Gordon Institute of Business Science
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CONTEXTUAL INTELLIGENCE: A LEADERSHIP MODEL FOR ENGINEERING AND CONSTRUCTION MANAGEMENT COMPANIES IN SOUTH AFRICA

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ABSTRACT

This research was undertaken to test an existing model of contextual intelligence in the engineering and construction industry of South Africa. It similarly attempted to determine the contributing elements within the defined categories of the contextual intelligence construct that include skills and abilities, types of leadership, intelligence and types of thinking.

A qualitative exploratory research method was used whereby sixteen semi-structured, in-depth interviews were held with leaders in the engineering and construction sector of South Africa.

A number of existing categories and elements of the contextual intelligence model were found to be relevant, albeit incomplete. A revised Contextual Intelligence Model was developed utilising both highly relevant and relevant elements within the four categories. New elements contributing towards the revised model included having the ability to listen, being collaborative, displaying authentic, participative, organisational and transformational leadership abilities, utilising system thinking and conscious thinking structures, and lastly utilising both emotional and technical intelligence.

Keywords: Leadership, Context, Intelligence, Engineering and Construction

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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CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Introduction

Understanding context is important for leaders today, given the rapidly changing and increasingly complex environment. With the high degree of interconnectedness through technology and communication, business environments are becoming increasingly dynamic, chaotic and complex. In this complexity, businesses and leaders have to learn to adapt in order to survive (Steven Terrell & Rosenbusch, 2013). South Africa is an emerging market where the complexity and pace of change needs to be understood to ensure that businesses remain relevant, successful and sustainable. More specifically, the engineering and construction industry is one of the most active, complex and dynamic environments within any country (Bresnen, 1990; Loosemore, Dainty & Lingard, 2003; Wild 2002, cited by Akhavan Tabassi, Ramli, Hassan Abu Bakar & Hamid Kadir Pakir, 2014). Furthermore, the engineering and construction industry is generally an important industrial sector in an economically developing country and to achieve best performance, project managers should realize and employ the appropriate leadership styles (Limsila & Ogunlana, 2008). With Infrastructure investment being a major priority in both the National Development Plan and the New Growth Plan in South Africa, the importance of successful infrastructure delivery is vital to ensuring growth, job creation and economic transformation (National Infrastructure Plan, 2012).

Given the fact that infrastructure investment needs to be a success in order to achieve the objectives of the country and that the contexts in which these investments are executed are increasingly complex and dynamic, new project management paradigms need to be investigated and explored as the traditional project management academic curriculum and theory is no longer sufficient. The reason for this is that organisations of today are beginning to understand that the skill sets to manage and lead have changed as the challenges within these contexts are far more complex (Mendenhall, Osland, Bird, Oddou & Maznevski, 2008 cited by Steven Terrell & Rosenbusch, 2013). Effective leadership is essential for every engineering and construction project and leadership behaviour is an important variable that has significant impact on the success of project management (Gharebaghi & McManus, 2003 cited by Limsila & Ogunlana, 2008).

Randeree and Ghaffer Chaudhry (2012) affirmed that leadership style is a recognised factor of employee performance and leadership style influences much of the organisational behaviour. Unfortunately, the traditional engineering/construction practices and theory treat projects as islands with closed boundaries that rely on prescribed formulae (Engwall, 2003; Hodgson, 2000; Heeks & Mundy, 2001 cited by Kapsali, 2011). Similarly, Pellegrinelli, Partington, Hemingway, Mohdzain and Shah (2007) identified that traditional and formal programme and project management methods are silent regarding context, however in top performing organizations the managers and leaders deliberately deviate from procedure in order to contextualise the application of procedure. Ofori (2008) confirmed that due to the traditional academic curriculum (which does not cover the development of leaders) project managers employ transactional task-orientated mentality.

Ofori (2008) stated that historically, leadership studies in the field of engineering and construction investigated motivational factors and personal characteristics of project managers. He confirmed that whilst there have been large volumes of literature available, very little work has been done within the industry. Langford, Fellows, Hancock and Gale (1995, as cited by Ofori, 2008), explained that the lack of leadership studies in the engineering and construction industry is due to the lack of understanding of knowledge of the industry on the part of social scientists and the lack of understanding of the social sciences by those in industry.

Certain academics discussing contemporary leadership have started to introduce new paradigms for the project management industry which include soft systems, emergent influence and complex adaptive systems. An example of new thinking includes the work of Chen and Manley (2014) that analysed the influence of formal and informal governance within engineering and construction projects. They found that it is in fact informal governance (including leadership, team integration and communication systems) that was a greater predictor of project performance and thus called for future research into this informal space. Hu, Chan and Le (2012) also identified that programme and project leadership as well as understanding context are some of the critical programme management factors an organisation must have to deliver successful projects. Ozorhon, Abbott and Aouad (2014) recognised that leadership plays a crucial role in shaping project contexts and enables innovation.

Pellegrinelli et al., (2007) raised the importance of context and of creating a platform for context that are aligned to purpose and process to determine the role that context plays

in shaping programmes and projects. Pellegrinelli et al., (2007) concluded that there is a symbiotic influence between the context and the projects that are developed.

Given that context is becoming increasingly complex and that leadership theory and application needs to change, a clear understanding of the skills, abilities, leadership styles, intelligence, behaviours and different types of thinking that are necessary must be determined. Similarly, clarity is required around which of these skills and abilities can be used to assist leaders to correctly diagnose context in order to apply more effective leadership styles and ultimately become a more effective leaders.

1.2 Research Problem

Given the increasing emphasis on the importance of understanding context and the introduction of contemporary leadership literature within engineering and construction environment, it is important to determine the existing models and constructs that are available and select those that could be useful to leaders in the engineering and construction sector of South Africa. One of the first authors who defined contextual intelligence was Sternberg (1985) who explained that contextual intelligence is “an external, interactive process involving the practical application of knowledge and information in real world situations”. The researcher therefore posed the question: Which knowledge and information must be applied?

Mothilal (2010), Deppe (2010) and Sandilands (2010) offered a Revised Leadership Effectiveness Model consisting of the following categories: 1) what leaders *are*, 2) what leaders *know* and 3) what leaders *do* in understanding the requirement for leadership effectiveness. Similarly, Kutz and Bamford-Wade (2013) developed a conceptual model for Contextual Intelligence categorised into: 1) skills and abilities, 2) types of leadership, and 3) types of thinking. Brown, Gould and Foster (2005) further offered a conceptual framework for developing contextual Intelligence by: 1) learning the language, 2) learning the reality, 3) developing contextual maps, 4) identifying patterns within context, 5) paying careful attention to attitudes, 6) identifying all possible means of influence and 7) having a grasp on the broad perspective. These models demonstrate that there are important “differences of understanding” between leadership approaches in context and understanding context.

The focus of this research paper is considered to be centred on the understanding of context for leaders, and more specifically, what is required for leaders to diagnose context, the Kutz and Bamford-Wade (2013) Conceptual Model for Contextual

Intelligence was identified as the most appropriate conceptual model. After the review of similar literature, the researcher argued that the relevancy of this conceptual model is unknown and there may be opportunity to adjust or further develop the Conceptual Model. Finally, specific nuances may be experienced within varying contexts and therefore the Kutz and Bamford-Wade (2013) Conceptual Model for Contextual Intelligence should be tested within the construction and engineering sector.

1.3 Research Objectives

Kutz and Bamford-Wade (2013) offered that in today's dynamic ecosystem, problems are poorly defined and are missing relevant information, there are multiple possibilities for solutions, and these are influenced by multiple experiences. Similarly, a leader must have a range of skills, abilities, knowledge to practically utilise and make sense of an environment and become a more effective and successful leader. With many contemporary leadership constructs focused on context, Kutz and Bamford-Wade's (2013) model was identified as the most appropriate model for diagnosing context.

The purpose of this research project was to explore the conceptual model of Contextual Intelligence with the aim of determining whether it is a relevant and a comprehensive conceptual model for leaders in the engineering and construction industry.

The objectives of the research were to:

- Test whether the conceptual model of Contextual Intelligence is a relevant conceptual model for leaders in the engineering and construction sectors of South Africa.
- Determine whether the conceptual model of Contextual Intelligence is a comprehensive conceptual model for leaders in the engineering and Construction sectors of South Africa.
- Ascertain whether the perceived benefits derived from diagnosing context align to the benefits and outcomes derived from the Contextual Intelligence conceptual model.

The relevance of the categories and elements that constitute the existing model were examined by gaining leaders' insights. The more a leader identified with and discussed an element, the more relevant it was found to be and conversely, the less an element was identified or discussed, the less relevant it was. Through interviews the researcher

tested the existing structure but also opened up the process to allow for new inductive elements and categories. This process allowed the researcher to determine how comprehensive the existing Kutz and Bamford-Wade (2013) conceptual model for contextual intelligence is for the engineering and construction industry.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The purpose of this literature review is to discuss both traditional and contemporary leadership literature and to determine some of the different leadership requirements and some of the shortfalls and criticisms experienced in today's environments.

The literature review commences by understanding leadership and the epistemological development of the topic. This chapter then discusses the skills, abilities, behaviours and traits of leaders before reviewing the differing leadership styles defined and discussed over the last hundred years.

Different types are intelligence is then reviewed to further explore the relevance of such ability in the context of leadership.

Understanding context is then introduced as a vital requirement for today's leaders and the concept and work of Contextual Intelligence is the introduced. A comprehensive evolution of Contextual Intelligence is provided before it is critically reviewed. The combination of skills, abilities, behaviours, traits, intelligence and types of leadership are then discussed briefly as elements of Contextual Intelligence. Three varying models are then introduced as possible models for diagnoses of context and successful leadership. These three models are reviewed before a preferred model is selected for examination.

Finally, an argument is made that the Kutz and Bamford-Wade (2013) Conceptual Model for Contextual Intelligence is a relevant model with which to test in the engineering and construction sector.

This argument is examined by asking whether the Kutz and Bamford-Wade (2013) Conceptual Model for Contextual Intelligence is relevant and comprehensive for leaders in the engineering and construction industry.

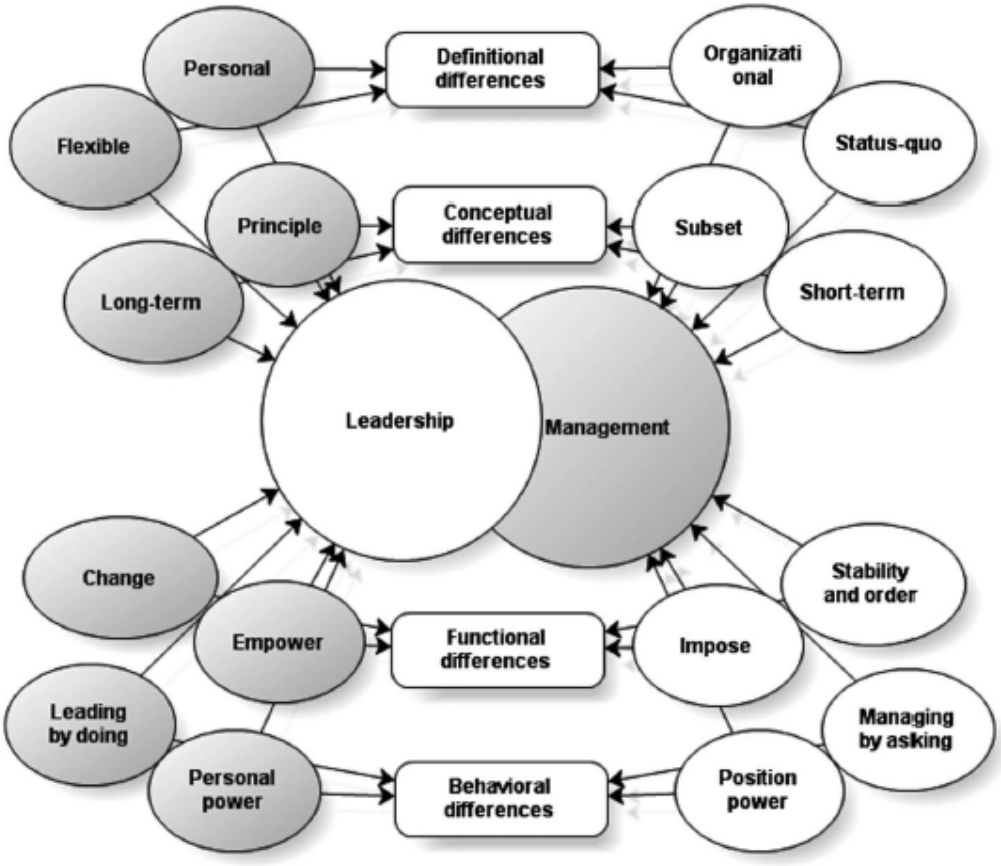
2.2 Leadership

Leadership is one of the most researched management topics and has an academic history spanning more than 100 years (Avolio, Walumbwa & Weber, 2009). The study and theory of leadership has evolved to such an extent that more than 221 different

definitions and conceptions have been found (Rost, 1993 cited by McClesky, 2014). To explain some of these nuances, Toor's (2011) thematic framework and Kaplan's (2009) balancing of basic dualities were reviewed.

Toor's (2011) research conceptualised a thematic network that offers an explanation between the different themes of management and leadership. Toor (2011) managed to differentiate the two constructs but accepted that management and leadership can happen simultaneously within an organisation's context. This model and differentiation of themes can offer a possible foundation to further examine the applicability of other constructs (Please see Figure 1 below).

Figure 1: Toor's (2011) Thematic Network for Differentiating between Leadership and Management



Toor (2011) recorded that it is leadership that is more flexible and open to new ideas, where management is more task-orientated and rigid. Toor (2011) further stated that leadership pursues change that is coupled with sustainability, whilst management is tied with the bottom line and lastly, leadership empowers people where management imposes authority. Toor (2011) acknowledged that there cannot be exclusive reliance

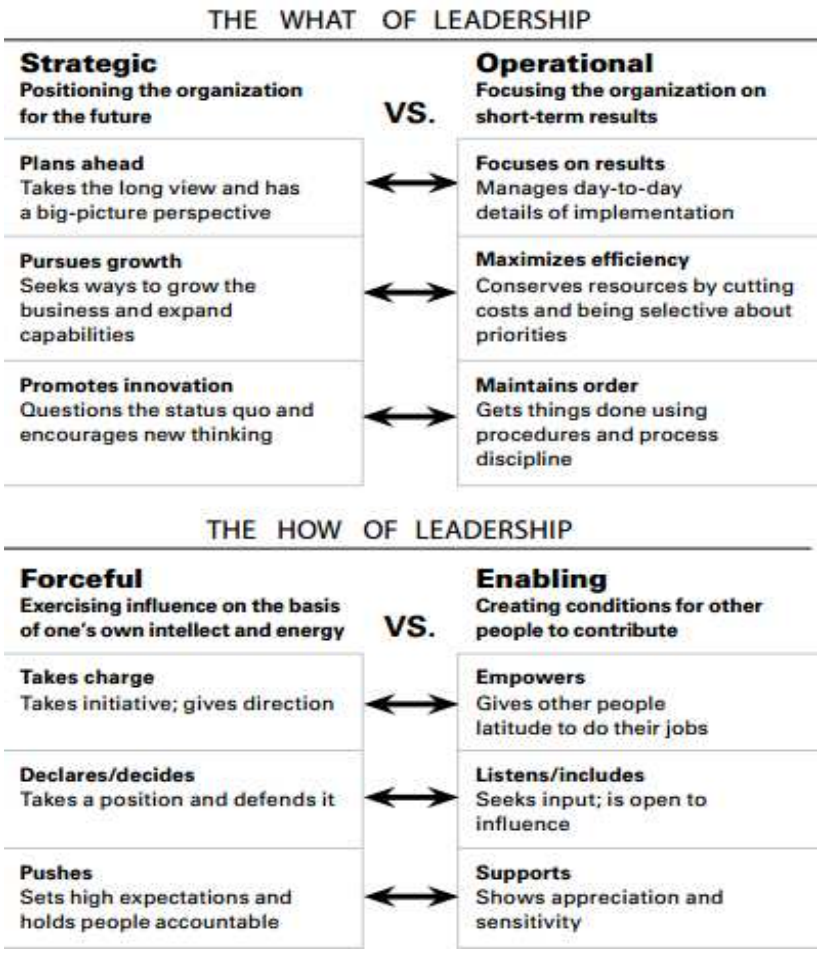
on either leadership or management, and rather admonished that organisations need leaders with managerial astuteness and mangers with leadership qualities. Below is a table listing the themes of both leadership and management. This table is used later chapters of the research study to identify, test and discuss further developed elements of leadership.

Table 1: Tabulation of Toor's Thematic Differentiation Network

Leadership	Management
Personal	Organisational
Flexible	Status-quo
Principle	Subset
Long-term	Short-term
Change	Stability and order
Empower	Impose
Leading by doing	Managing by asking
Personal power	Position power

Toor (2011) clearly delineated the themes evident for management and leadership. However the differentiation is not as clear in the two basic dualities model proposed by Kaplan (2009). Kaplan (2009) argued that a leader needs to balance two basic dualities in "what" a leader does and "how" a leader does it. In Kaplan's model the conceptualisation of the leader is not as long-term as one might think but rather needs to balance between strategic and operational focus. Similarly Kaplan (2009) contended that a leader must balance between being forceful and enabling, as opposed to Toor (2011) who separated empowering and imposing themes into leadership and management, respectively. Below is Kaplan's summary of leaders' balance of dualities:

Figure 2: Kaplan's (2009) Fundamental Dualities in Leadership



Kaplan's model above demonstrates that in comparison to Toor's (2011) thematic network, there can be both similarities and contradictions within the concept of leadership. It may be argued that now that this ambiguity is understood, it is necessary to investigate the skills, abilities, behaviours and traits required for successful leadership today.

