aim of Chapter 6 is to review the results through the lens of theory and discuss agreements, contradictions and contributions between observed results and literature presented in Chapter 2, to address the research objectives and research questions of the study (Chapter 1 and Chapter 3 respectively).

6.2 Discussion of Research Question 1

Which heuristics are most prevalently used by managers during a state of turnaround and uncertainty?

There has been implied association between heuristics and uncertainty in previous studies (Francis & Desai, 2005; Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014; Trahms et al., 2013). Literature implies that certain heuristics are apt for combatting environments of uncertainty (Mousavi & Gigerenzer, 2014). The question remains whether company turnaround can be successfully linked to uncertainty, and with it, the suitability of heuristics. In particular, it remains unanswered, directly in literature, whether certain heuristics are more prevalent in turnarounds than others.

6.2.1 Testing for heuristics

An integrated method of vignette scenarios, seeking for information and tracking of decision moves, was designed by the researcher to detect heuristics being employed under various decision environments. Respondents were introduced to three vignettes, differing in company scenario, and asked to peel away concealed information to distinguish between alternatives (different customers, suppliers and projects). After making their decision, respondents were requested to elaborate on their approach followed, reasoning behind selection of criteria (information) and their stopping rules for purchasing information. In addition, the decision constraints of time pressure and cost constraints were respectively introduced through timed scenarios and defined budgets for information purchase. This designed method, although built on core elements from

previous research (Albar & Jetter, 2013; Bauer et al., 2013; Newell et al., 2003), varied from the quantitative mainstream computer aided experiments in the methods qualitative approach .

The objectives of the study required a deeper understanding into the reasoning and approaches behind heuristic decision making, justifying a rich qualitative study opposed to a quantitative study. The benefits of the computerized experimental approach, namely robust analysis, correlation or relationship finding, and narrow scope of study, were unable to be fully replicated with the design for this study. However, post-interview coding using Atlas.ti did provide an element of correlation and relationship finding through analysis in a methodical manner.

Tabulated results of the vignette decision selection and criteria choices (Table 8) were able to monitor the amount of information being purchased and time taken for decisions differing decision environments. Future use of this approach could be applied to other decision environments to test information use and time required by respondents. The type of decision requested could also be extended beyond the types employed in this study, i.e. unfamiliar turnaround, familiar turnaround and familiar stability.

It is postulated that the designed approach for testing heuristics in managerial decision making will contribute to literature and future studies.

6.2.2 Identification of specific fast and frugal heuristics

As expressed in Chapter 5, some fast and frugal heuristics under study were observed to be used by managers during the turnaround context, although these were not found to be mutually exclusive during the vignette results. This indicated that no single fast and frugal heuristic was dominant in use by all respondents during a particular context (turnaround or stability). However, what was evident (from the vignette results and semi-structured interviews) was the greater use of fast and frugal heuristics during times of turnaround in contrast to times of stability.

Three heuristics stood out in their application by the sample of managers, namely Take-the-best, Satisficing and Recognition. The Tallying heuristic was observed to be minimally used and featured two uses across all respondents in the three vignettes, proving insignificant to interpretation of results. The remaining heuristics included in testing were unobserved and was accepted as unused in decision making by managers during the conditions set by the study.

Application of the Take-the-best heuristic was observed through respondents using a combined ranking system for criteria and alternatives, with purchase of additional information to distinguish between perceived tied alternatives. Aligning to Albar and Jetter (2009), the respondents who displayed use of this heuristic stopped requesting or using information once they were able to discriminate between alternatives. An interesting adaptation of this heuristic was found in the method of ranking criteria. Most respondents ignored the cue validity and rather used experience to rank and select available criteria, thereby contrasting the cue validity related search rules found in literature (Artinger et al., 2014; Gigerenzer & Gaissmaier, 2011). Some respondents were found to use the cue validities as a secondary check. This is likely due to the deeper reliance on experience during times of turnaround. The stopping and decision rules were found to agree with literature. In experiments conducted by Gigerenzer and Gaissmaier (2011), an average of three criteria were tested before making a decision. The current study is close to alignment with this past study, revealing that an average of four criteria were used for the familiar turnaround scenario.

Respondents displayed the Satisficing heuristic by accepting non-optimal, but sufficient decision making accuracy. Special mention was made by many respondents of a threshold that resided in memory for criteria. Use of this threshold was evident in final selection of alternatives. The identification and description by respondents is in agreement with the Satisficing heuristic core building blocks, as described by Artinger et al. (2014). The adjustable or fixed aspiration level was observed to be based on respondents past experience. The acknowledged trade-off between decision time and decision accuracy in turnaround is observed by both the current study and literature when application of the satisficing heuristic is considered (Artinger et al., 2014).

The Recognition heuristic was applied by several respondents. However, in contrast to the identifiers described by Artinger et al. (2014), there was more than one criteria used to inform respondents decisions. Some elements were recognizable from the respondents past and, as asserted by Gigerenzer and Gaissmaier (2011), respondents decided to ignore contradictory criteria. The Recognition heuristic was also observed in the stable scenario (vignette 3), although far more prevalently in vignette 1 and vignette 2, depicting a turnaround situation (Table 9). There was a clear higher usage during unfamiliar turnaround environments. One wonders whether this is due to additional uncertainty that respondents may have experienced in unfamiliar company and decision conditions, as depicted by the scenario from vignette 1.

The remaining fast and frugal heuristics that were unobserved included: F&F decision trees, Tallying, Similarity, Imitate the successful and Imitate the majority. Contrary to literature illustrating their use and effectiveness, these heuristics were not found in respondents approaches to decisions during the three scenarios or semi-structured open questions based in the respondents current operating environment (Artinger et al., 2014; Gigerenzer, 2008; Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014). No observations of decision trees were found in rough work during vignettes or explanations by respondents during their open question responses. Although respondents acknowledged awareness of expert and peer opinions, the two related heuristics (Imitate the successful and Imitate the majority) were never used as the primary heuristics in their decisions. This is potentially due to turnaround environments conflicting with various conditions of their use, most notably (a) environment slowly or not changing and (b) learning is slow for the Imitate the majority and Imitate the successful heuristic respectively (Gigerenzer, 2008).

A general observation from most respondents was the noticeable strategy to purchase less information and rather infer information from fewer criteria. This aligns to the broad intention behind fast and frugal approaches, specifically in the less-can-be-more philosophy explained by Artinger et al. (2014). This method was expressed by respondents to address the time and information cost pressures in their turnaround environments. The observation agrees with Artinger et al. (2014) and promotes the use of the fast and frugal heuristic toolbox for turnaround situations. The observation that respondents chose to ignore most information, rely on experience and intuition, and focus their decision on a few key information is supportive of the views expressed by Mousavi and Gigerenzer (2014) in literature. The frugality of purchasing less information was additionally supported by feelings of regret in purchasing “too much” information by some respondents during the turnaround scenarios. Respondents varied in their level of cost consciousness. One wonders if the frugal value of money is a personal characteristic that is built within organisations under turnaround, and stimulates cost conservative heuristic-based approaches to decisions.

6.2.3 Application of decision rules in turnarounds

In the qualitative assessment and elaboration of the respondent’s decision approach, an outstanding theme was the use of rules in their decision making during turnaround environments. In the pyramid of decision making approaches (Figure 5) established by Schoemaker and Russo (1993), *rules and shortcuts* form a second tier decision approach and are the foundation of heuristics. As explained by Schoemaker and Russo

(1993), the use of these rules implies that there is conscious application to decisions (opposed to *intuition*), indicating that managers are deciding to use rules over intuition, benefiting the increased quality and clarity associated with heuristics. The application of decision rules in turnarounds is supportive of Mousavi and Gigerenzer (2014) who imply that there may be a reliance on rules in environments containing uncertainty, over more rational decision making techniques, due to benefits of reduced time and reduced information usage.

Several examples of rules were noticeable from respondents, and on a high level there were commonalities between respondents. The most notable being key criteria rules-based on experience, rules to filter decisions and established business rules as decision rules.

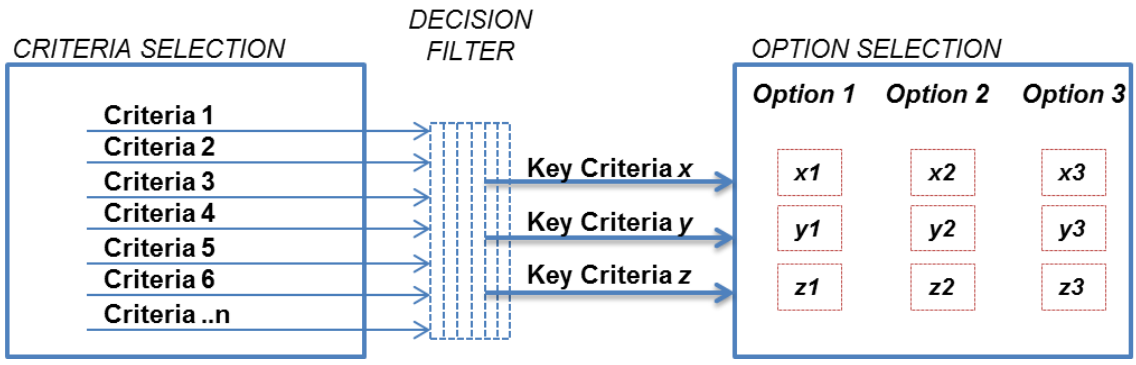
Multiple respondents were observed to use the rule of selecting a few key or non-negotiable criteria, and thereafter subjecting or anchoring the remaining decision to these criteria when distinguishing between alternatives and the criteria values. An example is the event of respondents being satisfied with low non-key criteria values but only accepting their decision (selected alternative/option) based high key criteria values.

The dominant use of experience in creating decision making rules was noticed throughout interviews. Respondents relied on their experience to assimilate decision environments to past decisions. During the vignettes, respondents often cited situations from their past that informed their selection of criteria to aid heuristics formed and empower quick decisions. The experience based rules utilized ranged from formal (such as Pareto) to informal. This provides a bridge to the indication by Albar and Jetter (2009) who assert that cognitive models, built on experience, allow individuals to recognise similarity between new and past experienced situations. The importance of recalling past decisions from memory to navigate turnarounds is emphasised by the study and literature.

An interesting observation was the use of heuristics as a filtering system in which respondents pass decisions through. This has not been covered explicitly by literature yet provides a key adapted use of heuristics when making decisions in turnaround. It was indicated that these *filters*, built by respondents, are refined over time to effectively process the decision and select only the key criteria relevant to the decision based on rules generated through past successful decisions. The filter reduces a multitude of criteria to a few key non-negotiable criteria from which alternatives or options are able to be differentiated. An illustration of this filter, understood by responses and

synthesized by the researcher, can be seen in Figure 12 below. The concept of a filtering system is akin to the description of heuristics that Gigerenzer (2008) provides, referring to their ability to sift through noise and ignore some information.

Figure 12: Illustration of rules-based decision filter



Source: Authors own

One respondent provided an interesting example of how heuristics have been formalised and documented into company business rules during the 2016 petroleum sector strike. This was understood as an efficient way to expedite lengthy experience and testing to arrive at a refined heuristic. As indicated by Velez-Castrillon and Angert (2015), turnarounds are likely to involve a high churn of employees which may leave a company with inexperienced decision makers. By creating business rules of tried and tested heuristics, one could seek to accelerate learning, reduce decision duration and increase likelihood of positive outcomes for inexperienced decision mistakes.