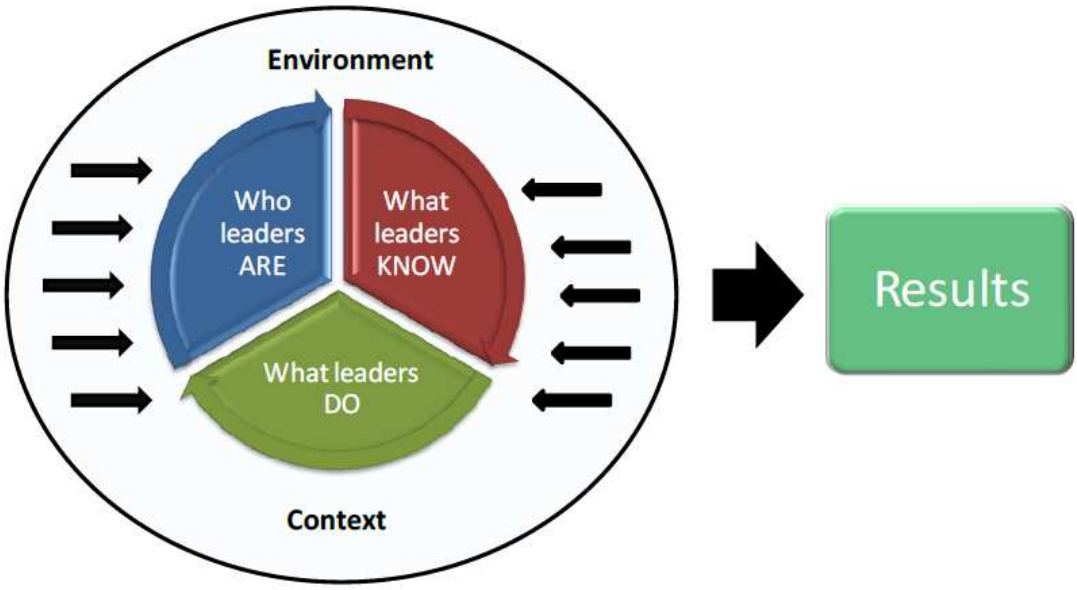
2.3 Skills, Abilities, Behaviours and Traits Required of Leaders Today

Mothilal (2010, cited Ulrich, Zenger & Smallwood, 1999) by stating that there are a number of terms and categories that define Leadership. Ulrich, Zenger and Smallwood (1999) were quoted as saying that leaders are defined by who they ARE (values,

motives, personal traits, characteristics), what they KNOW (Skills, abilities, competencies) and what they DO (Behaviour, habits, styles).

Yukl (2006) argued that traits and characteristics of great leaders could be identified and thereafter, if another person had similar traits, then that person could be a great leader. With this in mind Mothilal (2010), Deppe (2010) and Sandilands (2010) set out to define the values, personal traits, characteristics, behaviours and knowledge attributes of leaders who are effective in South Africa. The three authors combined their research into a Revised Leadership Effectiveness Model. This model is illustrated below:

Figure 3: Mothilal, Deppe and Sandilands' (2010) Revised Leadership Effectiveness Model



Each of the above authors identified pertinent elements that contribute towards being a successful leader. Each of the authors' findings are summarised to determine the shape and content of each category as well as each of the contributing elements.

Mothilal (2010) explored "who leaders ARE" and defined six elements that include 1) drive, 2) conscientiousness, 3) self-confidence, 4) openness, 5) charisma and 6) emotional intelligence.

Mothilal (2010) explained that successful leaders are very ambitious and must possess a great amount of energy to sustain this ambition and achieve certain goals. This drive is a combination of energy, ambition and focus. Leaders that are conscientious utilise

certain traits such as honesty, integrity and ethics. These traits provide a leader with genuine authority and also assist with improving a leader's reputation. Mothilal (2010) further explained that openness similarly provides a leader with improved reputation and improved levels of trust. Openness is also explained as the ability to be open to change and therefore the leader must be adaptable and innovative to accommodate for changing dynamics within their unique environment. Charisma is explained as having vision, being an inspiring leader, having good communication skills and being persuasive. These traits are some of a leader's most useful abilities as a leader could utilise these to share stories, inspire and influence their followers accordingly. Lastly, emotional intelligence is the ability which allows the leader to understand themselves and their followers' emotional states. Judge, Piccolo and Kosalka (2009) discussed that emotionally intelligent leaders encourage their followers by demonstrating calm and consistent emotions rather than negative emotions such as stress and anxiety.

Deppe (2010) explored the behaviours of leaders in South Africa and the category "what leaders DO". Fifteen behavioural themes were identified that any leader may display to be successful. Many of these fifteen elements are consistent or previously mentioned by Mothilal (2010) such as emotional intelligence, being engaging and approachable, having a vision, inspiring and motivating, displaying energy and passions, having focus and expressing trust. Other behavioural elements not previously described include: 1) communicating amongst various stakeholders, 2) selecting a team that is compatible and effective, 3) displaying empathy and that you care, 4) listening, 5) being a visible leader, 6) empowering staff and 7) building strong and resilient teams.

Sandilands (2010) focused on the final category of "what leaders KNOW". This category similarly included social and emotional skills that similarly inform leaders' behaviours. Sandilands (2010) explored the knowledge attributes that influence leaders' behaviours in South Africa and more specifically how important these knowledge attributes are and how these knowledge attributes are acquired. Sandilands (2010) discovered that knowledge is important to leaders as 93% of the authors' interviews confirmed that leaders identified knowledge as the enabler to enact behaviours. Sandilands (2010) ascertained that knowledge (described as the social and emotional skills) are acquired through 1) experience, 2) academic qualifications, 3) continuous learning and 4) mentorships. Technical qualifications as well as experience were some of the stronger influencers of knowledge.

2.4 Types or Styles of Leadership: Current Shortfalls and Criticisms

Ofori (2008) listed more than 28 different leadership styles that are currently used within leadership literature. Some of the more common styles found in the engineering and construction sectors included democratic, authoritarian, task- and relationship-orientated, autocratic, consultative, servant leadership, transactional, transformational, situational and laissez–faire. With so many varying leadership styles academics have sought out appropriate styles of leadership for varying geographies, cultures and social contexts. There are a great number of studies exploring different applications of leadership around the world and interestingly (or maybe not so interestingly), different researchers have found different leadership styles that have been better suited for different geographies, cultures and social contexts. Some examples of the different styles are presented in Table 2 below:

Table 2: Differing Leadership Styles

Academic Researcher	Favoured Leadership styles	Location
Seymour and Abd-Elhaleem (1991)	Task-orientated leadership	Egypt
Rowlinson, Ho, Yun (1993, cited by Ofori, 2008)	Supportive style in feasibility and pre-contract stages and directive style in construction	Egypt
Fraser (2000)	Team-style leadership	Australia
Fellows (2003)	Supportive-style of leadership	Hong Kong
Limsila and Ogunlana (2002)	Relationship-orientated leadership	Thailand
Randeree and Ghaffer Chaudhry, (2012)	Consultative and consensus leadership	UAE
Chan and Chan(2005, cited by Ofori, 2008)	Transformational and transactional	International

The table above affirms that there are varying leadership styles and that a particular style may be better suited for a different setting, culture and context. This is an interesting phenomenon and therefore it is appropriate that this research study investigated some of the most popular leadership styles, their shortfalls and criticisms in current business contexts.

As there have been numerous styles of leadership developed over the last century it would be impractical to discuss every style and associated nuances of each application. For the purposes of this literature review, four traditional leadership styles and three contemporary leadership styles were reviewed. The first four styles include

authentic, situational, transformational and transactional leadership followed by the more contemporary leadership styles of cognitive psychology and leadership, complexity leadership, cross cultural and global leadership.

Ofori (2008, p. 624) proposed that it is “integrity, moral character, self-discipline and clear purpose” that constitute some of the personal and social values and form a base of authentic leadership. Ofori (2008) investigated the need for authentic leadership and found that the existing skills sets and behaviours within the engineering and construction industry need to be transformed and therefore there is a need to shift the project managers’ thinking processes. Ofori continued that leadership skills have to be embedded in the culture of the organisation and these should reciprocally transfer between the organisation and the leaders. Ofori (2008) explained that there is no one particular leadership style and leaders need to learn how to switch from one style to another for different teams under different circumstances. Avolio, Luthans and Walumbwa (2004, as cited by Ofori. 2008) described that context is an important element that needs to understood when authentic leadership is investigated.

McClesky (2014) explained situational leadership theory as an ability to focus on issues that are either task or people orientated. He posited that within the domain of “people” leadership, behavioural leadership such as autocratic, democratic and laissez-faire styles should be understood. Hershey and Blanchard (1969, 1979, 1996, 1980, 1981) were also cited by McClesky (2014), who stated that situational leadership theory needs to consider the maturity level of the leaders’ followers. Some of the criticisms for situational leadership theory found was that inconsistency led to unauthentic leadership and that no particular leadership style was universally effective (Glynn & DeJordy, 2010 cited by McClesky, 2014).

Tabassi, Ramli, Abu Bakar and Kadir Pakir (2014) investigated transformational leadership within construction companies and identify five components that constituted leadership. They identified that leadership is a dynamic process that involves influences, intelligence and perseverance. They recognised that leadership occurs within a group context, includes personal exploration and involves goal attainment surrounding the usual iron triangle of (time, cost and quality). Tabassi et al., (2014, p.1020) further defined leadership as: “A dynamic process whereby a leader by his intelligence and perseverance influences a group of subordinates to develop their potential in order to achieve the organizational goals within certain time, budget and quality”. Tabassi, et al., (2014) found that in dynamic and fast-paced environments leadership styles need to change, as well as the transformational leadership qualities.

They confirmed Ofori's (2008) view that there is no one style of leadership but rather that leadership must change and adapt to the requirement of different situations.

McClesky (2014) cited Bass (1985; 1990; 2000) and Burns (1978) when he explained that transactional leadership focuses on the exchange between leaders and followers and that these exchanges allow leaders to accomplish their objectives and tasks. Again transactional leadership (like other traditional styles) has been criticised for its disregard of situational and contextual factors (Beyer, 1999; Yukl, 1999; Yukl & Mahsud, 2010 cited by McClesky, 2014). Another finding from other academic research was that within transactional leadership, it was found that leaders were not able to separate their personal ethical values from the preferred leadership style for different situations (Liu, Liu & Zeng, 2011 cited by McClesky, 2014).

Avolio, Walumbwa and Weber (2009) introduced the concept of self-view or view of ones-self as a cognitive leadership ability. This describes a leader who is cognitively aware of what leadership should be and strives to develop his/herself and followers to be better in leading and following respectively. It is implied that there are possible multiple versions and possible futures that a leader can envision, project and strive towards. Avolio et al., (2009) explained that a cognitive leader attempts to improve the relevance of their identity within their "schema" (p. 427) or given context. Avolio et al., (2009) suggested that future work is explored to link self-concept and meta-cognitive theories, which will help understand how leaders develop.

Ul-Bien and Marion (2008, as cited by Avolio et al., 2009) introduced complexity leadership based on complexity theory and complex adaptive systems theory. Avolio, et al., (2009) stated that complexity leadership is understood within a system comprising of dynamic and unpredictable actors and agents. It utilises double-loop learning to be adaptive and explains knowledge dissemination as a continual process of system evolution. Ul-Bien and Marion (2008, as cited by Avolio et al., 2009) admitted that complexity leadership has not been understood at a granular level whereby individual elements of the context can be isolated and substantively tested over a period of time. The authors suggested that further leadership studies should investigate the complexity of dynamically changing contexts.

Cross-cultural and global leadership is defined as a leadership requirement where leaders are working in an increasingly diverse set of locations (Avolio et al., 2009). Terrell and Rosenbusch (2013) found seven clusters of competency elements for global leaders that experience multiple interconnected contexts. These included cultural awareness and sensitivity, global mind-set and perspective, learning from

experience (which can be defined as tacit knowledge, either first-hand or vicariously), developing and maintaining relationships, communications traits and attitudes and finally knowledge and skills. Each of these skills offered the leader the ability to adapt to varying cultural contexts and improved the rate of success. Avolio et al., (2009) concluded that whilst improvements have been made regarding cross-cultural and global leadership, focused attention is required in determining the elements that constitute cross-cultural leadership.

After reviewing some traditional and contemporary leadership styles and understanding the shortfalls, criticisms and required future works, extrapolation of this information can commence, with the intention to identify certain patterns and themes.

After reviewing the four traditional and three contemporary leadership styles, certain themes developed, which are summarized in Table 3 below.

Table 3: Summary and Themes of Issues Currently Found in Different Leadership Styles

Leadership Style	Issue/s	Themes
Authentic	Skill sets need to be transformed. No one particular leadership style.	Changing context
Situational	No universally effective leadership style across contexts.	Varying contexts
Transformational	In dynamic and fast-paced environments leadership styles need to change.	Changing contexts
Transactional	Disregard of situational and contextual factors.	Context
Cognitive psychology	Understanding of self-concept and meta-cognitive theories.	Cognitively aware
Complexity	Need to understand granularity of complex context.	Complexity, Adaptability of context
Cross cultural and global	Need to understand elements that constitute different cultures.	Context

From a very simple diagnosis of the issues experienced in both traditional and contemporary leadership, it can be inferred that each leadership style is unique and applicable for specific circumstances. It is similarly apparent that every leadership style grapples with understanding its own application within fast-paced and dynamic contexts. The possible oversimplification of theming these issues may underestimate some of the particular issues with each style; however it suggests that at a broad level of analysis, the cognitive understanding of a particular context is absolutely vital when selecting a particular leadership style. Other academics such as Michie and Gooty (2005, cited by Ofori 2008) corroborated this by stating that there is a need for research

into the contextual variables such as organisational culture, environmental uncertainty, gender and socio-cultural set-up of society to better understand effectiveness of leadership. Randeree and Ghaffer Chaudhry, (2012) agreed that due to distinct critical factors on every project, it is difficult to determine the best leadership style.

2.5 Intelligence for Successful Leadership

There are many different types of intelligence available to a leader and each has a unique value proposition and application. Kutz (2008) defined intelligence as the ability to transform data into useful information, information into knowledge, and then most importantly to assimilate that knowledge into practice. Gardner (1993, as cited by Kutz & Bamford-Wade, 2013) explained that intelligence is the ability of a person to respond to new events and situations successfully and includes the capacity to learn from past events.

Arguments could be made that “General Intelligence” (IQ) is the foundation and base of all other types of intelligence. General intelligence is described as the capability to grasp and reason accurately with concepts and succeed in problem solving (Shmidt & Hunter, 2000 as referenced by Moon, 2010). Both Leaders and managers would require this intelligence to understand the technical knowledge and information within an industry.

In the mid-1980s the new construct of practical intelligence was introduced by Sternberg (1988) and Wagner and Sternberg (1985). Sternberg defined practical intelligence as an ability—distinct from general or academic intelligence—to perform successfully in naturalistic settings in a way that is consistent with one’s goals. Cianciolo, Grigorenko, Jarvin, Gil, Drebot and Sternberg (2006) referenced Wagner and Sternberg (1985) by stating that practical intelligence enables people to determine adaptive solutions to ill-defined problems. Sternberg (1998) further explained that tacit knowledge development is generally knowledge that is gained from experience and defines expertise within a particular field. This led to Sternberg testing and proposing new tacit knowledge inventories that help to measure practical intelligence as a distinct competence from general intelligence (IQ). The application of practical intelligence again can be used for both managers and leaders, as the goals referred to by Sternberg may be either short-term or long-term goals.

Emotional intelligence is a type of social intelligence that enables individuals to monitor the emotions of others as well as their own emotional status. The intelligence is

demonstrated by the ability to discriminate amongst these emotions and to use the information to guide thinking and actions (Salovey & Meyer, 1990 referenced by Moon, 2010). Goleman (1995, 1998), referenced by Moon (2010) described it as being able to motivate oneself and persist amidst frustrations, to control impulses and delay gratification, to regulate one's mood and keep distress from overwhelming the ability to think, to emphasise and to hope. Moon (2010) described Salovey and Mayer (1990) and Goleman (1995) as the founders of emotional intelligence with both parties developing measurements tools. Salovey and Mayer (1990) developed the Mayer-Salovey-Caruso emotional intelligence test (MSCEIT) and Goleman (1998) developed the Emotional Intelligence competence model which introduces the concept of intelligence inventories and the ability to use intelligence from an inventory developed and stored within the individual. As emotional intelligence is more of an intelligence used at a personal level to diagnose individual's emotions and is used as a personal empowering construct, this intelligence is more suited for leaders and it can be argued that it may be more useful to leaders than for managers.

Cultural Intelligence is theoretically an extended contemporary view to comprehending intelligence; it can be defined as the capacity to function effectively in culturally diverse environments (Early & Ang, 2003 cited by Moon, 2010). Early and Gibson (2002) as referenced by Moon (2010) stated the cultural intelligence is another form of intelligence that explains the effective adaptation to different cultural environments. Moon (2010) introduced the concept of application of intelligence or rather an application of an assortment of intelligences such as IQ, Emotional Quotient (EQ) and Social Quotient (SQ). He further stated that the construct of Cultural Quotient (CQ) is grounded in Sternberg's multi-loci framework of intelligence, which in turn makes it a multi-intelligence/dimensional construct. Ang, Dyne, Koh, Ng, Templer, Tay and Chandrasekar (2007) referenced by Moon (2010) explained that Cultural intelligence is a meta-cognitive intelligence that denotes application beyond having the intelligence ability. Moon (2010) offered to unbundle cultural intelligence into four areas that would aid in deciphering the intelligence as ability: First, it is the ability to gain understanding and comprehend a new culture based on a variety of factors that include planning strategy before cross-cultural interactions, adjusting cultural knowledge when interacting with different cultural backgrounds and monitoring the accuracy of cultural knowledge during cross-cultural encounters. Second, it is a meta-cognitive process of how an individual makes sense of similarities and differences between cultures. Arguments could be made that this inventory is developed as a tacit knowledge to the intelligence user. The third component is the individual ability to commit to adaptive

behaviours and the rate or measure of the individual's propensity to commit to change. Lastly; it is one's behaviour and ability to sense the extent to adapt given the cultural context. This application and adaption is articulated both verbally and non-verbally. As this intelligence talks to flexibility, long-term strategic orientation and empowering the leader, it may be argued that this intelligence is again better equipped for the leaders' use rather than the managers'. However, it could be useful to the manager as it assists in explaining the collective or the organisation as opposed to the individual.