6.2.4 Blended approach to decision making

The approach respondents take towards decisions currently being made in their company environment of turnaround, varied between rational and cognitive styles. Nearly half the respondents indicated their preference towards a balanced approach to decision making during turnarounds. In agreement to this is the view by Mousavi and Gigerenzer (2014) who maintain that intelligent decision makers will use heuristics in conjunction with rational methods to reduce error and bias, inevitably striking a balance in their decision approach. Under ideal conditions, rational styles were preferred due to their robustness and accuracy. However, given the constraints of time, cost and information during company turnaround, respondents acknowledged their greater reliance on cognitive styles, in particular heuristics.

In agreement with literature, respondents noted that rational styles were unable to match heuristics during turnaround pressure and scarce information conditions

(Mousavi & Gigerenzer, 2014). Given the availability of some decision resources, respondents would pursue a balanced approach to leverage the benefits of both rational and cognitive decision making. These preferences observed by managers under study defy dated literature on decision making that focus predominantly on rational approaches being the dominant preferred decision theory as indicated by Goldfarb et al. (2012). This justifies a need for a future research focus on cognitive decision theory to address current shifts in preferences.

A crucial factor guiding respondents' approach to decisions was the level of information deemed acceptable for the decision. There was an illustrated need for sufficient information to reach a level of comfort in the decision process. As noticed in the turnaround situation vignettes, no respondents purchased the full range of information available to them. For the respondents interviewed, sufficient information lay at nearly half the information available. Schoemaker and Russo (1993) maintain that although heuristics are better than intuition, they would not provide optimal results as they do not take all information into account. A blended approach during turnaround would likely provide a more accurate solution than purely heuristic at the expense of requiring more information.

In the absence of time and information, respondents acknowledged the acceptance of "satisfactory solutions" and having to forgo their preferred rational or blended approach for a purely heuristic-based approach. Some respondents explored the notion of an optimal point when trading off decision resources and decision accuracy which, once passed, provides incremental improvements in decision accuracy for large amounts resources (time, cost and information). This is supportive of the view that it is acceptable to sacrifice minor accuracy for simpler, faster, and less expensive decision making methods (Albar & Jetter, 2009).

Respondents supported the blended approach to decisions in turnaround with a caution of the dangers introduced by purely heuristic decisions, if used incorrectly. The variable of experience once again features as an important attribute to successful heuristic use. If inexperienced respondents are to use a purely heuristic-based approach there may be negative consequences due to low maturity or incorrect selection of the heuristic being used. This is supported by the views of previous research that indicate pitfalls due to bias, inexperience, incorrect selection and over confidence of purely heuristic decision making (Garbuio et al., 2015; Kokinov & Raeva, 2006; Maitland & Sammartino, 2015; Mousavi & Gigerenzer, 2014). As supported by Albar and Jetter (2009), having a blended approach to decision making allows for

correcting the deficiencies of cognitive approaches (lack of mathematical prowess) and rational approaches (limited cognitive capabilities).

Conclusion Research Question 1:

From the study conducted there were three heuristics largely observed to be used by managers during turnarounds, namely Take-the-best, Satisficing and Recognition. These heuristics were found to be used in varying degrees by managerial decision makers. The remaining fast and frugal heuristics were undetected in the study. No single fast and frugal heuristic was found to be dominant during turnarounds with some respondents even using a combination of the heuristics. However, what was found was the greater use of heuristics in turnaround than in stability.

The overall consensus from the vignettes found that managerial decision makers use elements of fast and frugal heuristics in their decisions during the company turnaround context by using or purchasing less information. Many managers employed the use of conscious decision rules to make their decisions, which provided an indication of heuristic use. A finding of particular interest was the use of heuristics as a decision filter for quick decisions using minimal information in turnarounds. Purely heuristic-based approaches to decisions were found to contain advantages when applied in turnaround environments. However, what was understood from managers is that a blended approach of heuristics and rational (analytics) is the preferred approach to decision making, given the provision of information and time.

This concludes that Research Question 1 was resolved and the research objective was met.

6.3 Discussion of Research Question 2

Does the company context and decision environment relate to the use of heuristics?

As acknowledged by past literature, a connection exists between decision making approaches and structural elements in the decision environment. In relation to heuristics, past research has indicated that managers contain an adaptive toolbox allowing managers to select the right heuristic for the appropriate decision (Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014). However, what remains unanswered is whether company specific contexts dictate the use of heuristics and what structural elements cause changes in company environments to stimulate the use of heuristics. Do managers adapt or perceive to adapt their cognitive resources in the

decision making process to the turnaround context differently to the context of company stability (Maitland & Sammartino, 2015)?

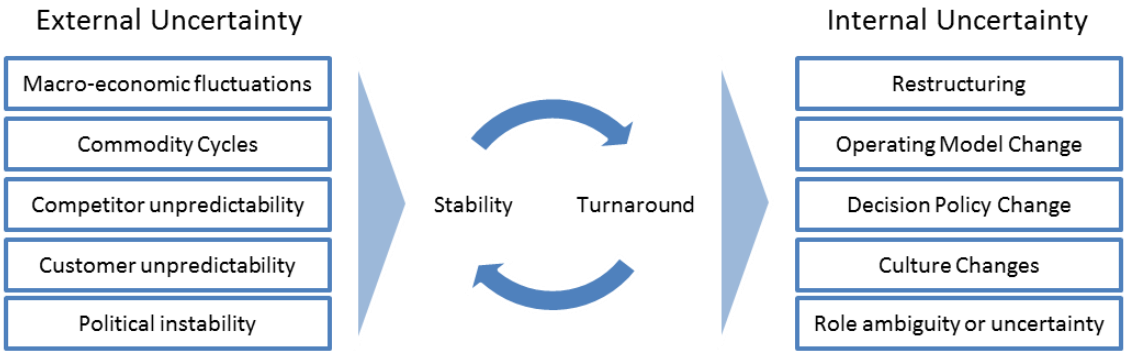
6.3.1 Uncertainty originating in turnarounds

The majority of respondents (nine in total) indicated a high level of uncertainty in their current environment during company turnaround. Results indicated that turnarounds breed uncertainty in the decision environment that managerial decisions occur within. In addition, respondents expressed that both internal and external forces contribute to decision making uncertainty. This sentiment is echoed by Trahms et al. (2013) who describe the performance decline in turnarounds to be caused by internal and/or external factors.

External forces featured as negative macroeconomic and political disturbances (fluctuating oil price and commodity prices) were in agreement to those provided by Trahms et al. (2013) and Horney et al. (2010), reiterating the need for organisations to focus efforts internally while interacting symbiotically with their external environment during a turnaround. Internal forces of uncertainty noted by respondents included: changed leadership, the new operating mode, job security, culture, unclear roles or responsibilities and structural uncertainty. These were specific to the company under study yet aligned broadly to causes of uncertainty in literature (Artinger et al., 2014; Trahms et al., 2013).

The concept of external uncertainty driving internal uncertainty was also explored by respondents. Forces external to the company was understood to prompt changes or actions in the internal company environment (such as a restructuring, technology change and operating model change). The response of companies to external disturbances in their environment (causing external uncertainty) was noticed as the forces of internal uncertainty from noted by respondents. These internal company response (and forces of uncertainty) are in agreement to the operational tactics of turnarounds expressed by Velez-Castrillon and Angert (2015) in Table 1. Respondents also noted that the frequency of the change accentuates the level of uncertainty (i.e. constant change amplifies uncertainty) which concurs with the relationship explained Albar and Jetter (2009) between uncertainty and rapidly changing business landscapes. Figure 13 below summarise the relationship observed from respondents between external uncertainty and internal uncertainty during company turnarounds.

Figure 13: Summary of external-internal uncertainty relationship



Source: Author's own

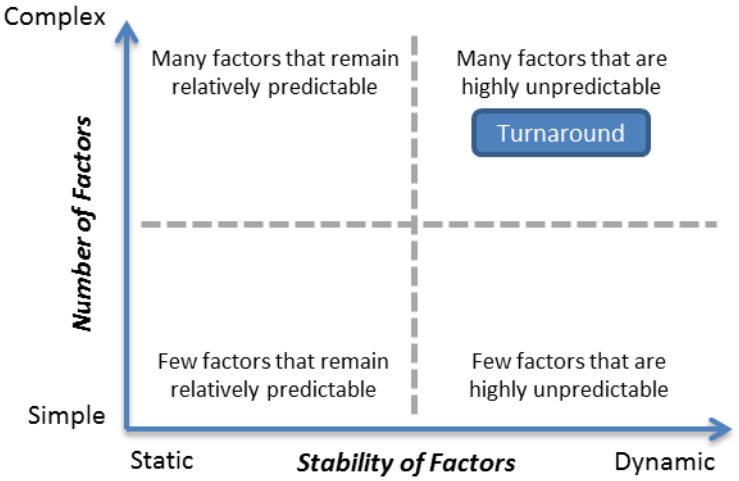
It can be understood that the permeable membrane of the organisation allows uncertainty to enter into the decision making process and thereby influence decision makers approach. Organisations cannot become completely closed to uncertainty and rather have to accept or deal with the uncertainty when present (Kokinov & Raeva, 2006). Some respondents expressed this awareness and acceptance of uncertainty in their environment and deemed that they have grown accustomed to dealing with it through adapting their decision approach. As expressed by Mousavi and Gigerenzer (2014), information can be used to reduce uncertainty in environment. Many respondents differed from this view and implied that the effort required to reduce uncertainty can be better spent on dealing with the decision uncertainty. Respondents holding this view aligned to the uncertainty response strategy of acceptance described by Daly (2016). This provides insight into the fast and frugal nature of decision makers in turnaround to rather conserve decision resources of time, information and cost, as opposed to using them to reduce uncertainty.

It is evident that there is a connected nature of uncertainty within organisations, with external uncertainty often providing the catalyst for turnaround initiatives and creating uncertainty in managerial decisions during this company state. Given the rising uncertainty in the environment outside the company, one wonders whether companies living with uncertainty would make heuristics more prevalent as their decision approach. Within industries that are accustomed to shorter cycles of change, and bordering continuous change, there might be an indication of higher use of heuristics.

Although only internal and external categories for uncertainty were explicitly mentioned, the rich insight into these causes can be extended to an alternate categorisation of uncertainty provided by (Artinger et al., 2014). Artinger et al. (2014) propose two dimensions of uncertainty, namely the complex-simple and static-dynamic dimension, both relating to number and stability of decision factors. By simplifying the original

description and applying it to the study of turnaround and uncertainty, one can visually represent uncertainty in stability and turnaround with a two-dimensional matrix (Figure 14 below). Turnaround is evident by decisions containing many factors that are highly unpredictable and constantly changing, providing uncertainty in the decision environment.

Figure 14: Illustration of a two dimensional matrix of uncertainty



Source: Adapted from Artinger et al., 2014, p.38

6.3.2 Company situational influences in decision approach

Results from the interviews and vignettes revealed that a change in approach occurs during managerial decision making in differing company environments, namely stability and turnaround (evident for eleven of the thirteen respondents). Respondents attributed this change to their environment and availability decision resources (mainly time and information). The results contributed to the existing literature on decision makers adjusting their decision approaches, by extending this to the specific company environment of turnaround and uncertainty (Albar & Jetter, 2009; Francis & Desai, 2005; Mousavi & Gigerenzer, 2014; Trahms et al., 2013).

Respondents indicated that stable company environments are more conducive to longer term decisions whilst in company turnarounds, managers prefer making shorter term decisions. The sentiment by respondents in the study agrees with outcomes from the study conducted by Chng et al. (2014), indicating the relationship between company environment and decision horizon in managerial decision making.