Organisational Intelligence is a fairly new academic concept that has extended from the notion of collective intelligence. Yolles (2005) argued that the conceptualisation of individual intelligence attributes as collective/organisational attributes are a simplistic extension. The power of organisational intelligence is not specifically surrounding knowledge management but the ability of that organisation to adapt and fit in its current context. Yolles (2005) further defined intelligence as being closely linked to the ability of a singular or plural actor to discern attributes of cultural knowledge, and in particular, to efficiently and effectively discriminate, relate, manipulate and apply that knowledge in a variety of phenomenal environments. Yolles (2005) used a model developed by Dealtry to conceptualise and define intelligence in organisations. Dealtry (2005) as referenced by Yolles used three strands in the model that include the collective purpose that is connected to the organisational vision, the intellectual properties that enable visions and lastly intellectual practices that have phenomenal manifestations in development programmes that are timely and relevant. Schwaninger (2001), also referenced by Yolles suggested that the intelligent organisations should be adaptable, effective, virtuous and sustainable. Schwaninger (2001) defined this type of intelligence as cybernetic. Whilst this intelligence relates to the managerial theme of an organisation it suggests that flexibility is a large part of the intelligence. Therefore the intelligence may be used in the short-term and on a transactional basis, and as a longer-term orientation of organisations to be flexible and adaptive. This intelligence may be useful for both the manager and the leader.

Only five main types of intelligence were reviewed, however each one provides a leader certain conceptual skills that can be used when diagnosing context. It may be argued that whilst any given context consists of all of these components, a leader of today must cognitively develop and consciously use all the intelligence available when diagnosing a context. It may further be argued that the more intelligent a leader, the better they will diagnose context and subsequently they may be more successful as leaders.

Having examined at five main types of intelligence and assuming these are all useful constructs that should form part of any leader's arsenal, it remains to be determined which type of intelligence should be used and how much of either "intelligence" should be used. Similarly is may be questioned: What anchor would each leader prefer based on their own experiences, values and preferences and how would this affect the reality and diagnosis of a context? It is with these questions in mind that other forms of intelligence may be useful in relating directly to the diagnosis of context.

2.6 Understanding context: The Requirements for a Leader Today

Before any skills, qualities and competencies are explored, it is logical to first determine (or attempt to determine) the all-encompassing term called "context". Kutz (2008) described context as all of the external, internal, interpersonal and intrapersonal factors that contribute to the uniqueness of each situation and circumstance. It is also described as the backdrop against which certain events take place. Kutz (2008) stated that every context or backdrop is unique from multiple perspectives and this unique set of variables is defined as "contextual ethos". Kutz and Bamford-Wade (2013) described context as the reference to the nature of interactions and interdependencies among and between agents (e.g.: people, ideas, values, experiences, cultures, etc.), political alliances, organisations, religious alignment, social contexts, and private contexts. It is these backdrops that influence the way leaders lead, organizations learn and stakeholders perceive the realities around them and similarly how they orientate themselves. Therefore, it may be argued that when a leader wishes to describe and engage in context, the leader needs to be cognitively aware and appreciate the influence context has on the organisation, the individuals and themselves.

The literature on leadership behaviour and traits may provide varying opinions as a useful construct with which to diagnose context. For example, academics such as Brouwers and Van de Vijvir (2015) reasoned that personality traits/behaviours such the (Big 5) (openness, agreeableness, extroversion, conscientiousness, and neuroticism) are important to a leader; however when these are understood within an etic or emic context they are not as universal as one may imagine. Brouwers and Van der Vajvir (2015) similarly contended that conceptual appreciation and assessment must make use of both universally applicable leadership traits as well as contextual traits/abilities/skills for a given context. Argumentatively, Lappalainen (2014) found that

traditional intelligence (as defined as problem solving ability, fluid intelligence and analytical intelligence), competition or focused achievement motives do not predict leader success. In fact personality traits such as assertion, empathy, and inspiration seem to be stronger predictors of successful leadership.

Different types and constructs of intelligence can provide many direct and conceptual benefits to a leader. That being said, intelligence is not the conclusive attribute that makes a leader. This is evident in practice that where a leader may be successful in one role, as soon as they get promoted or change roles they may not be as successful. Randeree and Ghaffer Chaudhry (2012) confirmed this by stating that whilst a leader may have knowledge and skills to act effectively in one situation, they may not emerge as effective in a different situation.

Whilst there may be varying opinions as to what contributes to being a successful leader, it is clear that a leader needs a cognitive conceptual understanding and multiple components and elements that constitute context or contextual ethos. It is for this reason that intelligence and varying concepts of intelligence are explored as a leadership skill in diagnosing context.

2.7 Contextual Intelligence for Successful Leadership

Knowledge and intelligence have never been finite explanations for individual and business success. In pursuit of explaining this phenomenon many academics have attempted to isolate certain variables for cognitive abilities, tacit knowledge and intuition, yet all have all been explored without success. Sternberg (1985) suggested that contextual intelligence is “an external, interactive process involving the practical application of knowledge and information in real world situations”. Terenzini (1993) later defined it as an action that “makes possible the prudent, intelligent and illuminating application of technical and methodical intelligence to locally meaningful versions of general issues”. The more recent academic contributions and interpretations have been offered by Kutz (2008) whereby he undertook an unrelated investigation into 49 leadership competencies using an explanatory factor analysis method. Through his study he analysed 12 leadership competencies and their unique relationships which ultimately validated the leadership construct of “Contextual Intelligence”.

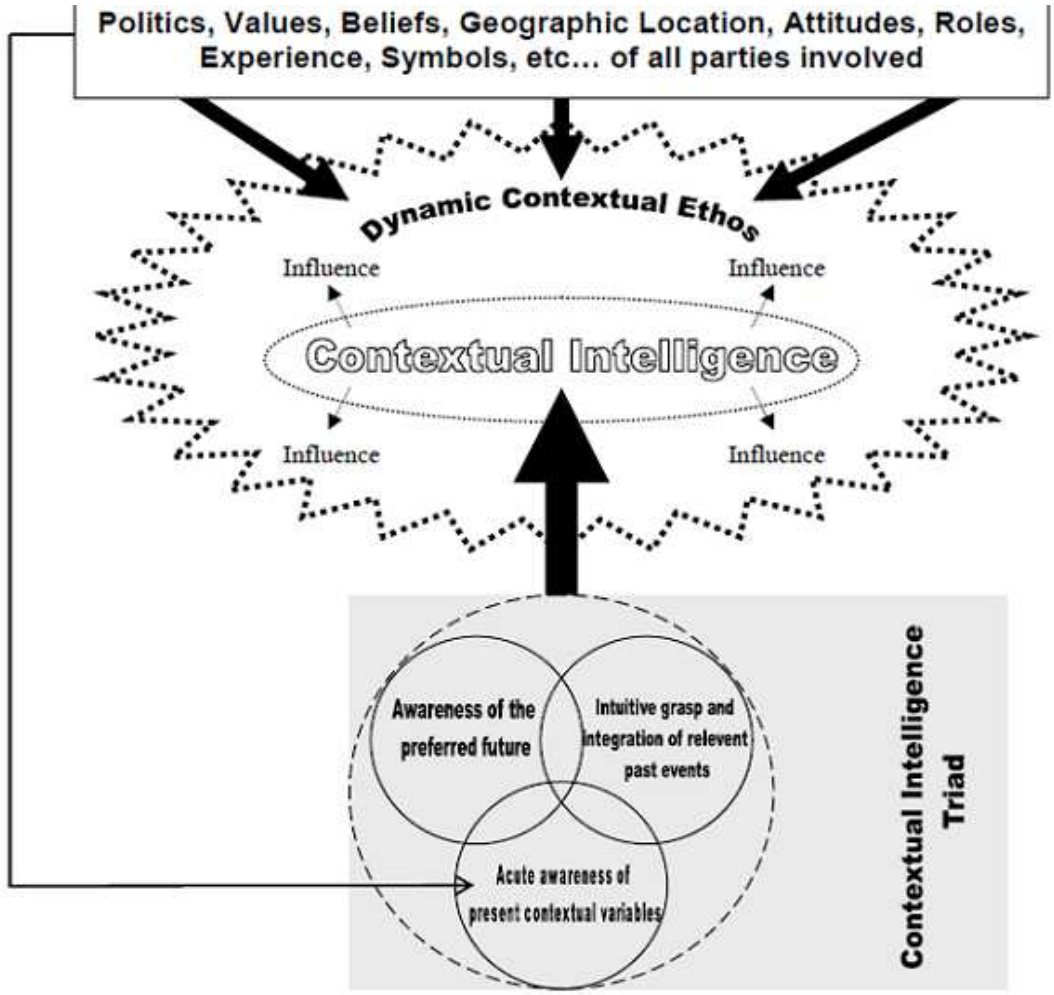
2.7.1 Contextually intelligent leadership behaviours and skill set

The twelve leadership behaviours, types and skills resonate and align with other leadership qualities that have been previously explored and explained. Toor's (2011) thematic network, Global leadership and Transformational leadership have similarities with the "Kutz" twelve behaviours which include being future minded, an influencer, ensuring an awareness of mission, being socially responsible and culturally sensitive. A contextually intelligent leader must also be multicultural, have the ability to diagnose context, be a change agent and have effective use of influence. A contextually intelligent leader must be intentional, a critical thinker and a consensus builder.

Each of the leadership skills and other intelligences must be present for a leader to be contextually intelligent. Kutz (2008) suggested that the result of using all leadership skills together is greater than the sum of the individual parts.

Kutz (2008) explained that intelligence can be subjective and therefore the interpretation of external stimuli could be different depending on the individuals' level of both his/her external and internal awareness. It is equally important to know what to do as it is to know how to do it. A practitioner and leader may be well versed in the cognitive base intelligence (Tier 1 from Terenzini, 1993) but without awareness of context they will not be able to apply the correct application of intelligence. Kutz proposed a model that suggests that leaders need to view their current contexts through dual lenses of past and preferred futures. The model also proposes the various skills set such as: 1) intuitive grasp of relevant past events, 2) acute awareness of present contextual variables and 3) awareness of the preferred future. Kutz (2008) maintained that these are the three leadership competencies that form the contextual intelligence concept. Below is a diagram that graphically explains the contextually intelligent skills-sets and conceptualisation:

Figure 4: Contextual Intelligence Skill Set (Kutz: 2008)



The model above was first introduced by Kutz in 2008 when he described the leadership requirement to simultaneously be aware of the past, present and future at a business and individual level. He continued to reason that the thinking must be applied to the system that consists of the contextual ethos and that there should be awareness of the reciprocal influences each actor or body has on the other. Kutz (2008) further explored the concept of experience and an individual's ability to extract multiple learning experiences from an event. Kutz (2008) argued that a contextually intelligent person can extract multiple lessons from a singular event whereas a less contextually intelligent person would require multiple experiences before learning the same lesson. It is posed that individuals who can challenge preconceived ideas, argue and have the ability to learn and gain experience quicker generally display contextual intelligence. This new learned knowledge can be transferred to any situation and new context. After exploring these varying aspects Kutz (2008) proposed the following definition: "The ability to quickly and intuitively recognise and diagnose the dynamic contextual

variables inherent in an event or circumstance and results in intentional adjustment of behaviour in order to exert appropriate influence in that context".

Kutz (2008) maintained that the application of intelligence is the leader's ability to diagnose context and he referred to understanding the contextual ethos that consists of the multiple variables within each unique context. Similarly, Brouwers and Van de Vijvir (2015) maintained that context has to be considered when observing intelligence as all cognitive processes take place in a cultural context. To incorporate this dimension, they proposed placing context at the centre stage before an intelligence analysis commences and therefore assessed all the available skills an individual possesses in order to solve everyday problems. Some of the more practical approaches to developing the ability to diagnose context hailed from Brown et al.,(2005), where they offered a conceptual framework for developing contextual intelligence. Seven factors or focus areas are suggested to be developed, that include learning the language, learning the reality, developing contextual maps, understanding the formal and informal structures, identifying patterns within the context, paying careful attention to attitudes, identifying all possible means of influence, and having a grasp on the broad perspective.

2.7.2 Contemporary Leadership Paradigms and the improvement of Contextual Intelligence

There is an increasing awareness and acknowledgement that the environment and total systems in which multiple environments exist are constantly converging and diverging, mixing thoughts, ideas, information that result in continuously changing realities. Leaders cannot apply traditional leadership constructs as they have been established, developed or defined using linear and static vacuums (Fiedler, 1967 cited in Kutz & Bamford-Wade, 2013). Some of the latest and contemporary developments in contextual intelligence have introduced the construct of three new paradigms and an existing knowledge base to provide a richer picture behind the concept.

The first new paradigm is that of Non-Newtonian thinking, which helps to understand and explain the non-linear and non-static environments in which leaders operate. This Non-Newtonian Thinking is unbundled into both Chaos Theory and Complexity Theory. Chaos Theory appreciates the realities of complexity and randomness. Chaos Theory in its name denotes non-linear recognition or non-diagnosable pattern of events. Whilst Chaos Theory may seem nonsensical, Kutz and Bamford-Wade (2013) referenced Stacy (1996) to explain the development in recognising the transition stage between

various states or forms of matter. The proposal was made that organisations can similarly go through phased changes, as the skill required to change or transition is the ability to learn and acquire that new intelligence and application within that company, or leader or individual's knowledge inventory. Complexity Theory and Complex Adaptive Systems similarly have attempted to conceptualise the state of an environment or system by articulating the unique variables within an environment and the multiple potential effects each factors could have on the other. Differentiation is made between closed complicated systems that can be understood from an internal review of the components versus an open complex system that requires both and internal and external view as a whole.

Tacit-based learning and tacit knowledge is not a new concept but is rather included into the contemporary leadership construct. Hatsopoulos and Hatsopoulos (1999, as cited by Kutz & Bamford-Wade, 2013) explained that tacit knowledge is what people know to be true about the actions and attitudes of self and others, but cannot articulate how these truths were learned. It is further explained that tacit knowledge comes from two different sources: 1) first-hand experience from trial and error and 2) analogical reasoning. First-hand trial and error experience is the most plentiful but it is the leaders' ability to gain as much experience/learning's from each lesson. Analogical reasoning is explained (Hatsopoulos & Hatsopoulos, 1999) as when an individual can recognise a trend in a given context, even if they have never been in that context before. Johansen (2009, cited by Kutz & Bamford-Wade, 2013) explained the process of immersion learning as a way to increase the tacit-based knowledge inventory of that individual, which in turn allows them to have more accurate analogical application to differing contexts. Blass and Ferris (2007, cited by Kutz & Bamford-Wade, 2013) similarly identified two types of experience (tacit knowledge) that helps identify contexts. This experience is either developed vicariously by understanding how an individual is impacted by decisions, behaviours and actions of others, or first-hand experience learned from decisions, behaviours and actions of others. Kutz and Bamford-Wade (2013) concluded by explaining that leaders should develop skills that facilitate the acquisition of tacit knowledge through vicarious and first-hand experiences that will ultimately assist the use of analogical reasoning.

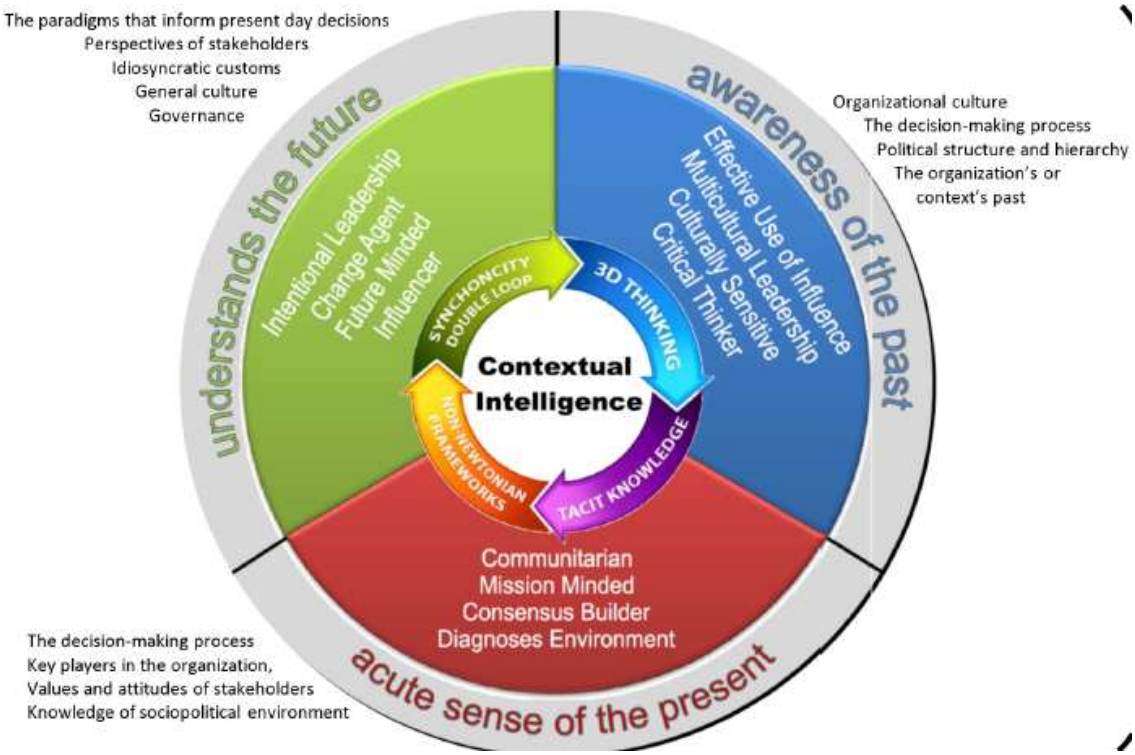
The second paradigm is that of synchronicity and innovation. Synchronicity as described by Jung (1973, cited by Kutz & Bamford-Wade, 2013) is when two (or more) simultaneous events that occur coincidentally (that is they are not causally related) result in a meaningful connection. Synchronicity is the idea that certain events regardless of context and time in which they occur are somewhat related (Kutz &

Bamford-Wade, 2013). Seng (2005, cited by Kutz and Bamford-Wade, 2013) explained that it is at this point of interconnection or synergy that new learning opportunities are created, as well as the thought idea generation and innovation environment. Similarly tacit-based knowledge is developed in this creative learning space. An accelerant for tacit-based knowledge is that at the point of synchronisation; incongruity is developed within that context (Drucker, 1985 as cited by Kutz & Bamford-Wade, 2013). Incongruity is the changing and shifting perception and ideas of stakeholders that constitute that context. Therefore as Drucker (1985) explained, to successfully diagnose context, having "people skills" is a very important factor. Leaders in today's fast-paced, dynamic environment are constantly facing these opportunities of synergy where tacit-based inventories are developed and analogical reasoning can be applied. It is this changing context that offers the leader the opportunity to think "out of the box" (Kutz & Bamford-Wade, 2013) and apply convergent application of knowledge and ideas.