An interesting distinction between turnaround and stability, causing changes in decision approach, was the company change in decision making policy as a result of the new operating model implemented. Respondents noted this change to cause bureaucracy

and reduced agility in decision making. A similar finding was indicated by Trahms et al. (2013) who maintain that turnarounds created “diminished managerial discretion” (p. 1278). However, it should be noted that the turnaround itself did not produce this effect, but rather the actions inciting turnaround, which could effectively be corrected by the company in future turnarounds.

Two major influencers in the decision environment were the availability of information and time, found to concur with literature (Dietrich, 2010; Maitland & Sammartino, 2015). To replicate reality, costs were associated with information available to purchase in the vignettes. It was found that 69% of respondents increased the amount of information purchased from turnaround (vignette 2) to stability (vignette 3) scenarios. Respondents indicated that their awareness of budget constraints (in turnarounds) or lack thereof (in stable environments) as a reason for the amount of information purchased. This clear change to prudent spending by the majority of respondents in turnarounds indicate an awareness of changes in their environment and adjustment of decision making approach. Time pressure was seen to hasten decisions and cause respondents to be satisfied with adequate decisions made from sufficient (and not all) information.

An interesting observation found in the interviews (by seven respondents) was a consideration of cost versus benefit in purchasing habits during the stability and turnaround. Some respondents indicated that in turnaround they tend to purchase crucial pieces of information and infer extensively from these to cover other un-purchased criteria, leading to frugal purchasing habits. A few respondents remained unaffected by the differing environment and instead applied a consistent frugal approach throughout turnaround and stable company scenarios. Respondents were more conscious of the cost benefit trade-off in the company turnaround scenario. This can possibly be explained by the greater availability of decision resources in company stability, creating less/no imperative for cost versus benefit consideration when purchasing information. Respondents supported this explanation by stating that stable decision environments had the ability (and capacity) to recover from poorly made decisions and were more forgiving to mistakes. Building onto this observation, Schoemaker and Russo (1993) maintain that a rules and shortcut based approaches to decision making (heuristics) provide a high cost-benefit during the decision making process.

Several respondents alluded to the applicability of rational and heuristic-based approaches to decisions in differing environments. Although there was consensus of a combined approach being most suitable, respondents identified rational approaches

with stable environments, and heuristic or cognitive approaches with turnarounds. This insight provided further evidence of a link between decision approach and environment. Literature by Albar and Jetter (2009) support this observation, stating contrast between the two approaches and their intensity on decision resources. Specific to this study, these resources exist in varying levels in stable and turnaround company environments. An additional observation from respondents indicated that there is a need for fast and frugal decision making to continue once companies exit their turnaround state and re-enter stability. This will likely provide agility should the company external environment fluctuate against their favour once more.

The concept of ecological rationality, explained by Mousavi and Gigerenzer (2014) and Pleskac and Hertwig (2014), relates to identifying environmental conditions in which methods/techniques/models perform at their best. This concept was observed in the manner that respondents associated differing approaches to different environments in both the vignettes and open questions. However, the finite nuances between a specific heuristics being better suited to specific environments was unable to be detected from the responses provided and further detailed questions will be required in future studies to determine ecological rationality (suitable environmental conditions) per heuristic.

The downfall of rational approaches in turnarounds was examined by respondents, with many references to “analysis paralysis” occurring during conditions of company stability. This limitation is supported by the assessment of rational approach disadvantages from Albar and Jetter (2009) and Schoemaker and Russo (1993), indicating the heavy reliance of rational decision making on time, information and mathematical capabilities.

Conclusion Research Question 2:

Results and findings from the study indicated that the company context and decision environment do relate to the use of heuristics. Managers deemed their current context of company turnaround was highly uncertain, influenced by both external and internal sources of uncertainty, filtering into their decision making approach. A finding of interest was the interconnected nature of external forces of uncertainty, driving turnarounds, thereby creating internal uncertainty, and eventually resulting in changes in decision making approach.

It was found that the two major situational influences of time and information availability vary in differing company contexts. Managerial respondents expressed a preferred approach of rational decision making in stable company environments due to the abundance of time and information, yet during turnarounds, they adjusted their decision making to a heuristic-based approach due to constraints of time, cost and information in these environments. These differences in approach were evident in respondent information purchasing habits during the vignettes of turnaround and stability. Company specific contexts can promote or demote the use of heuristics as they contain varying levels of crucial decision resources of time and information availability.

This concludes that Research Question 2 was resolved and the research objective was met.

6.4 Discussion of Research Question 3

What motivates the use of certain heuristics by managers in environments of company turnaround?

The use of heuristics to combat uncertain environments, due to complexity, cost pressures and time pressures, has been uncovered sporadically through literature. However, no direct evidence in the literature explores the motives of managers to use heuristics in the specific environment of company turnaround. By understanding the motives behind heuristic use, companies may be better able to foster environments that promote their use. One questions whether motives in company turnaround are the same as generic heuristic motivators, and do additional or contradicting motivators exist in this decision environment.

6.4.1 Factors motivating heuristic use

Several factors were deemed important by respondents in motivating the use of heuristics in managerial decision making during turnarounds. The factors have been categorised by influences direct to the decision and organisational influences indirect to the decision. The discussion to follow will explore these direct and indirect factors within the context of previous research in heuristics and decision making. Some factors were found to be similar to those covered in past research, whilst others are observed to be new and will contribute to existing literature as expected with exploratory research.

6.4.1.1 Direct factors to decisions

Six respondents mentioned risk as a contributing factor to heuristic use and that low risk decisions motivated their use more than higher risk decisions. The study results contribute to the findings by Chng et al. (2014), who note that managers in turnaround situations considered risk to a greater extent than in non-turnaround stable company environments, which features in their decision approach.

Decision horizon was observed to motivate heuristic use in short term decisions as opposed to longer term decisions. Findings from Chng et al. (2014) support the use of heuristics in turnarounds as past research notes that managers facing turnaround tend to make more short term decisions after being influenced by their environment. Short term decisions are expected to be lower in risk or uncertainty and more operational in nature which aligns to other observed factors promoting heuristic use in turnarounds.

Experience, familiarity, information availability and time were factors noted by respondents to provide ideal conditions for heuristic use when decision environments contained links to past experience, high familiarity, limited information and limited time respectively. These resulting factors have been echoed in past studies on decision making. Maitland and Sammartino (2015) found heuristics most beneficial to managerial decision making when frugality, experience and speed are demanded. Gigerenzer and Gaissmaier (2011) and Mousavi and Gigerenzer (2014) maintained that past recognition and memory recall in the decision required will prompt heuristic use since heuristics aim to exploit these capabilities of the decision maker. Shah and Oppenheimer (2008) agreed with the factor of limited information as effort reductions and frugality are prime conditions for heuristics.

The suitability of heuristics in decisions containing high uncertainty was noted as a factor by respondents and supported the research conducted by Albar and Jetter (2009) and Maitland and Sammartino (2015). Heuristics have been advocated to perform especially well in conditions of high uncertainty (Gigerenzer & Gaissmaier, 2011; Gigerenzer & Goldstein, 1996; Mousavi & Gigerenzer, 2014).

The remaining factors of comfort level, decision impact, urgency, pressure and strategic importance were found by respondents to promote heuristic during turnaround when decision conditions align to high comfort, low impact, high urgency, high pressure and non-strategic importance, respectively. These factors were not represented in the literature explored; however, they are expected to contribute to existing work conducted on the beneficial conditions to heuristic use in turnarounds.

Having a high comfort level with the decision context creates a greater possibility for successful use of the specific heuristic. If decision makers are inexperienced or unfamiliar with the heuristic they are less likely to employ them in turnarounds. Some respondents found that lower impact and often non-strategic decisions were more suited to heuristic use due to a level of apprehension with heuristic decision making during turnarounds. This implies that even in turnaround conditions with limited resources, respondents will consider the decision impact and consequences before opting to use heuristics.

Operational and tactical decisions were found more suitable for heuristics as opposed to strategic decisions, which may be a result of the sample respondents focusing predominantly on operational and tactical decisions in their current roles as Senior Managers. However, this factor can be extended to the decision horizon factor since long term decisions are largely strategic and short term decisions are largely non-strategic. By extension, the assertion by Chng et al. (2014) then support that heuristics are more suited for non-strategic, operational and tactical decisions.

Decision pressure and urgency are two time-related factors that appear frequently in turnaround environment. Given the benefits of heuristics under constraints of time, it follows that they should be suited for decisions required to be made under high pressure backed by a high level of urgency.

6.4.1.2 Indirect factors to decisions (organisational influencers)

The perception of heuristics within the organisation was found to be a significant influencer in the use of heuristics. Although not covered by literature, this is expected to contribute to existing literature on heuristic decision making. From the results of respondents, a negative perception of heuristics can be understood to occur through (i) unsuccessful outcomes of past use of heuristics, (ii) forced use of heuristics (iii) irresponsible use of heuristics and (iv) a false sense of heuristic ability. Poor outcomes with heuristics could serve as a case against the use of heuristics and driven throughout the organisation. The subsequent impact of negative heuristic perception in the organisation will hamper future use by decision makers. Perception is subjective and difficult to measure; however, it is speculated that this factor can exist in varying degrees within organisations and individual departments or functions.

The group-individual decision making dimension and policies that dictate this dimension were observed to influence use of heuristics during turnaround conditions in the company under study. Respondents indicated a great disdain for the use of

consultants and a group decision making environment which inhibit heuristic use. Rigid decision making policies that govern restrictive decision rights contribute to the demotion of heuristics within the managerial level and reduce flexibility to navigate uncertainty and turnarounds. Some respondents maintained that these policies and company norms wasted resources of time and information, which are expected to be reduced by heuristics. This factor is expected to reside in all organisations, regardless of turnaround or stability, and awareness is important if seeking to improve usage of heuristics by decision makers. Although not covered by literature, the group-individual dimension is expected to contribute to existing literature on heuristic decision making.

Organisational culture emerged as an unexpected indirect factor in motivating the use of heuristics. Respondents indicated that the company culture had transformed after the recent restructuring. Francis and Desai (2005) support this result, citing changes in culture as a possible consequence of firm performance decline and actions inciting turnaround. In addition, the role of context changes on decision makers belief structures and mental models, inevitably affecting their decision making was explored in research by Dietrich (2010). This extends the findings of Riabacke (2006) which indicated that unwritten rules engrained in company culture guide decision makers. Organisational culture that does not foster a safe environment in which heuristics can be used may hinder heuristic selection in decision making. Emotional uncertainty and issues of trust caused by culture changes featured in observations to influence managerial decision making. As an emergent theme, culture was not covered extensively in the literature for this study. However, this theme of culture changes and heuristic decision making lends itself to future research.

6.4.2 Towards fostering an environment promoting heuristic development

The development of heuristics within the context of turnarounds can promote their use and application. Several methods of heuristic development were observed throughout the semi-structured interviews, including (i) learning through mistakes, (ii) learning from others (iii) continual refining of one's heuristic toolbox, and (iv) self-awareness of personal heuristic styles.