The last paradigm is that of time orientation and 3D-thinking. Whilst this is claimed to be new thinking, many leadership scholars have previously explained the importance of leadership and how a leader orientates themselves to the past, present or future (Kutz & Bamford-Wade, 2013). Kutz (2008) posited that leaders have to be cognisant of all three dimensions when making decisions and understanding context. The application of simultaneous-thinking is what Kutz (2008) refers to as 3D-thinking. Typically, a leader naturally orientates towards a particular point in time based on certain success or where they feel they have strength. Kutz and Bamford-Wade (2013) discussed time warping and time chunking. Time warping requires the cognitive manipulation of the past and future by making these seem close to the present (Thomas & Greenberger, 1995 as cited by Kutz & Bamford-Wade, 2013). This ultimately takes the form of leadership that proposes a clear articulation of a desired future and influences stakeholders to make decisions to achieve that future. Time chunking is where that desired future is deconstructed into smaller time chunks.

By understanding the contemporary paradigms as well as previously discussed leadership skills, traits and abilities, Kutz and Bamford-Wade (2013) presented an improved conceptual model for contextual intelligence, as depicted in Figure 5 below:

Figure 5: Contextual Intelligence Model for Organisational Leadership (Kutz & Bamford-Wade, 2013)



The new model developed and presented by Kutz and Bamford-Wade (2013) developed the initial Kutz (2008) model and the twelve leadership abilities by incorporating the new leadership paradigms of tacit knowledge, non-Newtonian frameworks, synchronicity and 3-D thinking.

This new conceptual model explaining contextual intelligence is multi-layered and multifaceted. Each of the layers could be explored and tested to determine the benefits and advantages that each of the dimensions brings to the leader and the organisation. Some of the benefits and outcomes identified by Kutz and Bamford-Wade (2013) included explaining why there may be success in one environment and failure in another, reducing conflict and increasing awareness of the values and ideas of self and others, increased ability to effectively influence others, responding to and profiting from unexpected or complicated change, increasing team buy-in, accelerating ability to contribute in a new context and appreciating external and internal influences.

2.8 Argument for Kutz and Bamford-Wade's Conceptual Model for Contextual Intelligence

The study of leadership has developed for more than one hundred years and there are many varying opinions and theories that inform and constitute the current literature that exists concerning Leadership. There are certain skills, behaviours, traits, styles of leadership and different types of intelligence a leader requires to have at their disposal in order to be an effective leader. With this arsenal of knowledge a leader can diagnose a context and determine which of these elements he/she may use in any given situation.

By understanding the different requirements, three contemporary contextual intelligence models are reviewed:

Table 4: Review and Comparison of Contextually Intelligent Models

Contextually Intelligent Leadership Requirements	**Mothilal (2010), Deppe (2010) and Sandilands (2010) Revised Leadership Effectiveness Model**	**Kutz and Bamford-Wade (2013) conceptual model for Contextual Intelligence**	**Brown, Gould and Foster (2005) conceptual framework for Contextual Intelligence**
Skills, Abilities, Behaviours & Traits	Strong coverage	Covers, well defined through exploratory factor analysis	Partially and indirectly covered
Types or Styles of Leadership	Not Covered	Covers and included	Not Covered
Types of Intelligence	Indirectly covered	Covered	Indirectly covered
Other Benefits	Well defined categories and elements but unclear how to operationalize as a model.	Has time orientated lenses in an attempt to operationalize	Good in explaining knowledge acquisition and application

The Kutz and Bamford-Wade Conceptual Model for Contextual Intelligence (2013) has the most appropriate coverage of all the varying categories required for leaders today. This model is also focused on the diagnosis of context to ensure successful leadership. Whilst this is described as a conceptual model, there is specification behind the core concepts. However there is little explanation behind the operationalisation of independent and dependant variables (Mills, Durepos & Wiebe, 2009). There are also

concerns that whilst the Kutz and Bamford-Wade Conceptual Model for Contextual Intelligence (2013) has a wide coverage, there could be some elements of each category that it may have excluded or that may be influential for the engineering and construction sector of South Africa.

2.9 Summary of Literature

This literature has introduced and explored some traditional and contemporary leadership literature and engaged in some of the shortfalls and criticisms of today's leadership environment. Skills, abilities, behaviours and traits for successful leadership in South Africa were first discussed to provide the reader with an understanding of leadership within context. Leadership styles and the common issue of "context" was discussed and finally five types of intelligence were introduced and reviewed as possible competencies a leader might require in order to make sense of an environment. Lastly, contextual intelligence was introduced as a competency for a leader today and three varying models were reviewed according to the literature.

Kutz and Bamford-Wade's Conceptual Model for Contextual Intelligence (2013) was identified as the most appropriate model which was further reviewed individually against other important developments of literature. Given the extent of leadership requirements, context requirements and intelligence requirements of today, it would be useful to summarise whether or not contextual intelligence has the ability to address some of the concern raised.

Below is a summary table of issues and answer to the above question (The model developed by Kutz and Bamford-Wade (2013) is used).

Table 5: Test of Contextual Intelligence's Ability to Address Literature Issues

Issue or future requirement identified in literature	Kutz & Bamford-Wade, (2013), Conceptual Model for Contextual Intelligence
Toor's thematic network for a leader	The majority of themes and behaviours of Contextual Intelligence align.
Kaplan's balancing of dualities as a leader	Behavioural skills such as change agent, diagnosis of environment and the use of tacit knowledge can help the balance.
Mothilal (2010), Deppe (2010) and Sandilands (2010) Revised Leadership Effectiveness Model (Skills, Abilities, Behaviours and Traits)	Whilst the Kutz and Bamford-Wade (2013) Conceptual Model for Contextual Intelligence covers skills and abilities there are many gaps between the Revised Leadership effectiveness Model.
Traditional leadership styles and inapplicability to context	Assists directly with these issues, however the Kutz and Bamford-Wade (2013) Conceptual Model for Contextual Intelligence does not cover all the different types.
Cognitive psychology	3-D thinking and tacit knowledge align.
Complexity Leadership	Non-Newtonian thinking aligns.
Cross cultural and global leadership	Culturally sensitive behaviours, influencer and communitarian align.
Development and use of other intelligences	Kutz & Bamford-Wade imply that a leader must have these intelligences to use the construct of Contextual Intelligence.

Based on the review above, Kutz and Bamford-Wade's (2013) Conceptual Model for Contextual Intelligence is the most appropriate model and covers an array of literature. Contrary to the literature alignment, there are many elements that are not included in the model and therefore cause doubt about whether the model is relevant and comprehensive. Unique environments where contextual leadership is required should examine the relevancy and comprehensiveness of the Contextually Intelligent Model that will improve leadership effectiveness.

CHAPTER 3: RESEARCH QUESTIONS

Using the foundation of literature, Kutz and Bamford- Wade's (2013) Conceptual Model for Contextual Intelligence was identified as the most appropriate leadership model to diagnose context. Notwithstanding the above, arguments concerning the relevancy of the model have been emphasised, with the aim to help leaders diagnose context in order to apply the most applicable leadership style. By considering these opposing views, the three research questions were developed to explore the relevancy and the comprehensiveness of the model, and to and compare the benefits of the Kutz and Bamford-Wade (2013) Contextual Intelligence model in the engineering and construction industry of South Africa:

3.1 Research Question 1

Mothilal (2010), Deppe (2010), Sandilands (2010), as well as Brown et al., (2005) and Kutz and Bamford-Wade (2013) had similar and slightly varying opinions regarding the requirements of a leader to diagnose and be effective in different contexts. Kutz and Bamford-Wade's (2013) Conceptual Model was identified as the most appropriate leadership model to diagnose context and therefore the following is asked:

Is Kutz and Bamford-Wade's 2013 Conceptual Model for Contextual Intelligence a relevant model that can assist engineering and construction leaders to diagnose context?

3.2 Research Question 2

With the review of complementary literature as mentioned above, many corresponding constructs have been identified that do not exist in Kutz and Bamford-Wade's (2013) Conceptual Model for Contextual Intelligence. The absence of some elements has raised the question:

Is Contextual Intelligence a comprehensive model that can assist leaders to cognitively diagnose a context in order to apply the most appropriate leadership style?

3.3 Research Question 3

Using the same argument in Research Question 2, there is doubt that the original benefits listed by Kutz and Bamford-Wade's (2013) and which result from the conceptual model could possibly differ in the engineering and construction sector and therefore the question is asked:

What are the benefits to companies in the engineering and construction industry when correctly diagnosing context in comparison to Kutz and Bamford-Wade's (2013) seven pre-defined benefits?

The existing list of benefits includes:

- Explaining why there may be success in one environment and failure in another.
- Reducing conflict and increasing awareness of the values and ideas of self and others.
- Increasing ability to effectively influence others.
- Responding to and profiting from unexpected or complicated change.
- Increasing team buy-in.
- Accelerating ability to contribute in a new context.
- Appreciating external and internal influences.

Kutz and Bamford-Wade (2013) described the above list as non-exhaustive, which supports this research study in exploring and defining the benefits that are most suited for the engineering and construction industry.

CHAPTER 4: RESEARCH METHODOLOGY

This chapter outlines the methodology used to investigate the research questions posed in Chapter 3. The research methodology utilised various qualitative research scholars, including Mukhopadhyay and Gupta (2014), Marshall and Rossman (2014), Parry, Mumford, Bower and Watts (2014), Saunders and Lewis (2012), Maxwell (2012), Gray (2013) and Creswell (2013).

4.1 Methodology

The research method was qualitative and exploratory in nature and used in-depth semi-structured interviews. Mukhopadhyay and Gupta (2014) argued that researchers have historically used qualitative research more for theory development, expansion and elaboration purposes than for the purpose of theory testing. Marshall and Rossman (2014) simplified this historic view by explaining the original intention of qualitative methods was to explore, explain or describe. Other authors such as Maxwell (2012) explained that qualitative research is intended to help researchers better understand:

1. the meanings and perspectives of the people they study,
2. how these perspectives are shaped by their physical, social and environmental contexts and,
3. the specific processes that are involved in maintaining or altering the phenomena.

Mukhopadhyay and Gupta (2014) explained that in comparison to quantitative research methods, qualitative research allows the researcher to be more creative both in terms of data collection and analysis. The researcher had more than six data gathering and evaluation methods to choose from and therefore careful consideration and review of each method was employed. Mukhopadhyay and Gupta (2014) further explained that qualitative research includes interview methods, which was the preferred choice during this research study. Parry et al., (2014) clarified that in the field of leadership (over the last 25 years), the percentage of qualitative research studies have increased. Parry et al., (2014) mentioned that qualitative studies have contributed towards a more profound understanding of the leadership phenomenon in so far as quantitative studies have failed to explain the social influences and context in leadership literature. It was

with this knowledge and understanding that interviews formed the method of gathering the subjective primary data.

According to Creswell (2013), some of the benefits or advantages of qualitative data are that the collection of data can be time convenient to the researcher and it represents data to which interviewees' have given focused attention. Whilst Creswell (2013) explained the convenience of managing the researcher's time, Mukhopadhyay and Gupta (2014) stated that qualitative research is time consuming when it comes to data collection, data analysis and creating research reports. Some of the drivers of selecting the qualitative approach for this research project included gaining access to subjects and interviews, managing massive amounts of information, investing time in capturing interviews and transcribing as well as coding of interview information.

Gray (2013) explained exploratory research as studies that seek to explore what is happening and ask questions around it. He described that exploratory studies are particularly useful when not enough is known about a phenomenon. This research study attempted to determine the phenomenon of leadership in different contexts and examined the relevancy and comprehensiveness of Kutz and Bamford-Wade's (2013) Conceptual Model for Contextual Intelligence. Gray (2013) cited Saunders (2007), and suggested that an exploratory study can be conducted by:

- A search of the literature
- Talking to experts in the field
- Conducting focus group interviews

The search of the literature informed the theory of leadership and applicable constructs that constitute the contextually intelligent model. Talking to experts in the field helped the researcher garner in-depth information that would either support or repute the relevancy and comprehensiveness of the model. Conducting focus group interviews was not included as an interview method for this research study.

Marshall and Rossman (2014) defined exploratory methods whereby a researcher intends to:

- Investigate little understood phenomena.
- Identify or discover important categories of meaning.
- Generate hypotheses for further research.

The exploratory investigation of Kutz and Bamford-Wade's 2013 Conceptual Model for Contextual Intelligence was intended to determine whether the categories of meaning

of the model are relevant and comprehensive for the given context of the engineering and construction sector with South Africa.

These intentions are usually accompanied by research questions that ask “what is happening” in a particular situation, “what” specific themes or patterns are prevalent or lastly “what” is the meaning of the phenomenon for the interviewee’s? Three questions were asked in Chapter 3 and each required a very different method for capturing information. Research Question 1 enquired whether an existing model is relevant in a new context, whereas Research Questions 2 and 3 examined for information without any prescribed categories or framework. These questions were orientated towards challenging existing data and gathering new data. It is with this understanding that both deductive and inductive research methods were used.

Gray (2013) explained that deduction begins with a universal view and works back to the individual components. The first research question sought to analyse the existing Contextual Intelligence model in a specific environment. Saunders and Lewis (2012) explicated that deduction is a research approach that involves testing a theoretical model by defining a research question from existing theory. The questions are crafted to ensure that the answers relate to the same themes and categories and thereafter analysis either supports the theory or suggests modification.

As there was some variance of perspectives between the interviewees, it is likely that additional or new themes and categories were developed that contribute or support the existing model. This new or bottom-up information may be assumed to be inductive in nature. Saunders and Lewis (2012) explained that induction is an approach where theory is developed by analysing collected data.

The approach of gathering both inductive and deductive information was undertaken in the form of interviews and more specifically, by using semi-structured interviews. Semi-structured interviews enquire about themes using predetermined questions. Irvine, Drew and Sainsbury (2013) cited Opdenakker (2006) who stated that semi-structured face-to-face interviews provide a distinct advantage in that they can give the researcher extra information that can be added to the verbal information. Semi-structured interviews allow the researcher to probe and ask additional questions as appropriate to garner a more profound understanding or to assess the researcher’s understanding of the participant (Saunders & Lewis, 2012). This was appropriate and varying participants had differing meanings, perspectives and nuances behind the requirements and benefits of diagnosing context.

In summary; the literature reviewed in Chapter 2 explained that the construct of contextual intelligence can be classified or themed into:

1. Skills and Abilities,
2. Types of Leadership,
3. Types of Thinking, and
4. Benefits.

This study was initiated with the intent to review an existing conceptual model and contribute or expand to an existing base of knowledge by gathering new meanings and perspectives. The research questions developed in Chapter 3 sought to examine the existing construct as well as explore other themes and elements that may complement this model. Therefore a qualitative and exploratory research method was employed. The research method utilised deductive and partial inductive reasoning through a semi-structured face-to-face interviews, which allowed the researcher to extract valuable insights. The purpose of this research study was to gain perspectives of leaders in the engineering and construction industry by analysing literature and conducting focused interviews to determine the relevance and comprehensiveness of contextual intelligence as a conceptual model.

4.2 Population and Unit of Analysis

The population as defined by Saunders and Lewis (2012) is the complete set of group members that is available to the researcher. As discussed in Chapter 2, the definition of “leadership” in the engineering and construction sector of South Africa is a subjective term. The universe and industry consists of both public and private companies as well as both formal and informal businesses. A specific population was drawn to include leaders within formal companies that were currently involved in major infrastructure investments within South Africa and was further limited to the region of Gauteng. The research study engaged practitioners currently residing and practicing within the Johannesburg and Pretoria regions of South Africa. This included leaders who had more than five years’ experience in leading teams in both public and private companies, where these leaders had been involved in a major infrastructure investment (greater than R450m) in the past two years.

The unit of analysis was the individuals with whom the interviews were conducted. These interviews provided insights concerning new content as well as existing themes from previous qualitative thematic analyses.