It was understood from respondents that a company's response to decision mistakes can promote or inhibit heuristic development and subsequent future use. A company that is supportive of learning from mistakes will likely prompt younger inexperienced decision makers to build heuristics over time. As supported by Maitland and

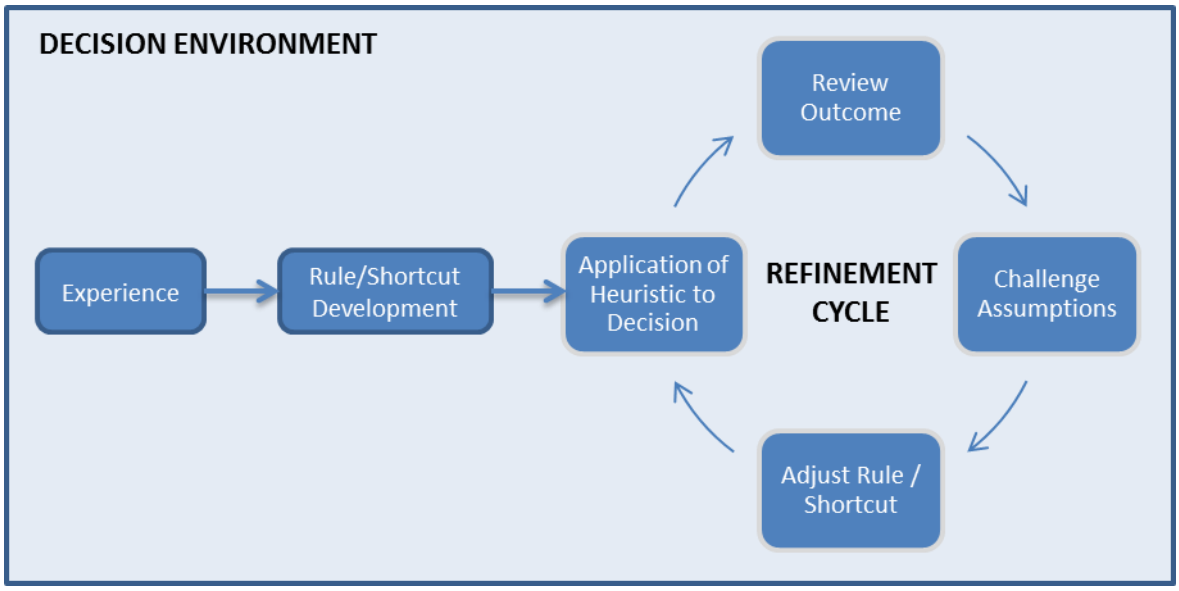
Sammartino (2015), experience forms the building blocks for new heuristics and aids the improvement of existing heuristics. If fear of negative outcomes is driven through the organisation, decision makers are less likely to attempt heuristic use and lean on older more familiar techniques for every decision, regardless of decision environment or context. This may result in negative consequences of longer decision lead times and more costly decisions in the purchase of information.

Horney et al. (2010) support the important role companies have in preparing employees to respond to an increasingly volatile, uncertain, complex and ambiguous environment. By creating a supportive environment for heuristics and lowering the barriers to their use, companies can effectively allow decision makers to make quicker frugal decisions and learn from their mistakes, enabling the refining of successful heuristics for future use. As expressed in section 6.2, these heuristics can eventually aid in navigating turnaround environments to the benefit of the company.

It was indicated by respondents that heuristic development can be facilitated by decision makers being open to learning from others. A closed approach to decision making may lengthen the time taken for heuristic development. The converse, being open to learning, is likely to expedite the time and effort taken to develop heuristics. This becomes especially important in conditions of company turnaround in which there is significant employee churn that ushers in young inexperienced employees into challenging roles.

The importance of reviewing and challenging assumptions to refine decision making heuristics was observed from the respondents. Results emerged that, when combined, described a cycle of continuous refinement to ensure heuristics are developed and do not repeat negative outcomes. A cyclical process of heuristics being applied to decisions, reviewing outcomes, challenging assumptions, and adjusting the rule or shortcut was understood to develop integrity in the heuristic over time. An illustrative model of this process, seen in Figure 15 below, depicts how experience can form initial heuristics which are thereafter refined over time. It is expected that the proposed illustrative model of heuristic refinement will contribute to the decision rule element of managerial decision making in the conceptual model of managerial decision making (Figure 6) defined by Boulding et al. (1994).

Figure 15: Illustrative model of a heuristic refinement cycle



Source: Author's own

6.4.3 Heuristics in recruiting practices

Recruitment practices can be aided by the quasi experimental vignettes designed during this study, with the intention of determining preferred decision making approaches (or heuristic ability) of new recruits. The qualitative testing of heuristics and decision making approaches can provide deeper insight into a potential employees personal decision making approach and determine if a fit exists between individual, organisation and decision context.

The vignette tests can be extended to departments or teams that require diversity in decision making capability, between cognitive and rational approaches. As results indicate in this study, certain company environments, specifically those of turnaround, may require more heuristic inclined decision makers within key areas of an organisation, which can be addressed by incorporating this vignette tests into existing recruiting practices. Cost and time constrained company environments may render rational decision making ineffective. By testing the decision approach of current employees, organisations may be able to better match and deploy specific decision capabilities to areas requiring them, facilitating a more agile response to internal or external uncertainty during company turnarounds (Maitland & Sammartino, 2015).

From the results of the study, it was observed that some decision makers changed their approach or stance on information purchases from turnaround to stability, whilst others were consistent, reasoning that there should be no need to deplete a budget just because of the availability of funds. Employees with this decision making stance may

be incredibly valuable in companies that wish to maintain fast and frugal decision making, regardless of company environments of stability or turnaround. A question of suitability arises on whether continued frugality places the organisation at an advantage after navigating out of turnaround into stability. The answer to this may be provided in future studies that extend individual level decision making to applicable decision approaches on an organisational-level.

Conclusion Research Question 3:

Managerial decision makers indicated motivators for heuristics, categorised by influences direct to the decision and organisational influences indirect to the decision. Direct factors of risk, comfort level, decision impact, urgency, decision horizon, experience, familiarity, information availability, pressure, strategic importance, time and uncertainty were noted by managers to influence the use of heuristics. Whilst organisational related indirect influences of individual perception of heuristics, company driven consultative approaches and decision making policies, and organisational culture, were found to promote or detract from the use of heuristics by the managerial layer under study. Contributing responses to the topic of heuristic motivators explored the ways in which companies can promote of inhibit the development of heuristics in organisations. Findings revealed the importance of fostering a safe environment accepting of decision mistakes, openness to learn, and continuously reviewing and challenging heuristic assumptions. A model of heuristic refinement was developed from observed responses to extend existing decision making literature.

An application of the quasi experimental study is believed to hold future value in the recruiting of decision capabilities to respond to states of company stability or turnaround. The methodology used in this study holds application to test for heuristic ability in managerial decision makers.

This concludes that Research Question 3 was resolved and the research objective was met.

CHAPTER 7: CONCLUSION

7.1 Introduction

The intention of Chapter 7 is to revisit research objectives from Chapter 1 through evaluating the research results and discussion from Chapter 5 and Chapter 6. Key contributions to be discussed include: heuristic prevalence in turnarounds, the environmental impact on heuristic use, motivating factors of heuristics in turnaround and, heuristic development and testing. Thereafter, the implications for managerial decision makers and companies containing managerial decision makers will be outlined, followed by the research limitations of the study conducted. Possible future research, enlightened by the current study, will thereafter be discussed.

7.2 Principle Findings

7.2.1 Heuristics in company turnaround

The research findings indicated the use of three heuristics in conditions of turnarounds by managerial decision makers, namely the Take-the-best, Satisficing and Recognition heuristic (Albar & Jetter, 2009). The study affirmed that suitable use of these heuristics in conditions matching uncertainty and extended to turnarounds (Artinger et al., 2014; Gigerenzer, 2008; Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014). Remaining heuristics of F&F decision trees, Tallying, Similarity, Imitate the successful and Imitate the majority were not employed by managerial decision makers in the study, contrary to literature inciting their effectiveness during conditions uncertainty (Artinger et al., 2014; Gigerenzer, 2008; Gigerenzer & Gaissmaier, 2011; Mousavi & Gigerenzer, 2014).

Responses to the vignettes showed a reduced purchasing of information during the turnaround scenario, prompting the outcome that decision makers exhibit frugal purchasing habits in situations of turnaround. This aligns to the fast and frugal approaches and the less-can-be-more philosophy (Artinger et al., 2014). During turnarounds managers tend to select a few key pieces of information whilst consciously ignore remaining information (Mousavi & Gigerenzer, 2014).

Managerial decision makers were found to employ decision rules and shortcuts, used consciously and formed over time through experience (Schoemaker & Russo, 1993). Rules-based decision making provided benefits of time and reduced information usage, crucial during decisions made in turnarounds. An interesting finding was the adapted

use of heuristics to filter decisions and sift through criteria, resulting in only the core, non-negotiable information required for the decision (Gigerenzer, 2008).

A blended approach, combining both rational and cognitive decision styles, was the preferred approach indicated by respondents (Goldfarb et al., 2012; Mousavi & Gigerenzer, 2014). The combined benefits of applying both styles to a decision provide decision makers robustness and accuracy together with reduced bias and error, resulting in more agile decision making and higher potential for successful outcomes within decision environment constraints.

7.2.2 Environmental impact on heuristic use

The second contribution of the study related to the impact that company environments have on heuristic use. It was observed from the results of the vignette and the interview responses that heuristic use differs in stable and turnaround environments. Current literature eludes to decision makers changing their approach to suit their environment however, this was not applied to company environments of turnaround and uncertainty (Albar & Jetter, 2009; Francis & Desai, 2005; Mousavi & Gigerenzer, 2014; Trahms et al., 2013). Findings indicate that the availability of key decision resources of time and information, in the environment of the decision maker, change with changes in the company. Managerial respondents expressed relationships of approach with rational decision making indicated more suited to stable company environments due to the abundance of time and information, whilst a heuristics-based approach was indicated more suited during turnarounds due to constraints of time and information in these environments.

The work by Chng et al. (2014) indicates a relationship between company environment and decision horizon within managerial decisions. Contributing to this research, the study revealed that turnaround environments were found to be more conducive to shorter term, quick decisions with limited information, ideal conditions for heuristic use. In addition, turnaround environments were found to hold a greater consideration for the cost-benefit of information purchased in contrast to company environments of stability. This consideration holds a deeper managerial inclination to employ heuristics in turnaround as opposed to stable conditions.

The study contributed to the understanding that the environment around a manager has the potential to change due to internal and external forces of uncertainty. Building on research into company turnarounds and decision uncertainty (Albar & Jetter, 2009; Velez-Castrillon & Angert, 2015), the study revealed that external uncertainty can

trigger company turnarounds subsequently introducing internal uncertainty in the decision making process. These changes in company environment often require a change in decision approach. If the company environment is one of turnaround, results indicate that an approach containing cognitive heuristics will be better suited to navigate the conditions of turnaround and uncertainty.

7.2.3 Motivating factors for heuristics in turnarounds

The study contributed by revealing factors, both direct to the decision and indirect to the decision, that motivate for the use of heuristics in turnarounds. Results for direct factors of heuristics included: risk, comfort level, decision impact, urgency, decision horizon, experience, familiarity, information availability, pressure, strategic importance, time and uncertainty. The results contributed to existing research on factors for heuristic use with new factors of comfort level, decision impact, urgency, pressure and strategic importance being uncovered (Albar & Jetter, 2009; Gigerenzer & Gaissmaier, 2011; Gigerenzer & Goldstein, 1996; Maitland & Sammartino, 2015; Mousavi & Gigerenzer, 2014; Shah & Oppenheimer, 2008). The additional factors revealed by the study contribute to an extended understanding on what can prompt the use of heuristics within company turnaround.

Results uncovered indirect influencers to heuristic use including: individual perception of heuristics, company driven consultative approaches and decision making policies, and organisational culture. The perception of heuristics and group-individual decision making dimension as emergent motivating factors, were not covered in literature and is believed to contribute to existing heuristic research. A fascinating and seemingly unexpected finding from the study was the factor of organisational culture, supporting work by Francis and Desai (2005) and Dietrich (2010). The negative impact, associated with turnaround initiatives, of emotional uncertainty and issues of trust caused by culture changes featured in observations to influence managerial decision making.