4.3 Sampling Method and Size of Sample

Non-probability sampling occurs when you do not have a complete list of the population and therefore cannot select a sample at random (Saunders & Lewis, 2012). Sanders and Lewis (2012) further explained that quota sampling ensures that the sample selected represents certain characteristics in the population that the researcher has chosen. Given that a list of the population was unobtainable through formal registers and that the companies to which the researcher had access to represented a considerable portion of the expertise in the sector, a non-probability quota sample was selected as the sampling method. This method was selected with the purpose of targeting leaders within a specific industry to which the researcher had access. To improve the homogeneity of the population, Robinson (2014) explained that inclusion and exclusion criteria should be developed. The more specific this criteria, the more homogeneous the population will be. Whilst leadership is a very broad term and can be subjectively viewed, little criteria were established that would limit the possible pool of leadership potential. The inclusion criteria established related to the industry and complexity through the overall value of the project in the last two years. The inclusion criteria are presented in Table 6 below:

Table 6: Sample Inclusion and Exclusion Criteria

Criteria No.	Inclusion Criteria Requirement
1	The participant had to be currently practicing or participating within the engineering and construction environment.
2	The participant had to be involved in project or programmes over R450m of value within the last two years.

The importance of this criterion was that it ensured the interviewees were from the correct sector. Secondly it assumes that the projects within which the interviewees were involved represented large-scale and complex projects that would have typically been delivered over a period of time that experiences change. This value of the projects was assumed to be synonymous with complex and diverse contexts that require contextual intelligence.

Initially 38 business leaders were identified. However due to impractical time constraints (Robinson, 2014) this was further refined to a shortlist of twenty eight. The size of the sample was then limited to a practical size of sixteen interviews. Robinson (2014) argued that the size of the sample can be limited due to practical reasons such as planning, engagements and availability. Guest, Bunce and Johnson (2006) have

found (through empirical evidence) that for homogenous populations the first twelve interviews are sufficient to achieve saturation of codes and themes. Whilst deductive coding aids in achieving saturation quicker, the inductive component may require an additional amount of interviews and therefore 16 was deemed a sufficient number to achieve saturation across the content and themes expected. The names of the interviewee's are provided in Appendix 1.

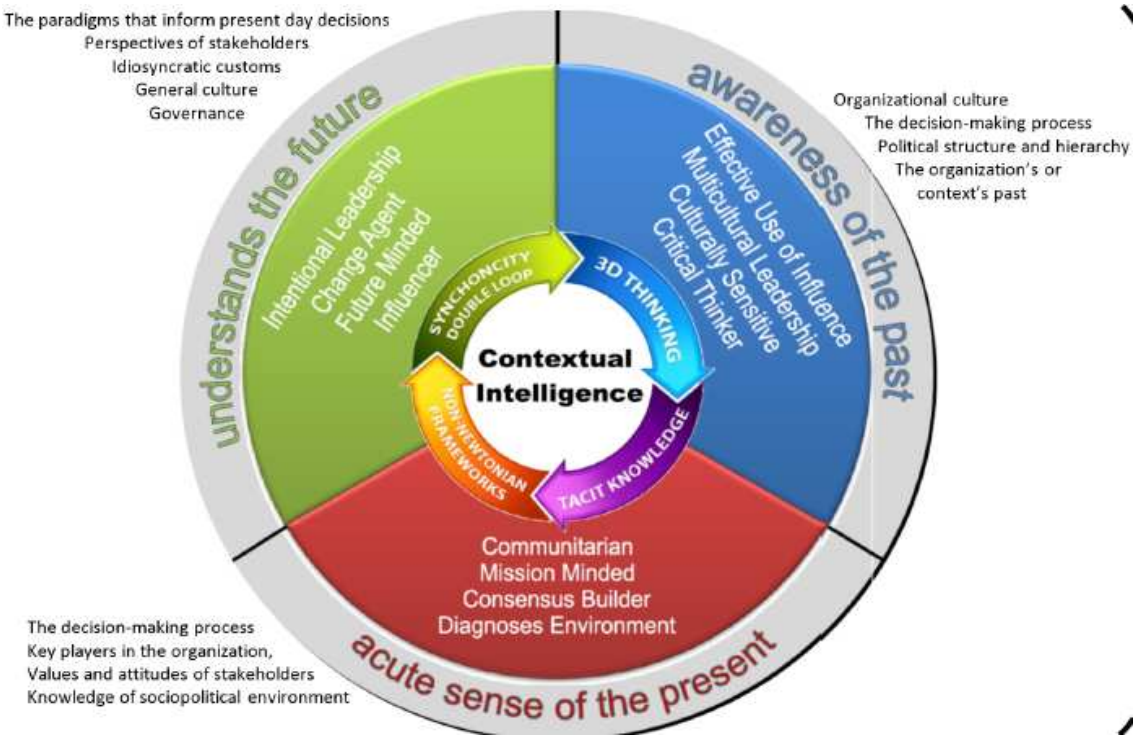
Sixteen exploratory interviews were finally conducted with selected engineering and construction leaders. The interviews were recorded and transcribed, and the data was then analysed against the existing model themes and structure (deductive) as well as explored for additional themes that could contribute (Inductive).

The sample included both male and female interviewees from Black, White, Indian and Coloured racial groups. Whilst the sample includes a mix of gender and race, the interviewees were similar in terms of their experience in large projects within the last two years and the availability and access to the researcher. The interviewees were sourced through the researcher's existing networks.

4.4 Formulation of the Interview Guide

The interview guide was developed by using Kutz and Bamford-Wade's (2013) Conceptual Model for Contextual Intelligence and other literature reviewed in Chapter 2. The model was categorised into three time-based categories that include skills, abilities, and types of leadership. There is an inner structure of types of thinking that surround the concept of Contextual Intelligence.

Figure 6: Contextual Intelligence Model for Organisational Leadership (Kutz & Bamford-Wade, 2013) Structure for Interview Guide



The questionnaire was constructed into the themes and categories of the model, including skills, abilities, types of thinking and benefits. The questionnaire was also designed to probe the leader in determining the different leadership styles and types of intelligence to cover other areas that may be useful in diagnosing context and could possibly contribute towards the model.

Whilst the interview guide provided overall structure to the interview, the researcher was aware that effective communications skills were required to ensure that the engagement was as natural as possible (Irvine et al., 2013).

Limited demographic data was captured at the beginning of the interview such as gender, race, years of experience and value of projects that the interviewee's had been involved with in the last two years. This provided a very brief overview of who the interviewees were and explained their current projects succinctly.

The second question explored the interviewees' knowledge of leadership as a construct and the different types of leadership that they employ in different situations.

The researcher did not disclose the model or the elements of the model but rather allowed independent thinking about the requirements of leaders to diagnose context.

This process had no particular structure and allowed the interviewees to think independently about structure and related directly to the inductive information gathering process. The open-ended questions at the beginning of the interview process guided the interviewees so they were not distracted by the constructs of the theory that were contained in the subsequent questions.

The final section of the questionnaire related directly to Kutz and Bamford-Wade's 2013 Contextual Intelligence Model for Organisational Leadership. These questions related to the structure of the contextual intelligence model and were deductive in nature. These questions structured the thought processes into skills, abilities, types of thinking and benefits.

Below is a summary of the interview schedule, the questions and the concepts tested relative to the research questions:

Table 7: Interview Question Consistency Matrix

Interview Question	Concept Assessed	Research Question
1.	No concept; for sampling method and size of sample	N/A
2 a-g	Inductive requirements for leaders to diagnose context	Research Question 2
2 h-j	Deductive constructs using Kutz and Bamford-Wade's (2013) Conceptual Model for Contextual Intelligence	Research Question 1

Whilst there was structure to the interview guide, further probing and questions were asked by the researcher where certain responses were unclear or where the researcher thought there may be additional benefit to the research to explore interviewees' responses further.

To ensure that the interviews related to the purpose of the research, a review of the interview schedule was completed and a pre-test was conducted. This pre-test provided the researcher with an idea about possible stumbling blocks the interviewees' would encounter. This pre-test similarly gave an idea of the amount of time it would take to complete an interview and how to structure the interview time. There were no modifications to the questionnaire after the pre-testing was complete.

4.5 Data Collection

As this study was exploratory in nature, it was understood that no previous types of studies had taken place and therefore there would be no secondary data available. The result was that the information collected was primary qualitative data (Saunders & Lewis, 2012).

The researcher sent out initial engagement letters to the predefined list of interview candidates explaining that the researcher would be conducting future qualitative research interviews and once ethical clearance was obtained from the tertiary institution, the formal meeting requests would be issued should the candidates be willing to participate. Twenty-eight introductory emails were issued, where 20 positive feedback comments were received. The eight negative responses included four no responses, two referrals and two candidates who were unavailable due to various reasons. The responses were all received via email.

The researcher then received ethical clearance and immediately issued the pre-allocated and scheduled meeting requests to the final list of interview candidates. Of the twenty issued meeting requests; there were three rescheduled meeting dates and two respondents could not commit to a specific time. The meeting request included a pre-interview pack (Appendix 3) that consisted of:

- A personalised letter of introduction
- A pre-interview guideline listing the main topic that the researcher would have liked to explore during the interview. The guideline was developed to enable the participant to start thinking about some of the concepts and issues that were to be discussed during the interview.

Sixteen interviews were conducted. The first and the last interview were conducted via “Skype” sessions due to the timing and availability of the interviewees, whereas the remaining fourteen interviews were conducted face-to-face. The interview meeting time was for a period of approximately one hour each and the audio interviews ranged from twenty minutes to sixty minutes. A three section interview guide (Appendix 2) was designed according to the literature reviewed and incorporated the research methodology to ensure maximum value from the interview process.

The interview sessions were all recorded using a recording device and these were then transcribed. The transcriptions were subsequently reviewed for completeness and were spell checked. These qualitative interviews were then analysed for existing and emergent themes using qualitative management methodology.

4.6 Data Analysis and Data Management

Parry et al. (2014) explained that content analysis occurs when codes and meanings are gathered or derived from the content of text data. The codes originated from the Conceptual Model for Contextual Intelligence and were used to summate the codes within the content. Parry et al. (2014) expounded that the analysis allows a researcher to test a theory and prove its validity through the numerical counting of the codes. This qualitative method was used to examine the relevancy of the Conceptual Model of Contextual Intelligence as described in Research Question 1.

Braun and Clarke (2006) stated that thematic analysis is a method for identifying themes and reporting patterns within data. This type of analysis is different in that it seeks to describe patters across qualitative data. These themes are the real events and realities of the interviewees within their own operating contexts. Braun and Clarke (2006) provided a six-step process when undertaking thematic analysis, which includes the following steps:

1. Familiarising oneself with the data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report.

There are many good practice requirements which were used when transcribing, coding and analysing. This method was well suited for Research Question 2.

Once the face-to-face audio-recorded interviews were complete, the audio files were transcribed. Due to time constraints of the researcher, requests for quotations were issued to three transcription services. These services were evaluated in terms of company experience, duration of operations and cost. A preferred service provider was identified and asked for a final contract price for purposes of contracting. The audio files were uploaded onto “Dropbox” cloud storage for the transcription service provider

to download and start the transcription process. The service provider provided between two and three transcribed recordings per day over a two week period.

Elo and Kyngas (2007) explained that the approach to content analysis of either inductive or deductive analysis can be the same in so far as there is:

1. a preparation phase,
2. an analysis phases and
3. a reporting phase.

Whilst previous sections of research methodology have discussed the different research questions utilising different types of analysis such as inductive or deductive, Elo and Kyngas (2007) clarified that deductive analysis can incorporate inductive analysis through an unconstrained matrix of analysis. Elo and Kyngas (2007) stated that a deductive type categorisation matrix is initially formed and thereafter it can be unconstrained in nature to accommodate new categories or subcategories.

Utilising Elo and Kyngas' (2007) approach and using the Atlas.ti software programme, coding structures were developed using Kutz and Bamford-Wade's 2013 Contextual Intelligence Model for Organisational Leadership (with the code families designated into skills, abilities, types of thinking and benefits. The coding design would allow for new codes within the categories of skills, abilities, types of thinking and benefits that were not included in the existing model as well as any other category that may have been induced from the exploratory process. Each of the new factors or themes would be assigned a pre-fix to allow for easy separation at later stage of analysis.

Throughout the coding process, new skills, types of thinking and benefits were identified and one new category was developed. The new category was the simplification and theme of consistent data analysed. For each interview coding took approximately two hours which equated to approximately thirty six hours of coding.

The coded data was analysed for each of the questions in terms of 1) identification of a code from an interviewee and 2) the number of occurrences the code was discussed across all interviewee's. An example of the code "communication" could be; "discussed by 50% of the interviewees and discussed ten times".

To translate the numerical information of occurrence, categories of descriptive parameters were created for both the Presentation of Results (Chapter 5) and the Discussion of Results (Chapter 6). These descriptors are explained below.

4.6.1 Descriptive parameters for presentation of results

To structure the discussion and translate the numerical information, the following descriptors were created. The descriptors align to 1) the identification of a code from an interviewee and 2) the frequency of occurrences where the code was discussed across all interviewees. The first set of descriptors relates to the identification of an element and is tabled below:

Table 8: Identification Descriptors for Analysis

Percentage parameter for identification of element	Descriptor parameter for identification across interviewees
100% - 75%	Identified by most interviewees
75% - 50%	Identified by many interviewees
50% - 25%	Identified by a few interviewees
25% - 0%	Minimally identified

The four tranches, notably 100 - 75%, 75 - 50%, 50 - 25% and 25 - 0% of “identification” were assigned descriptors termed “identified by most”, “identified by many”, “identified by few” and “minimally identified”, respectively.

Similarly; each time a constrained or unconstrained element was “discussed” across the sixteen interviews it was recorded. To structure the discussion, the following descriptors were aligned to the frequency of occurrences of an element that was discussed. The descriptors are tabled below:

Table 9: Discussion Descriptors for Analysis

Number of discussions for each element.	Descriptor parameter for number of discussions across Interviewees
47 - 35	Highly discussed
35 - 20	Actively discussed
20 – 10	Discussed
10 - 0	Minimally discussed

The four tranches, notably 47 - 35, 35 - 20, 20 - 10 and 10 - 0 of “discussion” were assigned the respective descriptors “highly discussed”, “actively discussed”, “discussed” and “minimally discussed”.

To ensure consistency across the reviews of each research question and all summaries, the above descriptors were used.

4.6.2 Descriptive parameter for discussion of results

To achieve a single measure, a combined score was developed to allow for ranking and comparison across the deductive and inductive processes. Both deductive and inductive elements and scores are ranked in tables for each category.

The combined scores for each element are described as the level of "relevancy" according to each category, contributing towards an updated and improved "contextual intelligence leadership construct".

Table 10 presents the descriptor for combined scores and relevancy:

Table 10: Combined Scores Relevancy Descriptor

Combined Scores	Contextual Intelligence Relevancy
100 - 75	Highly relevant
75 - 50	Relevant
50 - 25	Partially relevant
25 - 0	Irrelevant

The four tranches, notably 100 - 75, 75 - 50, 50 - 25 and 25 - 0 of "relevancy" were assigned respective descriptors termed "highly relevant", "relevant", "partially relevant" and "irrelevant".

Selected responses from each interview were chosen and tabled, thereafter the coded numeric information was analysed and presented in graph format.

4.7 Potential Limitations of Research

There are many assumptions that are made when investigating contextual intelligence as a construct. The first is that it is assumed that context matters when applying differing leadership styles and it ultimately contributes towards leadership success. The assumption is made that leadership (or the correct leadership style) helps organisation be successful in dynamic and complex contexts. Parry et al (2014) stated that "context" is the construct that has been missing when previous studies of leadership have occurred. This research study noted Parry et al.'s (2014) concerns and recognised that a potential limitation of this research was that no longitudinal studies have taken place. Historic, periodic or time studies would contribute significantly towards the legitimacy of the research. .

According to Mukhopadhyay and Gupta (2014), qualitative interviews are discounted for lack of rigor, and there is little basis for generalisation (as the context always differs) and there are practical difficulties. It is therefore acknowledged that the research undertaken and the review of leadership styles may not be exhaustive and there could be many other issues currently facing the study of leadership today. The summary and theming of issues may have been an oversimplification of issues within leadership.

The sampling method of non-probability quota sampling could be argued as not scientific or “real” and further arguments could be made that such findings are not entirely representative of the population of South African engineering and construction management companies involved in large infrastructure projects. Similarly, other arguments could be made that the test subjects selected to undertake the questionnaire and interview may not represent the sampling frame defined for the population.

Boyce and Neale (2006) stated that with in-depth interviewing there is a risk that the feedback may be prone to bias. It was explained that there might be a stake in the research for the interviewee and therefore the responses may have been slightly different if there were no stake or interest. With the interviews conducted for this survey the researcher was aware of any influence that could create biasness in the responses.

Boyce and Neale (2006) similarly argued that information gathered from interviews of small samples may be un-generalisable or rather that no themes may be deduced or common issues identified. It is however noted that for the sample in this research project, themes, categories and similar elements were found and therefore it can be assumed that the sample was representative of the population.

4.8 Conclusion

This research project was qualitative and exploratory and has utilised both deductive and inductive information gathering processes. The population included leaders in the Pretoria and Gauteng regions that had more than five years of experience and were involved in large-scale and complex infrastructure projects. The interview guide used the existing model structure from Kutz and Bamford-Wade’s (2013) Conceptual Model for Contextual Intelligence but ensured that the inductive information questions were asked first to ensure free and independent thinking. Sixteen interviews were conducted, with voice data captured and transcribed into text. The text data was coded using both inductive and deductive methods. Codes were reviewed for their frequency

of occurrence and numerical information was developed. The numerical coded information required explaining and therefore descriptive measures were created for Chapter 5 and Chapter 6. The research limitations were identified and thereafter reasonable steps were taken to mitigate any risk.