7.2.4 Heuristic development and testing

The final contribution of the study relates to developing and testing heuristics within companies. Literature suggests that a focus on managerial decision making can aid organisations to effectively navigate conditions of uncertainty in a changing business landscape (Francis & Desai, 2005; Miller, 2008; Trahms et al., 2013). Results contribute to this focus by implying methods of heuristic development to address company uncertainty, including (i) learning through mistakes, (ii) learning from others

(iii) continual refining of one's heuristic toolbox, and (iv) self-awareness of personal heuristic styles.

Results dictated that a company culture fostering a safe environment of experiential learning from mistakes can enhance the use of heuristics, supported by Maitland and Sammartino (2015). Openness to learning from others can expedite the learning curve of heuristics and their development, which is of especial importance to inexperienced decision makers. The results extend on the decision rule element of the conceptual model of managerial decision making defined by Boulding et al. (1994), to form a conceptual model of heuristic refinement (Figure 15) containing a cycle of: heuristics being applied to decisions, reviewing outcomes, challenging assumptions, and adjusting the rule or shortcut. The formalisation of this cycle is believed to contribute to existing literature on managerial decision making.

The methodology applied in the study of individual heuristic testing through a qualitative quasi experimental approach, employing the use of vignettes, is anticipated to contribute to existing studies which are predominantly quantitative (Albar & Jetter, 2013; Bauer et al., 2013; Gigerenzer & Goldstein, 1996; Shah & Oppenheimer, 2008). This designed method, although built on core elements from past research (Albar & Jetter, 2009; Bauer et al., 2013; Newell et al., 2003), varied from the mainstream computer aided experiments, and introduces the use vignettes in the testing of heuristics. The approach contains future value and application in the organisational recruiting of decision capabilities to respond to states of company stability or turnaround.

7.3 Implications for Management

The context of the study, grounded in managerial decision making during company turnaround and uncertainty, holds several implications for managers and leaders of organisations.

Results have shown that context is understood to play a significant role in the decision making approach. The growing VUCA environment (volatile, uncertain, complex and ambiguous) and shifting business landscape is likely to introduce uncertainty into organisations and directly or indirectly influence managerial decision makers (Horney et al., 2010). As indicated in results, managers need to be more accepting of uncertainty in their respective environments and even consider building a tolerance for environmental uncertainty over time. The acceptance of uncertainty combined with a use of heuristics allows managers to spend less time or effort attempting to reduce

uncertainty, and rather focus on making quicker decision within the constraints of time and information.

Managers need to be more receptive of their preferred decision making styles (rational or cognitive) and the impact the changing environment has on their decision resources (especially time and information availability). Once this awareness is achieved, managerial decision makers must make concerted efforts to adapt their decision making approach to suit the conditions in their environment. Doing so will create agility in company decision making and likely result in quick, sufficiently accurate decisions, as indicated by results. Firms can leverage on an understanding that certain decision making techniques are more suited to certain environments over others.

Albar and Jetter (2009) imply that companies tend to focus predominantly on systems and analytical models to improve decision making. However, results have suggested that companies also need to provide counselling on ways to think, analyse information and make decisions. Literature provides some indication that heuristics can be taught which will benefit those learning to be better equipped to make the best decision in various situations (Dietrich, 2010). Results from the study have implied that companies can play a significant role to aid the development of heuristics. Fostering a culture of learning and being more forgiving towards poor decision outcomes will create a safe environment, more conducive to the building and development of heuristics over time. Managers are advised to promoting experiential decision making to build, review, adjust and refine heuristics, leading to more successful decision outcomes (Gigerenzer & Gaissmaier, 2011). Reducing these barriers to heuristic development can aid decision makers to develop a greater managerial adaptive toolbox of heuristics, containing a heuristic *tool* to match various decision contexts. As indicated by Klein (2003, cited in Albar & Jetter, 2009), companies “should treat intuition as a skill that can be acquired and taught” (p. 581).

The vignette approach used for testing heuristics can be applied in managerial recruitment to assess new managerial decision makers on their heuristic abilities with the intention to match the company environment. In a similar manner, the vignettes tests can be used to determine the heuristic make-up of teams, inciting the companies and managers to question if there is a need for more heuristic abilities to attain decision making diversity. Recruiting and training can be tailored to specific decision making capabilities required to match the challenges in the current firm environment. The research resulted in managerial implications that aim to enhance managerial

awareness of the interconnectedness of decisions on performance, and awareness on how the decision environment may be influencing decision making within the firm.

7.4 Limitations of the Research

The acknowledgment and identification of possible research limitations, influencing findings or results, is important to establish credibility of the research study. In conjunction with the limitations provided in section 4.10, the major possible limitations of the research study include:

- The width of the research, testing eight heuristics in the particular class of fast and frugal, may have limited the depth of information received on specific heuristics.
- The research was conducted through interviews of managerial decision makers in positions that highly interacted with their environment at only one company so heuristic identification and further results will not be directly applicable to another company. This means that the conceptual models formed and principle findings may only be applicable to other companies in the same industry or with similar internal and external dynamics.
- The use of non-probability sampling, focused on strategic business units, might have excluded important managerial decision makers in other business units in the company. This may have limited the heuristics detected and there remains a possibility for other heuristics to be missed. In an effort to counteract this, the researcher attempted to ensure a wide sample of respondents from various functions within the two core business units at the company under research.
- An unexpected strike occurred between the interviews of respondents that may have influenced results. However, it is believed that this unplanned event contributes to the context of uncertainty under study and is representative of the reality that the company operates in, thereby positively contributing to the study and results.

7.5 Suggestions for Future Research

It is the intention of future research to further existing research findings and gain more insights into heuristic decision making. The researcher has suggested the following as potential areas for future study:

- Cultural influences featured unexpectedly in the study. Patterns of decision making may be an indicator of cultural differences. Further research focused on company and individual cultural differences in relation to heuristic use should be examined. An extension of this study into company values and heuristics could also be explored.
- A study could be conducted to provide depth into what barriers exist within organisations towards heuristics, how one lowers them and should they indeed be lowered.
- Given the rising uncertainty in the environment outside the company, one wonders whether living with uncertainty would make heuristics more prevalent as the decision approach. A study could be conducted, similar to the current study, in industries that are accustomed to shorter cycles of change (such as a company in the high technology industry that is inherent to frequent disruption), and accustomed to continuous change to detect if there is a higher acceptance and use of heuristics.
- Due to the extensive range of heuristics in current literature and the continuous development of new sets of heuristics in the field of behavioural psychology, future studies could focus on a class of heuristics other than fast and frugal.
- The current study has focused on individual-level heuristics and their interaction with the company operating environment. It would be of great interest to extend or contribute to current research and investigate if firm-level heuristics exist in organisations, whether they provide strategic advantages to the company, and how they are propagated throughout the company. This study on how individual-level heuristics may evolve into firm level heuristics would be contributory to previous research done in literature (Maitland & Sammartino, 2015).

7.6 Concluding Remarks

Company survival during initiated company turnarounds and a response to uncertainty in the ever changing business environment has been a growing imperative for large established organisations and SMMEs alike. Given the harsh macro-economic conditions, political instability, commodity cycles and other externally driven forces, it has been the hope of this research to leverage effective managerial decision making to aid companies in navigating their internal uncertainty during turnarounds. The imperative for research to enable the survival of firms is accentuated by rising unemployment and inequality due to firm failures in volatile and uncertain environments. This research holds potential to indirectly support this effort through contributions promoting greater effectiveness in managerial decision making, when executing company turnaround strategies.

This study contributed depth to understanding of heuristic use in the company specific context of turnaround and uncertainty and revealed the appropriateness of heuristic-based approaches when applied to this environment. The importance of awareness of a changing decision environment is implicit in the research findings for managers. Managerial decision makers should ensure agility to adjust and balance rational and cognitive approaches as dictated by the decision environment. Firms have the added responsibility of fostering an environment and culture that is accepting of heuristic-based approaches to promote their development and continuous refinement (Figure 15). The vignette approach for testing heuristics is expect to contain business application in recruiting and assessing decision capabilities to match specific company decision environments.

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APPENDIX 1: HEURISTIC COMPARISON

Table 12: Comparison of heuristics

Heuristic	Examines few cues	Simplifies weighting principles for cues	Integrates less information	Examines fewer alternatives
Availability (Tversky & Kahneman, 1973, 1974)	x		x	
Categorization by Elimination (Gigerenzer et al., 1999)	x		x	Pairing down
CONF (Karelaia, 2006)	x		x	
Deterministic elimination by aspects (Hogarth & Karelaia, 2005b)	x		x	Pairing down
Elimination by aspects (Tversky, 1972)	x		x	Pairing down
Idiosyncratic fit (Kivetz & Simonson, 2003)	x			
Lexicographic (Fishburn, 1967, 1974)	x		x	Pairing down
Lexicographic semi-order (Tversky,1969)	x		x	Pairing down
Minimalist (Gigerenzer et al., 1999)	x	x	x	Pairing down
Outrage (Kahneman & Frederick, 2002)	x	x		
Peak-end (Kahneman et al., 1993)	x	x		
Priority (Brandstatter et al., 2006)	x		x	Pairing down
QuickEst (Gigerenzer et al., 1999)	x		x	
Recognition (Gigerenzer & Goldstein, 1996))	x	x		
Representativeness (Tversky & Kahneman, 1974)	x		x	
Single variable (Hogarth & Karelaia, 2005a, 2007)	x		x	
Take-the-best (Gigerenzer et al., 1999)	x		x	Pairing down
Take the Last (Gigerenzer et al., 1999)	x	x	x	Pairing down
Warm glow (Monin, 2003)	x		x	
Anchoring and adjustment (Tversky & Kahneman, 1974)				Eliminates alternatives
Choice by most attractive aspect (Svenson, 1979)		x	x	Fewer compared simultaneously
Domran (Hogarth & Karelaia, 2005b)		x	x	

Do-no-harm (Baron & Jurney, 1993)				Eliminates alternatives
Effort (Kruger et al., 2004)				
Elimination by least attractive aspect (Svenson, 1979)		x	x	Fewer compared simultaneously
Equal weighting (Dawes, 1979)		x		
Equality (Messick, 1993; Roch et al., 2000)				Eliminates alternatives
Expertise (Ratneshwar & Chaiken, 1991)				
Fluency (Whittlesea & Leboe, 2003)				
Likeability (Chaiken, 1980)				
Majority of confirming dimensions (Russo & Dosher, 1983)		x		
Satisficing (Simon, 1955, 1956, 1990)		x	x	
Scarcity (Brannon & Brock, 2001)				

Source: Shah & Oppenheimer, 2008, p.214-215

APPENDIX 2: CONSISTENCY MATRIX

	Research Questions	Literature Review	Data Collection Tool	Analysis
1	Which heuristics are most prevalently used by managers during a state of turnaround and uncertainty?	(Artinger et al., 2014) (Gigerenzer & Gaissmaier, 2011) (Albar & Jetter, 2009) (Mousavi & Gigerenzer, 2014)	Vignette 1 and 2 Interview Questions (Q3, Q4, Q5, Q6, Q7, Q8)	- Matching of response to heuristic criteria - Content Analysis (coding and themes)
2	Does the company decision context and environment of turnaround relate to the type of heuristic being used?	Pleskac & Hertwig (2014) (Mousavi & Gigerenzer, 2014) (Trahms et al., 2013)	Vignettes 1 to 3 Interview Questions (Q5, Q6, Q9, Q10, Q11, Q12)	- Matching of response to heuristic criteria - Content Analysis (coding and themes)
3	What motivates the use of certain heuristics by managers in environments of company turnaround?	(Albar & Jetter, 2009) (Gigerenzer & Gaissmaier, 2011)	Interview Questions (Q4, Q7, Q11, Q13, Q14)	- Content Analysis (coding, categorising and themes)

APPENDIX 3: VIGNETTES FOR SEMI-STRUCTURED INTERVIEWS

Vignette 1: Unfamiliar and Uncertain/Turnaround

You are a Manager in a large company manufacturing electrical computer equipment (transistors, capacitors and circuit boards). Due to a new disruptive technology entering the market and several internal obstacles, the company is in a state of decline. The company's operational performance and share price has plummeted since the disruption but is slowly making a recovery after some severe cost cutting efforts and turnaround strategy implemented by the Senior Executives. In your new role you are tasked to execute on the firms strategy through effective decisions in daily operations, amidst cost and time pressures.