The results of this research study are presented in Chapter 5, which uses the research question structure as explained in Chapter 3. Each research question presents the numerical findings of 1) identification and 2) discussion of each element as it relates to categories from either the deductive model of Kutz and Bamford-Wade's (2013) Conceptual Model for Contextual Intelligence or the inductive independent thought process. The presentation similarly uses the descriptive parameters developed for presentation purposes.

CHAPTER 5: PRESENTATION OF RESULTS

5.1 Introduction

The purpose of this chapter is to present the numerical results from the analysis that was concluded (Please see Appendix 4 for native documents). Each research question is presented with the numerical findings of 1) the identification and 2) the discussion of each element. These elements are presented for each category from either the deductive model of Kutz and Bamford-Wade's (2013) Conceptual Model for Contextual Intelligence or the inductive independent thought process. The presentation of results also incorporates the descriptive parameters developed for presentation purposes.

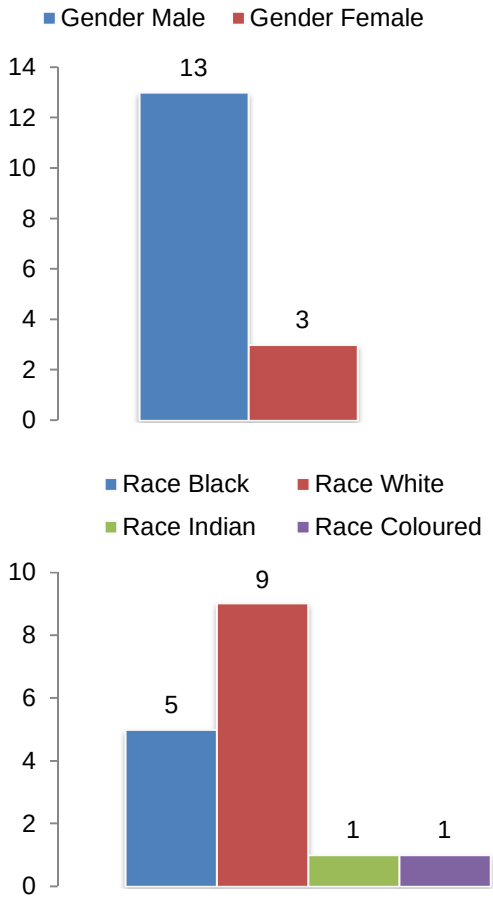
These findings provided numerical feedback that informed the tests of relevancy and comprehensiveness of the Kutz and Bamford-Wade's (2013) Conceptual Model for Contextual Intelligence.

5.2 Demographic Information

Sixteen in-depth semi-structured interviews were conducted. The complete list of interviewees can be accessed in Appendix 1. The demographic information for the interviewees is contained in the graphs below.

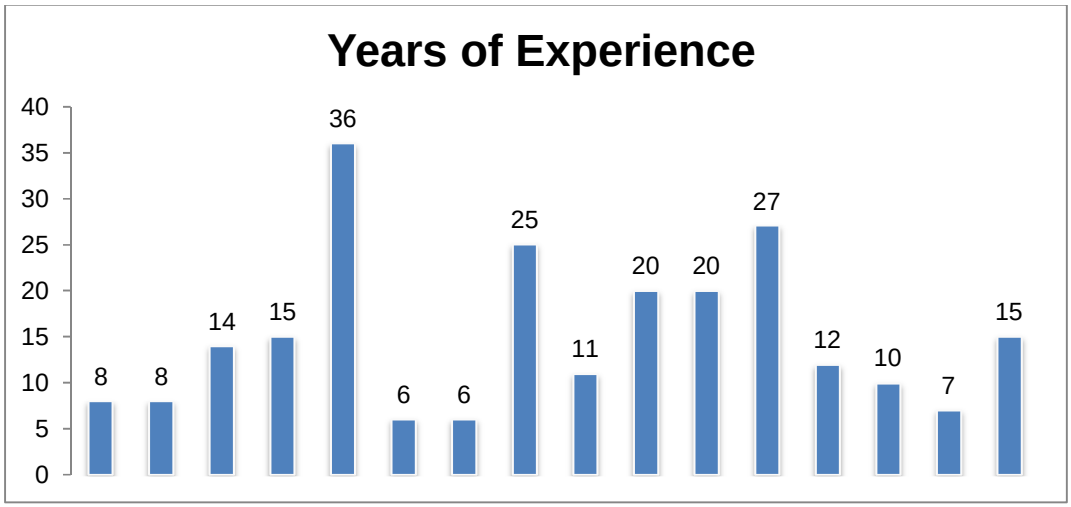
Of the sixteen interviews, thirteen were male and three were female. Five interviewees were Black, nine were White, one was Indian and one interviewee was Coloured.

Figure 7: Graphs – Gender and Race of Interviewees



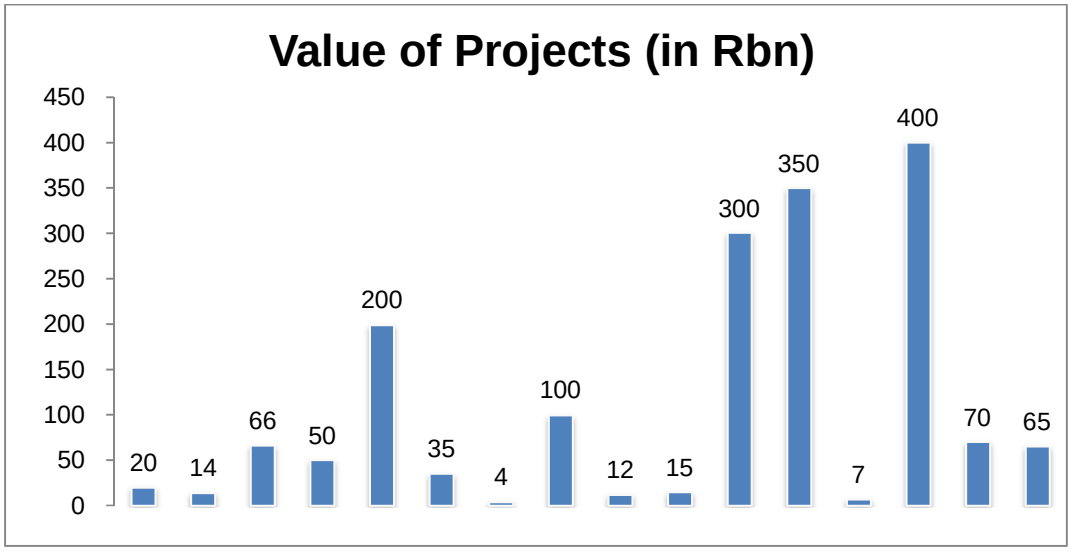
The interviewees are all currently practicing leaders within the engineering and construction sector of South Africa. Between the 16 interviewees there was a collective 240 years of experience with a minimum of six years, a maximum of 36 years and an average of 15 years.

Figure 8: Years of Experience for Sample



The cumulative value of projects that the sample had experienced was a staggering R1.7 trillion, with a minimum value of R4bn, an average of R106.8bn and a maximum of R400bn.

Figure 9: Value of Projects Experienced for Sample



An analysis of the entire coding elements (constrained and unconstrained) was undertaken to determine the frequency of occurrence for an element or code that was identified by an interviewee, as well as how frequently a code or element was discussed across the sample of interviewees.

5.3 Results Overview

For both constrained and unconstrained codes across the interviews, the maximum code was identified by thirteen (81%) of the 16 interviewees and the minimum code was identified by one (13%) interviewee.

The most discussed element was recorded 47 times whilst the least discussed element was recorded only once.

5.4 Relevance of the Conceptual Model for Contextual Intelligence

The model consists of three categories and multiple components including 1) skills and abilities, 2) types of leadership and 3) types of thinking. The elements or codes that contribute to each of the categories were evaluated in terms of interviewee identification and frequency of elements within discussions across the interviews. This information is presented in descending order of prevalence.

5.4.1 Skills and abilities

An element was coded (for identification and discussion purposes) when the researcher analysed the text data transcribed from the interviews. For Research Question 1, pre-defined codes were derived by using the existing framework. The text was coded from the researcher's review and understanding of the feedback provided. Examples are provided to explain how codes were allocated to the text. Table 11 below provides a select few responses with the element code in brackets.

Table 11: Selected Responses of Skills and Abilities Category (Research Question 1)

- (Critical Thinker) “You need to have that analytical ability to understand what is really going on.”
- (Critical Thinker) “You want to have thinking that is iterative and questions itself.”
- (Diagnoses Environment) “So for me those things and then also the ability to learn and apply the lessons learned from previous contexts into new ones.”
- (Diagnoses Environment) “Sometimes you need to take a step back and understand where people are coming from.”
- (Mission Minded) “I think you have to be almost single minded in your view of life.”
- (Mission Minded) “Whether right or wrong the greatest leaders I have seen are the people who are single minded in their conviction of something, and it is not necessarily right or wrong, but their single minded conviction and full belief in something – and getting people to buy into that as well – that ability to hold on to that one singular view and preach it and hold onto it.”
- (Change Agent) “Adjust yourself in such a way that in that situation you can be the best leader you can possibly be at the time.”
- (Future Minded) “Why is this…what is the end goal of this project?”
- (Influencer) “Yes so your way of thinking, your framework, your modelling and everything must be you are the person that… if you are the person that wants to implement something you must be the person that adapts and not the other person. You need to adapt to a solution for them. Again that helps you to get them on board and you get into their method and way of thinking. It is not always going to be easy.”

The original elements that constitute the skills and abilities category within the Contextual Intelligence Model are listed below and measurements provided for 1) percentage of interviewees who identified this element and 2) the frequency of occurrences for an element that was discussed. For codes that were mentioned by all sixteen interviewee’s, a 100% allocation is provided and similarly portions are allocated where less than a 100% mention is made. The number of responses of each element is provided in descending order of frequency. The results of each code/element are as follows:

5.4.1.1 Percentage of interviewees that identified each element:

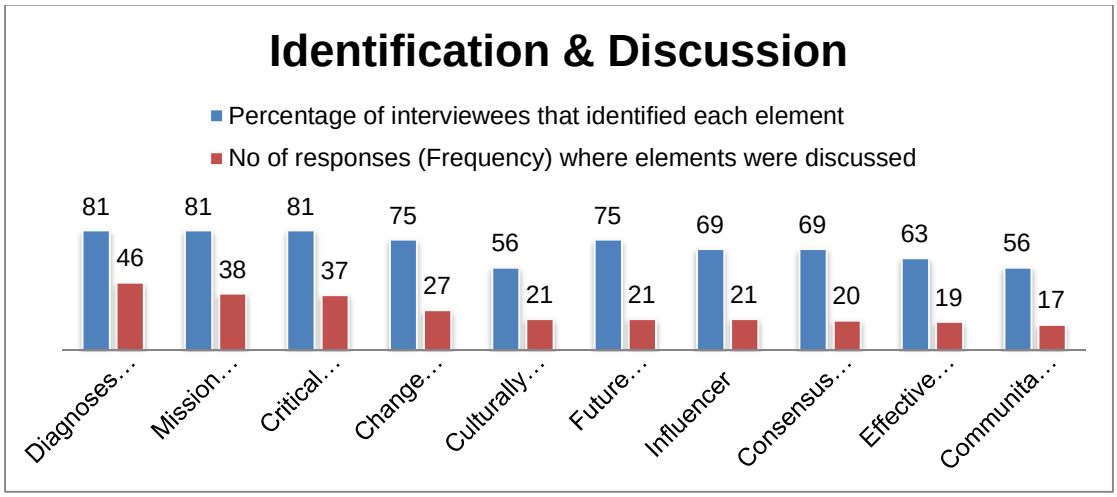
- Critical Thinker – 81%
- Diagnose Environment – 81%
- Mission Minded – 81%
- Change Agent – 75%
- Future Minded – 75%
- Influencer – 69%
- Consensus Builder - 69%
- Effective Use of Influence – 63%
- Culturally Sensitive – 56%
- Communitarian – 56%

5.4.1.2 Number of responses (Frequency) where the element was discussed:

- Diagnose Environment – 46
- Mission Minded – 38
- Critical Thinker – 37
- Change Agent – 27
- Culturally Sensitive – 21
- Future Minded – 21
- Influencer – 21
- Consensus Builder - 20
- Effective Use of Influence – 19
- Communitarian – 17

The above lists are summarised in the bar chart of Figure 10 below:

Figure 10: Identification and Discussion of Skills and Abilities (Research Question 1)



Whilst all elements of the model were identified by one or more of the participants, some of the elements were identified more than others. Five elements were identified by most of the interviewees (>75%) and the remainder were identified by more than half of the respondents. All twelve elements were identified by more than half (>56%) of the interviewees, where only two elements ("communitarian" and "culturally sensitive") were the lowest at 56%, therefore not being referred to frequently by the interviewees. Whilst the frequency of each of the elements may vary, it is neither an indication of importance nor relevance of any element to the model.

It should be noted that three of the elements; "diagnose environment", "mission minded" and "critical thinker" were highly discussed by more than 75% of the interviewees. The next five elements "change agent", "culturally sensitive", "future minded", "influencer" and "consensus builder" were actively discussed by more than half of the interviewees. The last two elements; "effective use of influence" and "communitarian" were discussed by more than half of the interviewees.

5.4.2 Types of leadership

An element was coded (for identification and discussion purposes) when the researcher analysed the text data transcribed from the interviews. For Research Question 1, pre-defined codes were derived by using the existing framework. The text was coded from the researcher's review and understanding of the feedback provided. Examples are provided that explain how codes were allocated to the text. The table below provides a select few responses with the element code in brackets.

Table 12: Selected Responses of Types of Leadership Category (Research Question 1)

➢ (Intentional Leadership) “Willing to make decisions, stick to them, if it makes sense, and common sense.” ➢ (Intentional Leadership) “Take the lead and be a visible leader and make decisions and very decisive.” ➢ (Intentional Leadership) “But I cannot stand people who are in leadership positions who are unable to make a decision.” ➢ (Multicultural Leadership) “You need to understand the culture of the people.” ➢ (Multicultural Leadership) “So people management is key because I think every organisation… if you go out into the organisation and ask them; ”What is your most valuable asset?”, they will tell you it is people.” ➢ (Multicultural Leadership) “Different people, different organisations.”

The original elements that constitute the types of leadership category within the Contextual Intelligence Model are listed below and measured for 1) percentage of interviewees who identified this element and 2) the frequency of occurrences of an element that was discussed. For codes that were mentioned by all sixteen interviewees, a 100% allocation is provided and similarly portions are allocated where less than a 100% mention is made. The number of responses of each element is provided in descending order of frequency. The results of each code/element are as follows:

5.4.2.1 Percentage of interviewees that identified each element:

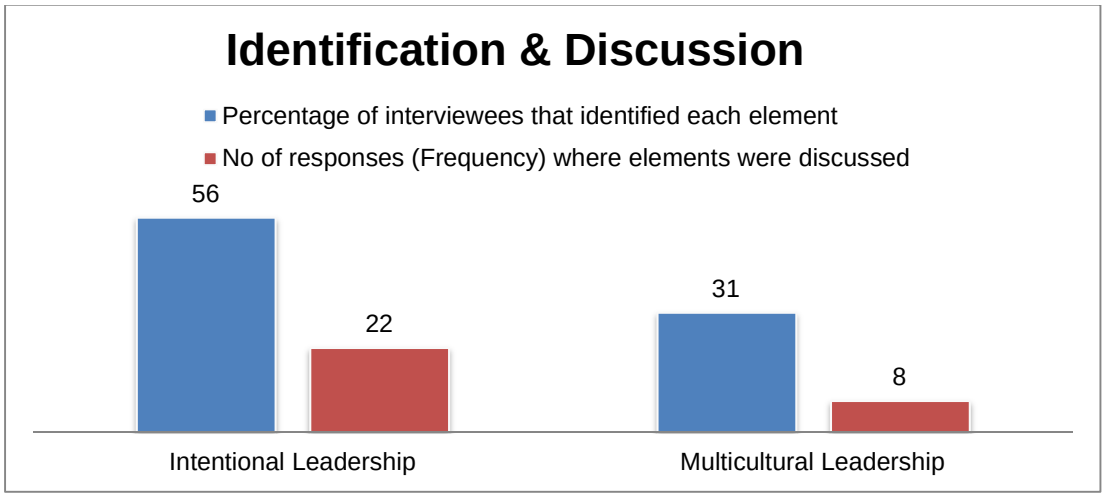
- Intentional Leadership – 56%
- Multicultural Leadership – 31%

5.4.2.2 Number of responses (Frequency) where the element was discussed:

- Intentional Leadership – 22
- Multicultural Leadership – 8

The above lists are summarised in the bar chart below:

Figure 11: Identification and Discussion of Types of Leadership (Research Question 1)



From the perspective of the type of leadership category, “intentional leadership” was identified by a few interviewees (56%). “Multicultural leadership” was only identified by 31% of the interviewee’s. Of the two leadership types, “intentional leadership” was discussed; however “multicultural leadership” was minimally discussed.

5.4.3 Types of Thinking

An element was coded (for identification and discussion purposes) when the researcher analysed the text data transcribed from the interviews. For Research Question 1, pre-defined codes were derived by using the existing framework. The text was coded from the researcher’s review and understanding of the feedback provided. Examples are provided to explain how codes were allocated to the text. The table below provides a select few responses with the element code in brackets.

Table 13: Selected Responses of Types of Thinking (Research Question 1)

- (Tacit Knowledge) “Pay attention, to be aware, to pull in probably on past experiences to make conclusions around what I am seeing.”
- (Tacit Knowledge) “Now leaders I think need to be able to demonstrate that they have gone through understanding and that they have some measure of wisdom which comes from being there and having done it and it can come only from wisdom and come from experience.”
- (Tacit Knowledge) “You learn it when you get there and you learn from mistakes that you make.”
- (Non-Newtonian Thinking) “The rate of those changes in the environment, the environment is shifting, like technology is changing as we speak so how do you embed the product in this particular technology but at the same time making sure it does not become obsolete overnight and that is the second element of complexity.”
- (Synchronicity/Double loop) “I think it’s about uhm…seeing how all the blocks fit together.”
- (3D thinking) “Uhm you have to be able to not only analyse but you also have to be able to synthesise because there is no sense in analysing and then just leaving it there and I think that is where the understanding and the wisdom comes from because your thought processes must able to analyse and then bring them all together and synthesise and then come to some sort of finding and conclusion and be able to then take it forward and I think this is what we have to do.”

The original elements that constitute the types of thinking category within the Contextual Intelligence Model are listed below and measured for 1) percentage of interviewees who identified this element and 2) the frequency of occurrences for an element that was discussed. For codes that were mentioned by all sixteen interviewees, a 100% allocation is provided and similarly portions are allocated where less than a 100% mention is made. The number of responses of each element is provided in descending order of frequency. The results of each code/element are as follows:

5.4.3.1 Percentage of interviewees that identified each element:

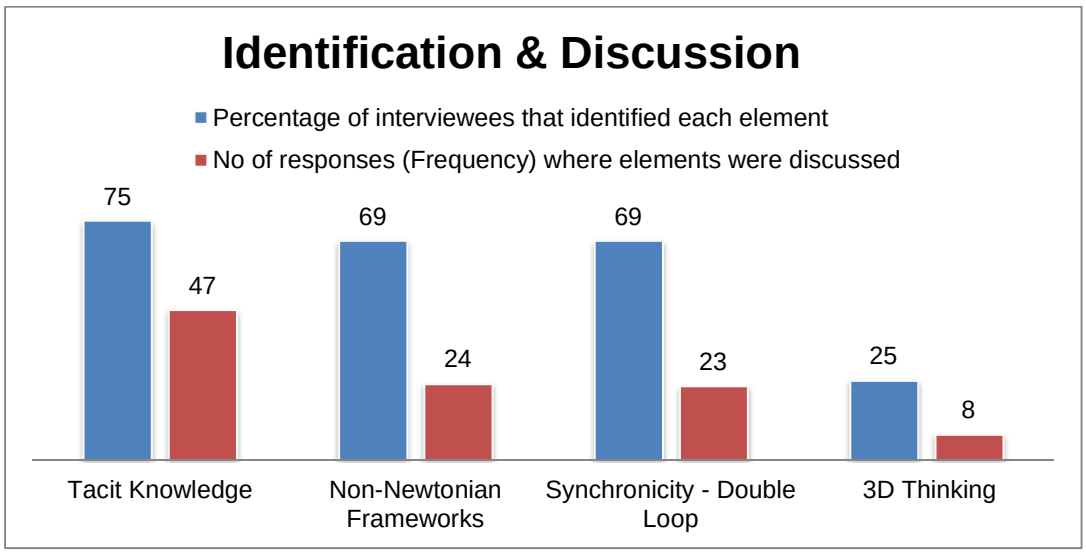
- Tacit Knowledge – 75%
- Non-Newtonian Frameworks – 69%
- Synchronicity/Double Loop – 69%
- 3D-Thinking – 25%

5.4.3.2 Number of responses (Frequency) where the element was discussed:

- Tacit Knowledge – 47
- Non-Newtonian Frameworks – 24
- Synchronicity/Double Loop – 23
- 3D-Thinking – 8

The above lists are summarised in the bar chart below:

Figure 12: Identification and Discussion of Types of Thinking (Research Question 1)



In similar fashion to the results above, the constrained elements originally defined within the types of thinking category were identified by all interviewees. More than eleven (>69%) of the interviewee's identified "tacit knowledge", "non-Newtonian frameworks" and "synchronicity". Only four (25%) of the interviewees identified "3D-thinking" as an element within the category. Whilst the frequency of each of the elements may vary, it is neither an indication of importance nor relevance of any element to the model.

"Tacit knowledge" was highly discussed by most of the interviewees. "Non-Newtonian frameworks" and "synchronicity" were actively discussed by many interviewees'; however "3D-thinking" was minimally discussed and scarcely identified.

5.5 Comprehensiveness of the Conceptual Model for Contextual Intelligence

Whilst the structuring of the Contextual Intelligence Model was originally constrained, the research question, research method and approach encouraged exploratory in-depth interviewing to inductively gather new elements, codes and categories that could potentially support or contribute towards the existing model. Through analysis and in-depth exploration, a fourth category was identified in addition to the existing three. A category of intelligence was inductively developed to complement skills and abilities, types of leadership and types of thinking. Furthermore new elements and codes were identified for the original three categories.

All new elements and codes defined within existing categories were evaluated in terms of interviewee identification and frequency of element within discussions across the interviews. This information is tabled in descending order.

5.5.1 Skills and abilities

An element was coded (for identification and discussion purposes) when the researcher analysed the text data transcribed from the interviews. For Research Question 2, no pre-defined codes were used. The text was coded from the researcher's review and understanding of the feedback provided. Examples are provided explaining how codes were allocated to the text. The table below provides a select few responses with the element code in brackets.

Table 14: Selected Responses of Skills and Abilities Category (Research Question 2)

- (Listen) “Listening to what people say and it’s often the under-handed comments or the comments that are not made in a public in a loud environment that allow you an insight to what the person is thinking.”
- (Collaboration) “Sometimes you can choose the people you work with and you want to get the best out of them for the benefit of the project.”
- (Communicator) “I think it is that ability to move up and down that hierarchy seamlessly and converse and engage with people at all levels, that is one of the abilities of a good leader in this project management space.”
- (Trust) “One thing people need to do, is be able to trust you.”
- (Empathy) “Empathy, and it’s important to show that I sympathise.”
- (Integrity) “Stick to your values.”
- (Integrity) “People won’t follow you if you don’t have that integrity.”

The new elements that may contribute towards the skills and abilities category within the Contextual Intelligence Model are listed below and measured for 1) percentage of interviewees who identified this element and 2) the frequency of occurrences for an element that was discussed. For codes that were mentioned by all sixteen interviewees, a 100% allocation is provided and similarly portions are allocated where less than a 100% mention is made. The number of responses of each element is provided in descending order. The new inductive elements were assigned a double ** pre-fix to assist the coding process. The results of each code/element are as follows:

5.5.1.1 Percentage of interviewees that identified each element:

- **Skill - Listen – 75%
- **Skill – Collaboration – 63%
- **Skill - Understanding – 50%
- **Skill –Communication – 50%
- **Skill – Focus – 50%
- **Skill – Trust – 50%
- **Skill – Being Consistent – 25%
- **Skill – Humility – 50%
- **Skill – Empathy – 25%
- **Skill – Integrity – 19%

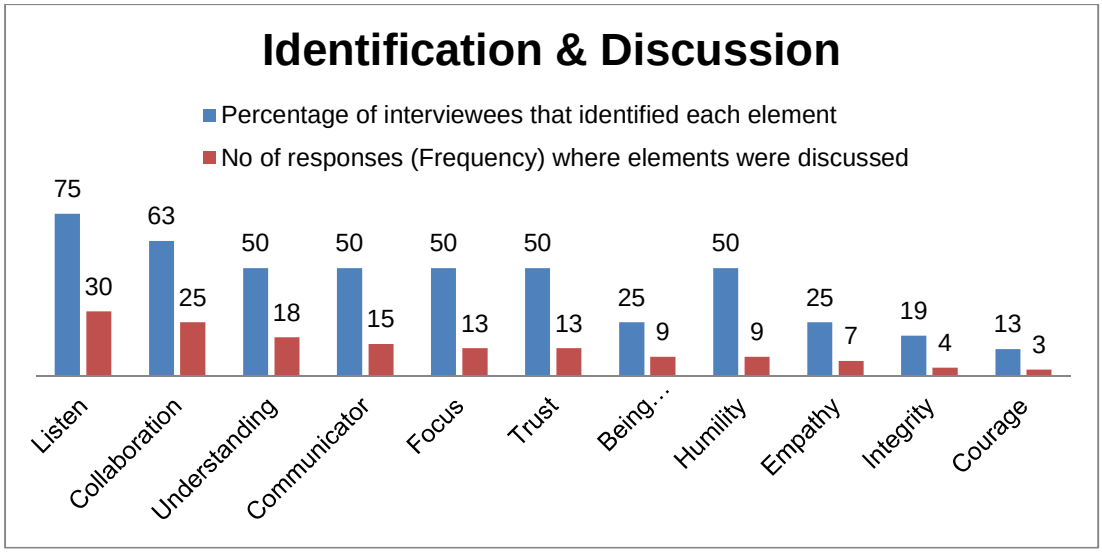
- **Skill – Courage – 13%

5.5.1.2 Number of responses (Frequency) where the element was discussed:

- **Skill - Listen – 30
- **Skill – Collaboration – 25
- **Skill - Understanding – 18
- **Skill –Communication – 15
- **Skill – Focus – 13
- **Skill – Trust – 13
- **Skill – Being Consistent – 9
- **Skill – Humility – 9
- **Skill – Empathy – 7
- **Skill – Integrity – 4
- **Skill – Courage – 3

The above lists are summarised in the bar chart below: (The prefix has been removed for visual improvement)

Figure 13: Identification and Discussion of Skills and Abilities (Research Question 2)



Through the unconstrained categorisation and inductive process, eleven new skills have been identified. The ability to listen was identified by most (75%) of the 16 interviewees and another six elements were identified by many (more than 50%) of the interviewees. Four elements were identified by few (25%) of the interviewees.

Of the eleven new skills, the ability to “listen” and “collaborate” were actively discussed; four elements, “having “understanding”, being a “communicator”, having “focus” and “trust” were discussed and the last five, “being consistent”, having” humility”, “having “empathy”, ”integrity” and “courage” were almost not discussed.

5.5.2 Types of leadership

An element was coded (for identification and discussion purposes) when the researcher analysed the text data transcribed from the interviews. For Research Question 2, no pre-defined codes were used. The text was coded from the researcher’s review and understanding of the feedback provided. Examples are provided explaining how codes were allocated to the text. The table below provides a select few responses with the element code in brackets.

Table 15: Selected Responses of Types of Leadership Category (Research Question 2)

- (Authentic) “It is that whole thing about being an authentic leader; you have to be who you are. And my leadership style is always the same.”
- (Participative) “He doesn’t have to be the expert but he has to grasp that so that the people that you lead can identify with you.”
- (Participative) “Don’t judge, you just allow everybody to come up with ideas and you can capture them and so that is another form of leadership.”
- (Organisational) “My leadership style is probably organisational. I make sure that I work out where everyone’s’ strengths are.”
- (Transactional) “Be clear about what you want from people so they can deliver against what you need.”
- (Authoritative) “Sometimes you can inspire by being more directive and authoritative.”

The new elements that may contribute towards the types of leadership category within the Contextual Intelligence Model are listed below and measured for 1) percentage of interviewees who identified this element and 2) the frequency of occurrences for an element that was discussed. For codes that were mentioned by all sixteen interviewees, a 100% allocation is provided and similarly portions are allocated where less than a 100% mention is made. The number of responses of each element is provided in descending order. The results of each code/element are as follows:

5.5.2.1 Percentage of interviewees that identified each element:

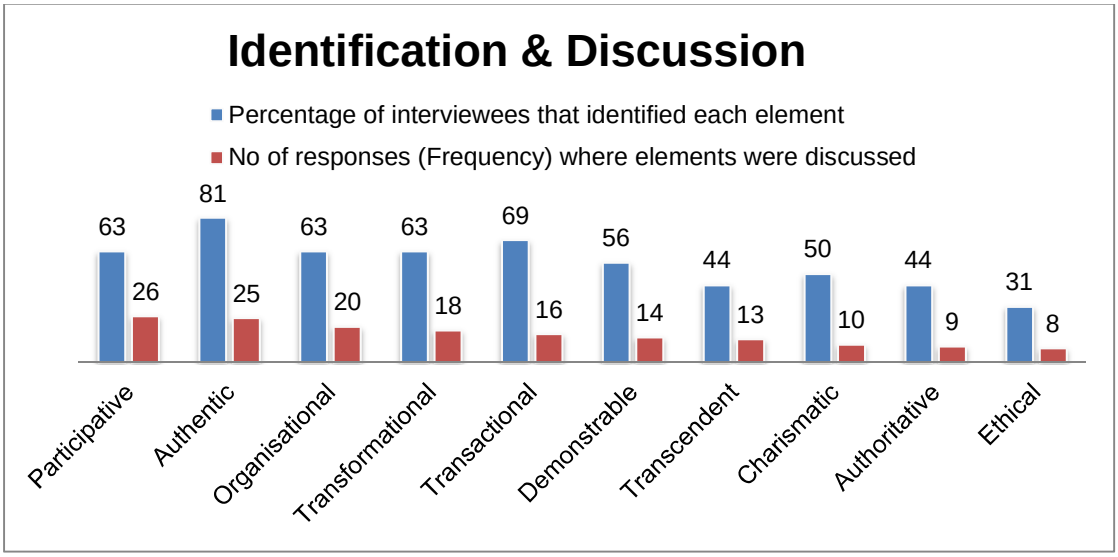
- **Leadership – Participative – 63%
- **Leadership - Authentic - 81%
- **Leadership – Organisational – 63%
- **Leadership – Transformational – 63%
- **Leadership – Transactional - 69%
- **Leadership – Demonstrable – 56%
- **Leadership – Transcendent – 44%
- **Leadership – Charismatic – 50%
- **Leadership – Authoritative – 44%
- **Leadership – Ethical – 31%

5.5.2.2 Number of responses (Frequency) where the element was discussed:

- **Leadership – Participative - 26
- **Leadership - Authentic - 25
- **Leadership – Organisational – 20
- **Leadership – Transformational – 18
- **Leadership – Transactional - 16
- **Leadership – Demonstrable -14
- **Leadership – Transcendent - 13
- **Leadership – Charismatic -10
- **Leadership – Authoritative - 9
- **Leadership – Ethical - 8

The above lists are summarised in the bar chart below: (The prefix has been removed for visual improvement)

Figure 14: Identification and Discussion of Types of Leadership (Research Question 2)



Through the unconstrained categorisation and inductive process, ten new leadership styles have been identified. “Authentic leadership” was identified by 13 (81%) of the sixteen interviewees and another six elements were identified by more than half of the interviewees. Three elements were identified by a few (44%) interviewees.

Three elements, namely “participative leadership”, “authentic leadership” and “organisational leadership” were actively discussed. “Transformational leadership”, “transactional leadership”, “demonstrable leadership” and “transcendent leadership” were discussed, whereas “authoritative” and “ethical leadership” were minimally discussed.

5.5.3 Types of thinking

An element was coded (for identification and discussion purposes) when the researcher analysed the text data transcribed from the interviews. For Research Question 2, no pre-defined codes were used. The text was coded from the researcher’s review and understanding of the feedback provided. Examples are provided to explain how the codes were allocated to the text. The table below provides a select few responses with the element code in brackets.

Table 16: Selected Responses of Types of Thinking (Research Question 2)

- (Holistic/system/big picture) "I might have this one challenge but if I take the system's view then I will have a better understanding."
- (Structured processes) "We don't use a proper thinking process and the only way to have a proper thinking process is to have frameworks, you can follow and you can for instance categorise and we know you supposed to categorise and you have them poet and you have project management related risk and you can have environmental related risk and you can have organisational risk, you can have technical or operational or quality related risk and that is what the T stands for and at least if you start to or you can have other people say TEMPO where it is a similar thing. But you should follow a structured process and you can say these are the risks categories that I am going to look at and let's make sure we've got risk in each of those areas but we don't do that properly and because that is thinking."
- (Creative) "Be a positive energetic thinker, stimulating people who must think out of the box and think of new ideas."

The new elements that may contribute towards the types of thinking category within the Contextual Intelligence Model are listed below and measured for 1) percentage of interviewees who identified this element and 2) the frequency of occurrences an element was discussed. For codes that were mentioned by all 16 interviewees, a 100% allocation is provided and similarly portions are allocated where less than a 100% mention is made. The number of responses of each element is provided in descending order. The results of each code/element are as follows:

5.5.3.1 Percentage of interviewees that identified each element:

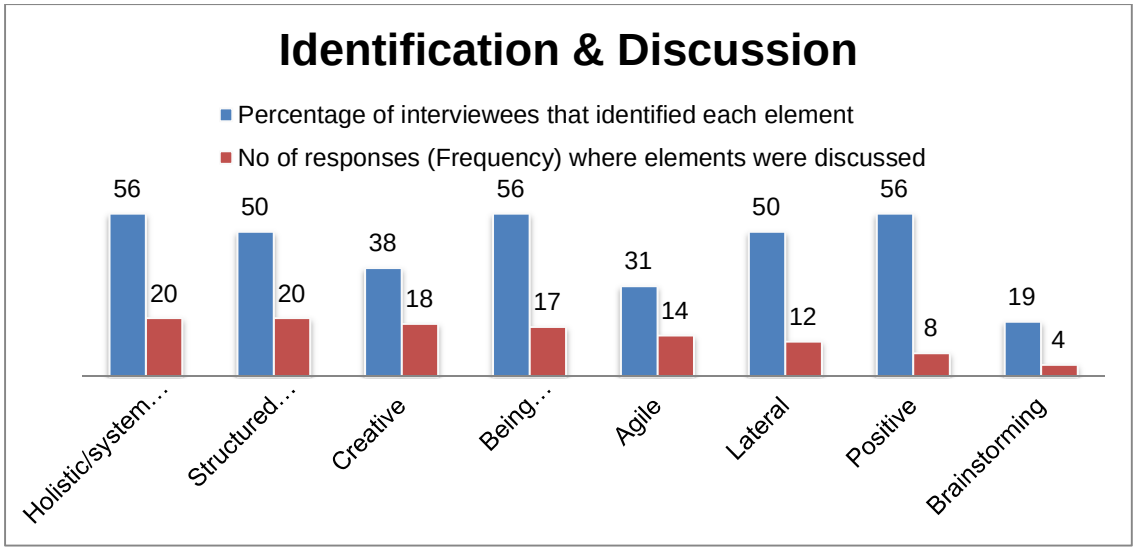
- Holistic/system/big picture – 56%
- Structured processes – 50%
- Creative – 38%
- Being Conscious about thinking – 56%
- Agile – 31%
- Lateral -50%
- Positive -56%
- Brainstorming -19%

5.5.3.2 Number of responses (Frequency) where the element was discussed:

- Holistic/system/big picture – 20
- Structured processes – 20
- Creative – 18
- Being Conscious about thinking – 17
- Agile - 14
- Lateral - 12
- Positive - 8
- Brainstorming - 4

The above lists are summarised in the bar chart below:

Figure 15: Identification and Discussion of Types of Thinking (Research Question 2)



Through the unconstrained categorisation and inductive process, eight new types of thinking have been identified. “Holistic/system thinking”, “structured thinking”, “being conscious of thinking”, “lateral thinking” and “positive thinking” were identified by many (>50%) of the 16 interviewees and another two elements were identified by a few interviewees, while “brainstorming” was almost not identified.