DECISION: As part of the cost containment efforts you have opted out of your current supplier agreement and are required to choose a new supplier to partner with. The possible suppliers have been narrowed down to four candidates that have all quoted equal on cost. Please decide which supplier to use?

BUDGET: R1450.00

Your fellow managers have suggested **Supplier 3**.

An industry expert in this type of decision has suggested **Supplier 4**.

Table 13: Example table of cues/criteria for vignette 1

Cost	Cue / Criteria	Cue Validity	SUPPLIER 1	SUPPLIER 2	SUPPLIER 3	SUPPLIER 4
R 130	Supplier values matching your values	0.45	High	High	Low	Low
R 180	Size of company	0.64	Large	Medium	Small	Small
R 260	Reliability	0.91	Low	High	Medium	Medium
R 80	Market perception of partner	0.27	Great	Average	Poor	Poor
R 110	Company turnover	0.36	High	Medium	Medium	Low
R 30	Trend in shareprice	0.09	Low	Low	Medium	Medium
R 210	Quality of product	0.73	Low	High	High	Medium
R 60	BBEEE Compliance	0.18	Level 2	Level 7	Level 1	Level 1
R 230	Good relationship currently / customer service	0.82	Great	Average	Poor	Poor
R 160	Past Performance	0.55	Medium	Medium	Medium	Low

Vignette 2: Familiar and Uncertain/Turnaround

You are a Manager in a large multinational petrochemical company facing decline. Key levers in the markets they sell to are working against them (i.e. weak Rand/Dollar exchange, Brent Crude price and commodity prices). The company has recently undergone a restructuring to ease the impact of these factors and you have just been awarded a new position in a significantly changed structure. The executive team has defined a great strategy to turn the company around and you are part of the management layer tasked with driving the operational improvements. However, the environment you operate in continues to be uncertain and ambiguous. You encounter pressures of cost and time in your actions daily.

DECISION: The production facility has shut down unexpectedly and only one load of product remains. Customers are frantically requesting product and each desperately need the remaining load. Please decide which customer should receive the last remaining load of product.

BUDGET: R1350.00

Your fellow managers have suggested **Customer B**.

An industry expert in this decision has suggested **Customer D**.

Table 14: Example table of cues/criteria for vignette 2

Cost	Cue / Criteria	Cue Validity	CUSTOMER A	CUSTOMER B	CUSTOMER C	CUSTOMER D
R 130	Riskiness of customer?	0.50	High risk	High risk	Med risk	Low risk
R 230	Profit margin of customer?	0.92	Low margin	High margin	Low Margin	Med Margin
R 150	Location of customer (near/far/local/export)?	0.58	Near	Far	Far	Near
R 210	Customer payment behaviour?	0.83	Disciplined	Irratic	Disciplined	Irratic
R 190	Customer featuring in your Long Term Strategy	0.75	YES	No	No	No
R 170	Loyalty of customer	0.67	Low	High	Low	Low
R 110	Customer Share Price	0.42	High	Medium	Medium	Low
R 90	Customer Annual Turnover	0.33	High	Low	Low	Medium
R 70	Direct or Indirect competitor?	0.25	None	Indirect	Direct	None

Vignette 3: Familiar and Stable/Non-Turnaround

You are a Manager in a large multinational petrochemical company that is at the peak of its historical performance. Production, sales and the share price have grown tremendously causing the organisation to thrive amidst great market conditions. You are well established in the organisation and have proven yourself timeously in your role within the management layer. The executive team has entrenched an ambitious growth strategy which the management layer is rallying behind to drive operational performance. You are familiar with an environment that is predictable and accustomed to, deviating little from your forecasts and expectations. You feel comfortable to conduct your role without pressures of cost and time.

DECISION: You have R1m in your budget to invest in a project. Four proposals exist and you are required to choose one of these projects to pursue in the next financial year. Your decision can be informed by several cues that are often used to predict the likelihood of success. Which project will you select and allocate your limited budget to?

BUDGET: R3000.00

Your fellow managers have suggested **Project 4**.

An industry expert in this decision has suggested **Project 1**.

Table 15: Example table of cues/criteria for vignette 3

Cost	Cue / Criteria	Cue Validity	PROJECT 1	PROJECT 2	PROJECT 3	PROJECT 4
R 250	Profitability	0.92	High	High	High	Low
R 170	Risk	0.62	Low	Medium	Medium	High
R 190	Uniqueness	0.69	High	Low	Low	Medium
R 130	Project Feasability	0.46	Low	High	Low	Medium
R 210	Payback Period (years)	0.77	4	3	4	1
R 230	Return on Investment	0.85	9000	1000	2000	8000
R 110	Complexity of Project	0.38	Medium	Medium	High	High
R 150	Number of stakeholders involved	0.54	Low	High	High	Medium
R 90	Change Management required	0.31	High	High	Medium	Low

APPENDIX 4: QUESTIONS FOR SEMI-STRUCTURED INTERVIEWS

INTRODUCTORY QUESTIONS

1. Please state your name, age and current position?
2. Please state your total number of years working as a manager?

QUESTIONS FOR VIGNETTES

3. Talk me through the process you followed when making your decision? What cues/criteria did you consider and what sequence did you use them in?
4. What was the reasoning behind your choice? Why did you decide to use the information you chose to use?
5. What pieces of information did you find useful and what did you find not useful?
6. Did the scenario guide your decision? Please elaborate.
7. Did you compare this decision to a past experience? Please elaborate.
8. What would you have done differently in retrospect?

OPEN QUESTIONS

9. Uncertainty relates to constant change, hard to predict scenarios, and ambiguous, conflicting, unavailable or unreliable information. How do you perceive the level of uncertainty in your environment? Do you feel that there is uncertainty in some of the decisions you make? If so, how do they impact your approach when making decisions?
10. Do you perceive the environment or conditions of company turnaround to be related to uncertainty?
11. How do you make decisions when the FULL range of information is unavailable or when there is a lack of detail on all possible alternatives?
12. Do you feel your decision making style has changed with changes in the company (internal and external). What has changed in your environment and how has your decision making changed? (Horney et al., 2010)
13. What factors motivate you to use shortcuts/intuition to make decisions or solve problems? Are there some situations in which you find them more useful than others? Has their use yielded successful decisions? Can you provide some examples?
14. Are you comfortable using heuristics/shortcuts freely or do you only use them when you have no other choice?

APPENDIX 5: FINAL CODE LIST

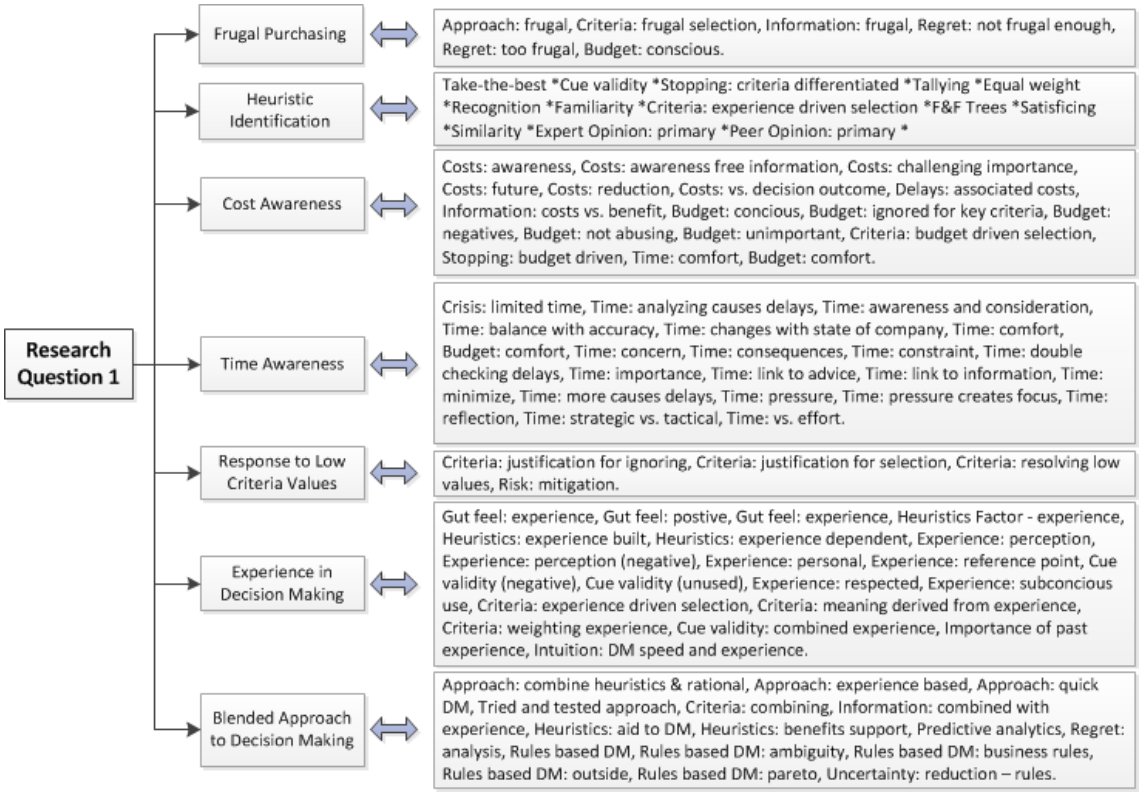
Accountability: Changes
Accountability: changes in crisis
Accountability: Difficulty in DM
Accountability: DM
Accountability: group
Accountability: personal
Accountability: position
Accountability: Reduced in crisis
Adequate DM vs. thorough DM
Agility
Agility: turnaround
Alternatives
Alternatives: competing
Alternatives: customer
Alternatives: key criteria based
Alternatives: optimal value
Alternatives: ranked by key criteria
Alternatives: threshold
Alternatives: tie-break purchase more
Analysis Paralysis
Approach: alters with les information
Approach: analysis paralysis
Approach: awareness required
Approach: changes
Approach: changes with company char
Approach: combine heuristics & ratior
Approach: company priority dependen
Approach: complicated by OM
Approach: crisis vs. stable
Approach: expereince based
Approach: frugal
Approach: impact dependent
Approach: isolate issues
Approach: ownership driven
Approach: personal
Approach: position dependent
Approach: pressure dependent
Approach: purchase then review
Approach: quick DM
Approach: rank with experience
Approach: rational DM
Approach: rational DM (negative)
Approach: review goals
Approach: reviewing and testing outcc
Approach: risk based
Approach: same if repeated
Approach: similar followed
Approach: situation dependent
Approach: team DM diversity
Approach: turnarounds cause change
Approach: uncertainty vs. stable
Approach: unchanged
Assumptions: challenging
Assumptions: clarity
Assumptions: confirming
Assumptions: DM
Assumptions: experience based
Assumptions: prediction
Assumptions: reviewing & changing
Best combination of criteria values
Budget concious
Budget: concious
Budget: ignored for key criteria
Budget: negatives
Budget: not abusing
Budget: unimportant
Cannot base decisions on one critieri
Certainty: affitinty towards
Certainty: anchoring
Certainty: company responsibility
Certainty: embeding
Change: accepting constant change
Change: company response
Change: constant
Change: forcing
Change: impact
Change: imperative
Change: implementing
Change: input
Change: internal
Change: management
Change: OM
Change: risks
Change: structural restructuring
Collective DM
Collective DM (negative)
Collective DM: buy in
Collective DM: to individual
Communication
Company beliefs
Company moves through cycles
Company overspending
Company vs. Employee DM
Confidence
Confidence (negaitve)
Conflicts: compromise
Conflicts: managing with experience
Conflicts: rank
Consequences of Decision Making (ne
Considering wider impact
Constraints
Constraints: people
Consultants: useage (negative)
Consultative
Context
Context: Africa
Context: company
Context: drives decision
Context: importance
Context: industry
Context: South Africa
Contingency plan
Costs: awareness
Costs: awareness free information
Costs: challenging importance
Costs: future
Costs: reduction
Costs: vs. decision outcome
Crisis
Crisis: DM
Crisis: limited time
Crisis: limits information
Crisis: protection
Crisis: quick DM
Criteria: additional
Criteria: all important
Criteria: all purchased
Criteria: application to scenario
Criteria: average used
Criteria: balance used
Criteria: BEE ()
Criteria: benefits questionable
Criteria: budget driven selection
Criteria: build over time
Criteria: building selection robustnes
Criteria: combining
Criteria: comfort driven
Criteria: company importance
Criteria: company size ()
Criteria: company size (-)
Criteria: complexity ()
Criteria: compromise
Criteria: confirmatory
Criteria: conflicts
Criteria: confusion to DM
Criteria: considers improving
Criteria: context driven selection
Criteria: curiosity
Criteria: customer behaviour ()
Criteria: customer relationship ()
Criteria: customer service ()
Criteria: direct/indirect ()
Criteria: experience driven selection
Criteria: few vs. many
Criteria: filtering
Criteria: frugal selection
Criteria: growth ()
Criteria: high values
Criteria: impact explained
Criteria: incentiven driven selection
Criteria: inference
Criteria: intuition driven selection
Criteria: irrelevant
Criteria: justification for ignoring
Criteria: justification for selection
Criteria: linked to turnaround strategy
Criteria: location ()
Criteria: long term strategy ()
Criteria: loyalty ()
Criteria: margin ()
Criteria: market ()
Criteria: market perception ()
Criteria: meaning derived from experi
Criteria: neglected selected
Criteria: noise
Criteria: non-key
Criteria: non-negotiables
Criteria: not adding to decision
Criteria: past decision driven selectio
Criteria: past performance ()
Criteria: payback ()
Criteria: payment ()
Criteria: personality
Criteria: predetermined selection
Criteria: prioritizing
Criteria: profit margin ()

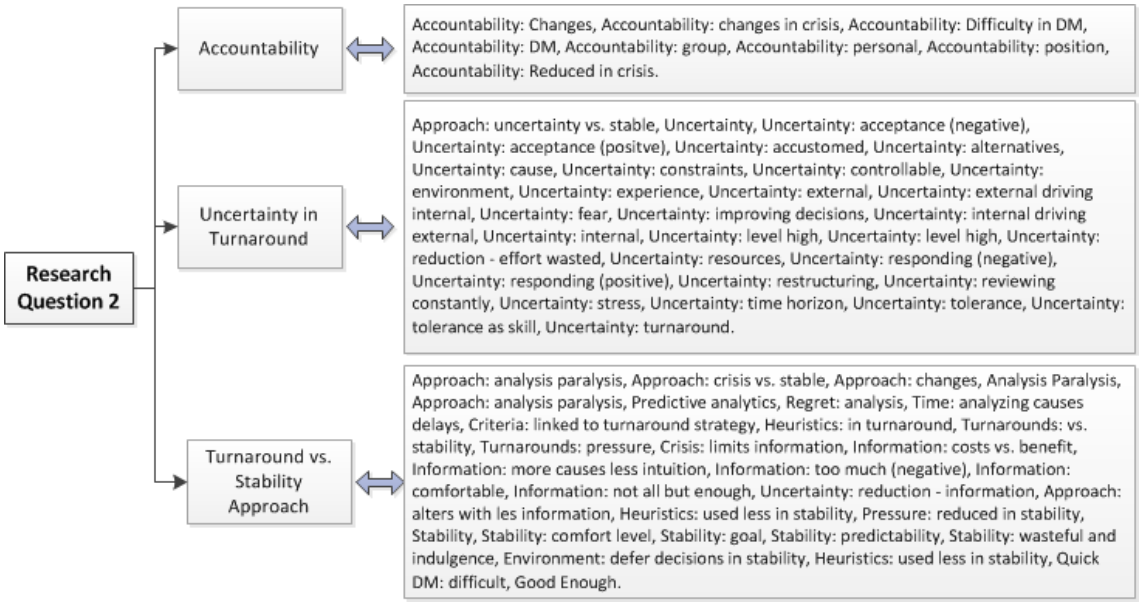
Criteria: profitability ()
Criteria: project feasability ()
Criteria: purchased & unused
Criteria: quality ()
Criteria: reaching threshold
Criteria: Reliability ()
Criteria: resolving low values
Criteria: risk ()
Criteria: riskiness ()
Criteria: ROI ()
Criteria: sacrificing on non-key
Criteria: scenario creation
Criteria: scenario driven selection
Criteria: select contradicing
Criteria: selection informs success
Criteria: seperated by time horizon
Criteria: stakeholders ()
Criteria: strategic partner ()
Criteria: strengths driven selection
Criteria: supplier selection ()
Criteria: supplier values ()
Criteria: support decision outcome
Criteria: too many
Criteria: uniqueness ()
Criteria: unpurchased confirmatory
Criteria: unpurchased managable
Criteria: unused consideration
Criteria: usefulness
Criteria: value driven selection
Criteria: weighting
Criteria: weighting experience
Critical Factor
Cue validity (negative)
Cue validity (unused)
Cue validity *
Cue validity: combined experience
Cue validity: second check
Culture: change
Culture: company
Culture: company, Culture: DM
Culture: trust
Culture: unforgiving mistakes
Culutre: consultative
Current company DM (negative)
Data: advantage
Data: decisions
Data: decisions (negative)
Data: limited (positive)
Data: negative
Data: sufficient
decision empowerment (negative)
Decision execution
Decision execution: delays
Decision Fit
Decision Outcomes
Decision Outcomes: bad
Decision Outcomes: reaction
Decision Outcomes: reviewing
Decision process
Decisions that are questioned
Delays: associated costs
Different stakeholders
disempower decision maker
Disruptive tech
DM based on previous grounding
DM Capability
DM competency
DM competency: peers (negative)
DM competency: trust
DM Horizon: long term ignored
DM Horizon: long term impact
DM Horizon: long vs. short
DM maturity and education increases
DM Personality (negative)
DM Policies: changes
DM Policies: delays
Doing more with less
Dynamic business
efficient DM
Emotional DM
Emotional DM: (negative)
Empowering others
Environment
Environment: adapting approach
Environment: awareness of change
Environment: becoming internally stal
Environment: comfort with familiarity
Environment: commodity prices volotil
Environment: competing decisions
Environment: competitive
Environment: complex
Environment: customer
Environment: defer decisions in stabi
Environment: economic volatility
Environment: evolving DM approach
Environment: evolving landscape
Environment: exchange rate unpredict
Environment: external
Environment: frequent challenges
Environment: impacts DM approach
Environment: internal not effecting DM
Environment: market changes
Environment: new
Environment: oil price volatile
Environment: past
Environment: past vs. current
Environment: personal
Environment: relaxing DM in stability
Environment: responding
Environment: reviewing for DM approa
Environment: stable
Environment: stable long term decisio
Environment: stakeholder complexity
Environment: uncertain
Environment: uncomfortable
Environment: understanding
Environment: unfamiliar
Environment: variability stable
Environment: volatile
Expectation: doesn't change
Expectation: quick returns
Experience based decisions
Experience building better DM
Experience improving accuracy relatio
Experience sources
experience vs. inexperience
experience vs. unconcious
Experience: perception
Experience: perception (negative)
Experience: personal
Experience: reference point
Experience: reflection
Experience: reliance
Experience: respected
Experience: subconcious use
Experience: traumatic
Experience: usage
Experience: validation
Experience: wide
Expert Opinion: doubt
Expert Opinion: ignored
Expert Opinion: justification required
Expert Opinion: secondary
Facts (negative)
Fear: accountability
Fear: change
Fear: decision making
Fear: fearless
Fear: internal
Fear: reducing
Fear: turnaround
Feeling of inadequacy and inexperien
Forcing decisions
Future
Future clarity vs. time
Future: developing view
Future: extrapolate
Future: impact
Future: thinking
Future: uncertain
Future: vs. past
Good decisions
Good enough
Group DM (positive)
Gut feel
Gut feel: behavior
Gut feel: confirmation
Gut feel: contradictions
Gut feel: decisions
Gut feel: experience
Gut feel: importance
Gut feel: negative
Gut feel: positive
Gut feel: postive, Gut feel: experience
Gut feel: situational, Gut feel: decisio
Gut feel: uncertainty
Heuristics Factor - comfortability
Heuristics Factor - Decision horizon
Heuristics Factor - Early or initial deci
Heuristics Factor - experience
Heuristics Factor - familiarity
Heuristics Factor - hard to distinguish
Heuristics Factor - impact
Heuristics Factor - Implementation
Heuristics Factor - information availal
Heuristics Factor - information comple

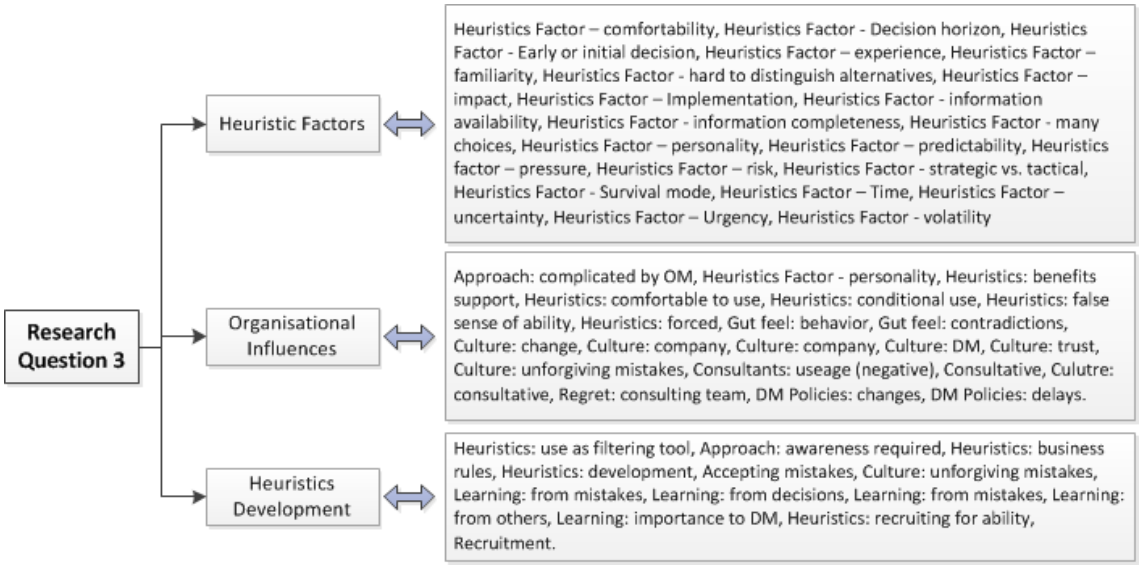
Heuristics Factor - many choices
Heuristics Factor - personality
Heuristics Factor - predictability
Heuristics factor - pressure
Heuristics Factor - risk
Heuristics Factor - strategic vs. tactica
Heuristics Factor - Survival mode
Heuristics Factor - Time
Heuristics Factor - uncertainty
Heuristics Factor - Urgency
Heuristics Factor - volatility
Heuristics: aid to DM
Heuristics: as check
Heuristics: benefits support
Heuristics: bold decisions
Heuristics: business rules
Heuristics: choice
Heuristics: comfortable to use
Heuristics: competitive advantage
Heuristics: conditional use
Heuristics: confidence
Heuristics: development
Heuristics: documented
Heuristics: evidence based DM
Heuristics: evolves with time
Heuristics: experience built
Heuristics: experience dependent
Heuristics: false sense of ability
Heuristics: for final decision
Heuristics: for initial decision
Heuristics: forced
Heuristics: frequent successful use
Heuristics: future use
Heuristics: guestimate
Heuristics: in turnaround
Heuristics: inexperience indicated by
Heuristics: informs ballpark
Heuristics: irresponsible use
Heuristics: limits
Heuristics: long term goal setting
Heuristics: maturity required
Heuristics: muscle memory
Heuristics: outcome (negative)
Heuristics: outcome (positive)
Heuristics: personal life
Heuristics: recruiting for ability
Heuristics: responsible use
Heuristics: under pressure
Heuristics: unsuited large decisions
Heuristics: unsuited strategic
Heuristics: use as filtering tool
Heuristics: used less in stability
Heuristics: useful
high level positions
Importance of past experience
Importance of ranking
Independent DM
Indicator of comfort
Information: accepting imperfect
Information: better DM with less
Information: combined with experien
Information: comfortable
Information: conflicting
Information: costs vs. benefit
Information: external
Information: frugal
Information: irrelevent
Information: irrelevent in retrospect
Information: key requirements
Information: leveraging off others
Information: limited for competitors
Information: maximise
Information: more causes delays
Information: more causes less intuiti
Information: more confuses decision
Information: more does not improve d
Information: more required
Information: not all but enough
Information: ok with less
Information: public sources
Information: reality outdated
Information: too much (negative)
Information: unclear
Information: use available
Information: using networks
Information: validity over time
Information: vs. decision impact
Interesting Quote
Intuition: bias
Intuition: building
Intuition: DM speed and experience
Intuition: isolated (negative)
Intuition: maturity
Key criteria
Key criteria: anchors decision
Key critieria prioritised
Knowledge base limited in uncertain
Learning: from decisions
Learning: from mistakes
Learning: from others
Learning: importance to DM
Less fat in DM
Limited information
Limited information: past experience
Limited information: personal prioriti
Linking current to past DM
Living with decision
Locus of control
Macroeconomic conditions (negative)
More expereince less time
Not compromising on key criteria
Objectivity
Off-the cuff decisions
Opportunity seeking
Past success informing future decisio
Peer Expert Opinion: aligned
Peer Expert Opinion: comfort
Peer Expert Opinion: DM resource
Peer Expert Opinion: not influenced
Peer Expert Opinion: ok with conflict
Peer Opinion: challenged
Peer Opinion: considered
Peer Opinion: secondary to decision
Peer Opinion: used as tie-breaker
People: impact
People: profile (positive)
People: social exclusion on decisions
People: uncertain
People: under resourced
People: uniqueness
Personality
Predicting
Predictive analytics
Pressure: DM
Pressure: none
Pressure: reduced in stability
Profit
Profitability, Uncertainty
Purchasing more would lead to the sa
Questioning new model
Quick DM: difficult
Quick DM: fast reactions required
Quick DM: importance
Quick DM: less information
Quick DM: no internal recognition
Quick DM: quality (negative)
Recognition Heuristic *
Recruitment
Red Tape
Regret: analysis
Regret: consulting team
Regret: none
Regret: not frugal enough
Regret: too frugal
Reliability
Resiliance
Resolute in DM
Resources for decision
Resources: internal
Restructuring
Restructuring: customer
Restructuring: DM impact
Restructuring: response to external er
Restructuring: stability
Results and decision outcome thinkin
Risk
Risk: appetite
Risk: awareness and consideration
Risk: blindly taking
Risk: calculated
Risk: limited information
Risk: mitigation
Risk: personality
Risk: taking more (positive)
Risk: vs. reward
Rounded DM ability
Rules based DM
Rules based DM: ambiguity
Rules based DM: business rules
Rules based DM: outside
Rules based DM: pareto
Sanity
Sanity check
Satisficing *
Saturation point reached
Scenario: absorbing details

Scenario: daily occurance
Scenario: guides decision
Scenario: importance
Scenario: link to experience
Scenario: greater than budget
Selection then rank
Short term impact
Something will go wrong
Speed: competitive advantage
Speed: required
Speed: valued over budget
Spontaneous decisions
Stability
Stability: comfort level
Stability: goal
Stability: predictability
Stability: wasteful and indulgence
Stopping: budget driven
Stopping: comfort with key criteria
Stopping: criteria differentiated
Stopping: personal criteria met
Stopping: satisfied
Stopping: saturation reached
Strategic vs. Operational DM
Strategic vs. Tactical (Effort)
Strategic vs. Tactical DM
Strikes
Subconcious thought process
Supporting Information
Sweet spot on spending
Tactical position DM requirements
Take the best Heuristic *
Tallying
Time
Time: analyzing causes delays
Time: awareness and consideration
Time: balance with accuracy
Time: changes with state of company
Time: comfort, Budget: comfort
Time: concern
Time: consequences
Time: constraint
Time: double checking delays
Time: importance
Time: link to advice
Time: link to information
Time: minimise
Time: more causes delays
Time: pressure
Time: pressure creates focus
Time: reflection
Time: strategic vs. tactical
Time: vs. effort
Trade-offs
Trends
Tried and tested approach
Trust: from leadership
Trust: importance
Trust: information
Trust: issues
Trust: lost
Trust: rebuilding
Turnaround
Turnarounds: actions
Turnarounds: bold decisions
Turnarounds: changes
Turnarounds: conditions
Turnarounds: customer focus
Turnarounds: cycle
Turnarounds: daily
Turnarounds: DM
Turnarounds: DM aided by experience
Turnarounds: DM easier
Turnarounds: external and internal
Turnarounds: impact
Turnarounds: investment
Turnarounds: inward focus
Turnarounds: leadership
Turnarounds: less predictability
Turnarounds: outward focus
Turnarounds: partnership
Turnarounds: people DM
Turnarounds: pressure
Turnarounds: strategy
Turnarounds: successful
Turnarounds: vs. stability
Unable to delay gratification
Uncertainty
Uncertainty: acceptance (negative)
Uncertainty: acceptance (positve)
Uncertainty: accustomed
Uncertainty: alternatives
Uncertainty: approach
Uncertainty: bearable
Uncertainty: capital projects
Uncertainty: cause
Uncertainty: CEO
Uncertainty: certainty
Uncertainty: company created
Uncertainty: competitors
Uncertainty: constraints
Uncertainty: context
Uncertainty: controllable
Uncertainty: customers
Uncertainty: cycles
Uncertainty: decision roles
Uncertainty: DM
Uncertainty: DM delays
Uncertainty: embracing
Uncertainty: environment
Uncertainty: environment currently
Uncertainty: environment, Uncertainty
Uncertainty: everyday
Uncertainty: excuse
Uncertainty: experience
Uncertainty: external
Uncertainty: external driving internal
Uncertainty: fear
Uncertainty: frequent change
Uncertainty: impact
Uncertainty: impact (negative)
Uncertainty: improving decisions
Uncertainty: improving decisions (negative)
Uncertainty: industry
Uncertainty: information
Uncertainty: internal
Uncertainty: internal driving external
Uncertainty: internal, Uncertainty: exte
Uncertainty: internal, Uncertainty: leve
Uncertainty: level high
Uncertainty: level increasing
Uncertainty: level low
Uncertainty: level medium
Uncertainty: local vs. global, Uncertair
Uncertainty: long term
Uncertainty: managing it
Uncertainty: mining
Uncertainty: org levels
Uncertainty: personal
Uncertainty: political
Uncertainty: predicting
Uncertainty: product
Uncertainty: purchasing more
Uncertainty: reaction
Uncertainty: reduction - effort wasted
Uncertainty: reduction - information
Uncertainty: reduction - questions
Uncertainty: reduction - rational DM
Uncertainty: reduction - rules
Uncertainty: reduction - values
Uncertainty: resources
Uncertainty: responding (negative)
Uncertainty: responding (positive)
Uncertainty: restructuring
Uncertainty: reviewing constantly
Uncertainty: self inflicted
Uncertainty: short term
Uncertainty: social acceptance
Uncertainty: speculation
Uncertainty: stress
Uncertainty: supply chain
Uncertainty: time horizon
Uncertainty: tolerance
Uncertainty: tolerance as skill
Uncertainty: turnaround
Uncertainty: unknowns
Uncertainty: unpredictable
Uncertainty: variability
Uncontrollable factors
Understanding causes
Understanding triggers
unfamiliar with industry
unknown factors
Unnecessary to puchase more
Value driven decision making
Values
Values: change during turnaround
Values: comfortable
Values: company
variability
Wasteful in decisions
weaker loci of control
World is changing

APPENDIX 6: CODE FAMILIES PER RESEARCH QUESTION







APPENDIX 7: INTERVIEW CONSENT FORM

Gordon Institute of Business Science
University of Pretoria

Unit 2, 180 Webber Road

Sandown

2196

yyyy/mm/dd

Dear [Interviewee],

I am currently completing my MBA through the University of Pretoria's Gordon Institute of Business Science (GIBS). As part of my studies, I am conducting research entitled "Heuristics in Managerial Decision Making during Company Turnaround and Uncertainty".

The aim of the research is to investigate the use of heuristics during organisational turnarounds and to understand the decision making process of managers within a company undergoing a turnaround. I humbly request the opportunity to interview you regarding this topic and subsequently be able to use the data gathered from our interview for the completion of my thesis.

Our interview is expected to last 60 minutes and will help me understand your approach to decision making through a decision making exercise and open ended exploratory questions. **Your participation is voluntary and you can withdraw at any time without penalty**. In line with standard ethical practice, all data will be kept confidential and will be aggregated for the subsequent data analysis, thus ensuring confidentiality of the data shared during the interview. We ask your permission to record your name, age and position as part of the research with the assurance that no link between these details and specific data findings will be discussed at a personal level.

Should you be interested, a copy of the interview transcript and final research report can be made available to you. In the instance that this research is used in the future, it

will be for academic purposes only. If you have any concerns or reservations, please do not hesitate to contact me or my supervisor through our details listed below.

	RESEACHER	**SUPERVISOR**
NAME	Loven Govender	Dr. Charlene Lew
EMAIL	lovendran23@gmail.com	lewc@gibs.co.za
PHONE	+27 79 888 6866	+27 11 771 4284

Name of participant: _____

Signature of participant: _____

Date: _____

Signature of researcher: _____

Date: _____

APPENDIX 8: ETHICAL CLEARANCE

Dear Mr Lovendran Govender

Protocol Number: **Temp2016-01356**

Title: **Heuristics in Managerial Decision Making during Company Turnaround and Uncertainty**

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,

Adele Bekker