Of the eight new elements, six elements “holistic/system thinking”, “structured thinking”, “creative thinking”, “being conscious of thinking”, “agile in thinking” and “lateral thinking” were discussed, where “positive thinking” and “brainstorming” were minimally discussed.

5.5.4 Intelligence

An element was coded (for identification and discussion purposes) when the researcher analysed the text data transcribed from the interviews. For Research Question 2, no pre-defined codes were used. The text was coded from the researcher's review and understanding of the feedback provided. Examples are provided to explain how the codes were allocated to the text. The table below provides a select few responses with the element code in brackets.

Table 17: Selected Responses of Types of Leadership Category (Research Question 2)

- (Emotional) "It is a little bit like marketing or advertising; a great advert is not the advert with the facts, it is the advert that somehow elicits an emotional response from you. So you have to be that person who when you are explaining yourself, when you are articulating yourself, you can tap into people's emotions and draw on that, so that you somehow convince them of things – not about the rightness or the logic of it – but about the emotion of it."
- (Emotional) "I think in today's world it is becoming increasingly difficult to deal with people because people are not so prone anymore to just follow a leader blindly. They might have done in the 50's in the 60's and in the 70's and you have to manage people and you have to try and understand them and you need a lot of emotional intelligence to be a leader today."
- (Technical) "So you also need to have a technical skills base to some extent depending on what that means and wherever you operating, a technical or an operational vacuum you certainly need to have your hands on a working knowledge of what is happening in that particular environment."
- (Self-awareness) "Key drivers are that you need to understand yourself."
- (Spiritual) "I am Christian so spirituality and spiritual intelligence is important."

A new category with new elements was identified through the inductive exploratory process. The new category is identified as types of Intelligence. The new elements that constitute intelligence are listed below and measured for 1) percentage of interviewees who identified this element and 2) the frequency of occurrences for an element that was discussed. For codes that were mentioned by all sixteen interviewees, a 100% allocation is provided and similarly portions are allocated where less than a 100%

mention is made. The number of responses of each element is provided in descending order. The results of each code/element are as follows:

5.5.4.1 Percentage of interviewees that identified each element:

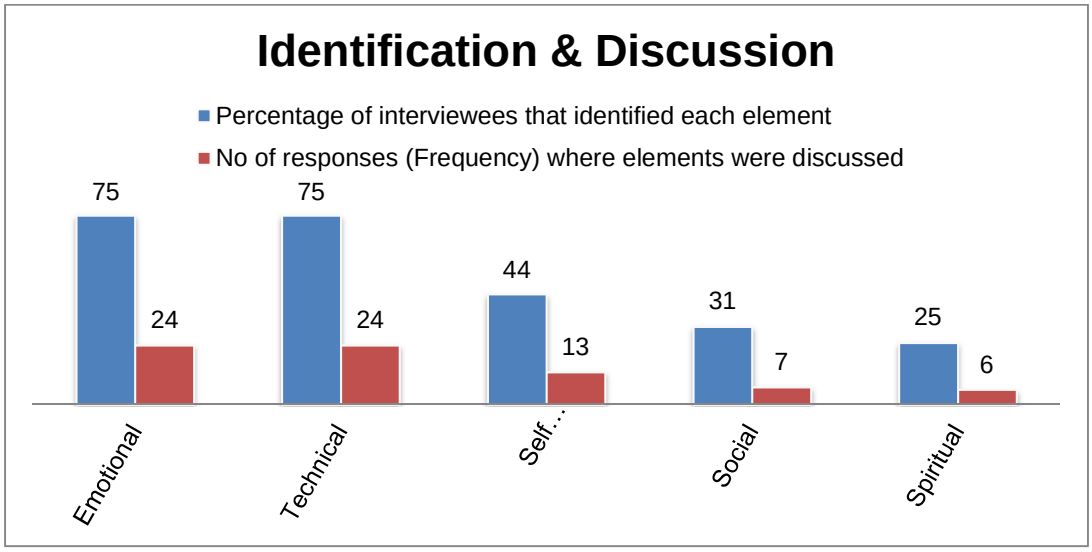
- *Intelligence – Emotional - 75%
- *Intelligence – Technical – 75%
- *Intelligence – Self-awareness – 44%
- *Intelligence – Social – 31%
- *Intelligence – Spiritual – 25%

5.5.4.2 Number of responses (Frequency) where the element was discussed:

- *Intelligence – Emotional - 24
- *Intelligence – Technical – 24
- *Intelligence – Self-awareness – 13
- *Intelligence – Social – 7
- *Intelligence – Spiritual – 6

The above lists are summarised in the bar chart below:

Figure 16: Identification and Discussion of Types of Intelligence (Research Question 2)



Through the unconstrained categorisation and inductive process, five new types of intelligence have been identified. “Emotional intelligence” and “technical intelligence”

were identified by 12 (75%) of the 16 interviewees. Three other elements were identified by seven (44%) or less interviewees.

“Emotional intelligence” and “technical intelligence” were actively discussed and “self-awareness” was discussed. The last two elements, “social intelligence” and “spiritual intelligence” were minimally discussed.

5.6 Benefits of the Conceptual Model for Contextual Intelligence

Kutz and Bamford-Wade (2013) originally provided eight benefits and outcomes for the leader and the organisation. Through the exploratory and inductive process, ten new benefits were identified by the interviewees. These include: 1) better decision making, 2) more effective in achieving outcomes, 3) get to know your boundaries, 4) better relationships, 5) broader understanding, 6) better base and foundation, 7) better application of leadership, 8) more efficient n achieving outcomes, 9) become a better leader and 10) become a more visible leader. The original benefits are provided for the reader’s understanding and thereafter the new elements or codes are presented. Finally, the existing and new benefits are compared.

All new elements and codes were evaluated in terms of interviewee identification and frequency of occurrence of elements within discussions across the interviews. This information is tabled in descending order.

5.6.1 Existing Benefits

The benefits offered by Kutz and Bamford- Wade (2013) include:

- Explaining why there may be success in one environment and failure in another.
- Reducing conflict and increasing awareness of the values and ideas of self and others.
- Increasing ability to effectively influence others.
- Responding to and profiting from unexpected or complicated change.
- Increasing team buy-in.
- Accelerating ability to contribute in a new context.

- Appreciating external and internal influences.

It is understood that this was not an exhaustive list and depending on the context of the leader or organisation, then these benefits may differ. Cross-comparison data of the existing benefits was used in comparison to the new benefits later on in this chapter.

5.6.2 New Benefits

An element was coded (for identification and discussion purposes) when the researcher analysed the text data transcribed from the interviews. For Research Question 3, no pre-defined codes were used. The text was coded from the researcher's review and understanding of the feedback provided. Examples are provided to explain how the codes were allocated to the text. The table below provides a select few responses with the element code in brackets.

Table 18: Selected Responses of Types of Leadership Category (Research Question 2)

- (Better decision making) "I will be able to handle the situation hopefully better."
- (Better decision making) "There are too much of those things so he can't make the decision without having the context otherwise he is making decisions without factual basis, I translate context to facts."
- (More effective in achieving outcome) "You must understand that the effectiveness of any solution depends on its context."
- (Broader understanding) "Understanding those gaps in terms of value and proposition into that service provider and knowing where your limitations are."
- (More efficient in achieving outcome) "That's your armoury, you are an archer, you will draw a different arrow, if it's a crooked arrow then obviously you miss the target."

The new elements that may contribute towards the benefits list are recorded below and measured for 1) percentage of interviewees who identified this element and 2) the frequency of occurrences for an element that was discussed. For codes that were mentioned by all 16 interviewees, a 100% allocation is provided and similarly portions are allocated where less than a 100% mention is made. The number of responses of each element is provided in descending order. The new inductive elements were assigned a single asterisk (*) prefix to assist the coding process. The results of each code/element are as follows:

5.6.2.1 Percentage of interviewees that identified each element:

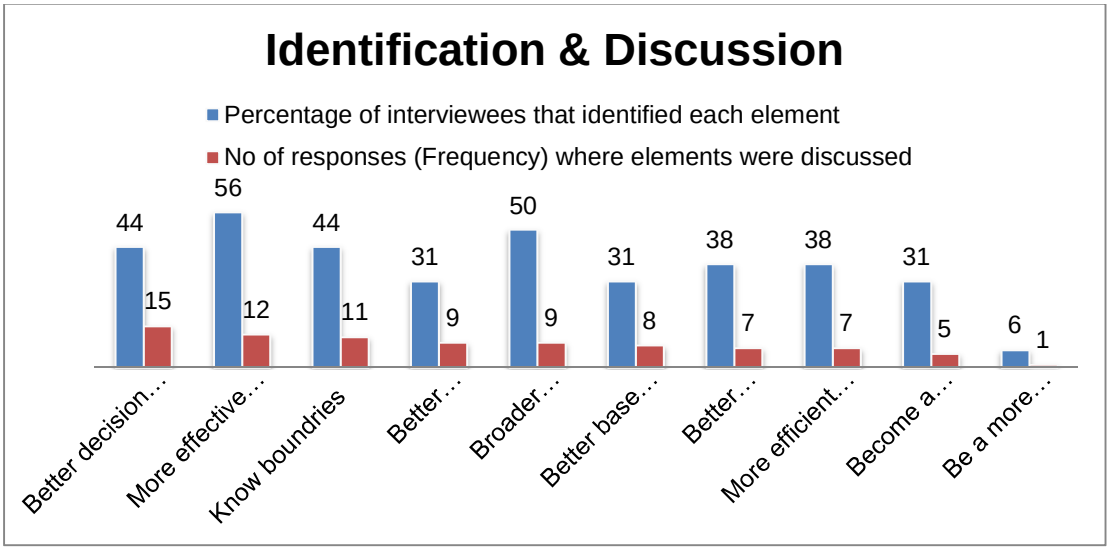
- *Benefit – Better decision making - 44%
- *Benefit – More effective in achieving outcome– 56%
- *Benefit – Get to know your boundaries– 44%
- *Benefit – Better relationships – 31%
- *Benefit – Broader understanding – 50%
- *Benefit – Better base and foundation – 31%
- *Benefit – Better application of leadership – 38%
- *Benefit – More efficient in achieving outcome – 38%
- *Benefit – Become a better leader -31%
- *Benefit – Become a more visible leader – 6%

5.6.2.2 Number of responses (Frequency) where the element was discussed:

- *Benefit – Better decision making - 44%
- *Benefit – More effective in achieving outcome– 56%
- *Benefit – Get to know your boundaries– 44%
- *Benefit – Better relationships – 31%
- *Benefit – Broader understanding – 50%
- *Benefit – Better base and foundation – 31%
- *Benefit – Better application of leadership – 38%
- *Benefit – More efficient in achieving outcome – 38%
- *Benefit – Become a better leader -31%
- *Benefit – Become a more visible leader – 6%

The above lists are summarised in the bar chart below:

Figure 17: Identification and Discussion of Benefits (Research Question 3)



Through the unconstrained categorisation and inductive process, ten new types of benefits have been identified. “Being more effective as a leader” and “having a broader understanding” were the highest identified categories by many (>50%) of the 16 interviewees. Another seven benefits were identified by a few interviewees’ but “being a more visible leader” was minimally identified.

Three benefits, namely “better decision making”, “being more effective in achieving outcomes” and “knowing boundaries” were discussed. “Having better relationships”, “having a broader understanding”, “having a better base and foundation for decision making”, “better application of leadership”, “being more efficient in achieving outcomes”,” becoming a better leader” and “being a more visible leader” were minimally discussed.

5.6.3 Benefits Comparison

Whilst it is appreciated that the original benefits list provided by Kutz and Bamford–Wade (2013) was not exhaustive, analysis was concluded that evaluates each new benefit against the original list. A percentage of alignment was provided to each of the new benefits against each individual original benefit. The intention was to describe the coherence, compatibility and concentration of the new benefits to the old. The intention was to emphasise cross-alignment and concentration to promote certain benefits and review the least concentrated benefits. Whilst an old benefit may not describe the new benefit, it may be an enabler or a result. Therefore the test was to cross-evaluate the new list of benefits against the old list and *vice versa*.

The below table was developed through cross-comparison.

Table 19: Cross-Comparison of Benefits

	COMPARISON MATRIX	NEW BENEFITS: Better decision making	More effective in achieving outcome	Know boundries	Better relationships	Broader understanding	Better base and foundation	Better application of leadership	More efficient in achieving outcome	Become a better leader	Be a more visable leader	
ORIGINAL BENEFITS	Explaining why there may success in one environment and failure in another	10%	25%	25%	15%	65%	65%	15%	23%	15%	15%	27%
	Reducing conflict and increasing awareness of the values and ideas of self and others	55%	60%	65%	65%	65%	65%	55%	55%	65%	40%	59%
	Increase ability to effectively influence others	55%	65%	55%	65%	35%	35%	65%	55%	65%	45%	54%
	Responding to and profiting from unexpected or complicated change	60%	65%	35%	35%	35%	35%	55%	55%	25%	25%	43%
	Increasing team buy-in	40%	65%	55%	67%	45%	45%	65%	65%	60%	55%	56%
	Accelerating ability to contribute in a new context	45%	55%	65%	55%	65%	65%	43%	35%	45%	55%	53%
	Appreciating external and internal influences	65%	55%	55%	55%	65%	65%	55%	55%	55%	60%	59%
		47%	56%	51%	51%	54%	54%	50%	49%	47%	42%	

The table above colour codes the most compatible old benefits and the most compatible new benefits. A green colour code represents a high level of coherence and compatibility whereas a red colour represents a very low level of compatibility. An average sum is presented at the end of each row or column for an old or new benefit respectively.

The old benefits have compatibilities' levels ranging from 59% to 27% and are listed below in descending order:

- Reducing conflict and increasing awareness of the values and ideas of self and others – 59%.
- Appreciating external and internal influences – 59%.
- Increasing team buy-in – 56%.
- Increasing ability to effectively influence others – 54%.
- Accelerating ability to contribute in a new context – 53%.
- Responding to and profiting from unexpected or complicated change – 43%.
- Explaining why there may be success in one environment and failure in another -27%.

The new benefits have compatibilities' levels ranging from 56% to 42% and are listed below in descending order:

- More effective in achieving outcome – 56%
- Broader understanding - 54%
- Better base and foundation – 54%
- Know boundaries – 51%
- Better relationships – 51%
- Better application of leadership – 50%
- More efficient in achieving outcome – 49%
- Better decision making – 47%
- Become a better leader – 47%
- Be a more visible leader – 42%

The most compatible existing benefits from Kutz and Bamford-Wade (2013) are that of "reducing conflict and increasing awareness of the values ideas of self and others", "increasing team buy-in" and the ability to "appreciate external and internal issues". The most compatible new benefits to the existing list are that of being "more effective in achieving outcome" and having a "broader understanding".

The least compatible existing benefit from Kutz and Bamford-Wade (2013) is that of "explaining why there may be success in one environment and failure in the other". The least compatible new benefit to the existing list is that of "being a more visible leader".

5.7 Conclusion of Results

The sixteen in-depth qualitative interviews were conducted with leaders in the engineering and construction sector that had an average of 15 years' experience and had been involved in projects of an average value of R106bn.

For both constrained and unconstrained codes across the interviews, the maximum code was identified by thirteen (81%) of the 16 interviewees and the minimum code was identified by one (13%) interviewee. The most discussed element was recorded 47 times whilst the least discussed element was recorded once.

Descriptors were established for identification and discussion purposes, which contributed to the findings and interpretation of the analysis. From the "Kutz and Bamford-Wades (2013) Conceptual Model for Contextual Intelligence", elements within the constrained categories included 1) skills and abilities, 2) types of leadership and 3) types of thinking. These were analysed for counts of identification and discussion.

From the in-depth unconstrained questions within the interview guide, a new category was defined called “types of intelligence” which complements the existing three categories. The elements within all four categories were analysed for counts of identification and discussion.

New benefits derived from the interviews were cross-compared against the existing list of benefits for coherence, compatibility and concentration.

To determine the relevance and comprehensiveness of each element a combined scoring approach was utilised and old and new elements as well as benefits are compared in Chapter 6.

CHAPTER 6: DISCUSSION OF RESULTS

The research findings were analysed and interpreted using the literature (Chapters 2 and 4) to address the researcher's three core research questions (Chapter 3) about Contextual Intelligence being a relevant and comprehensive model for leaders in the engineering and construction sector of South Africa.

The research questions are:

1. Is Kutz and Bamford-Wade's 2013 Conceptual Model for Contextual Intelligence a relevant model that can assist engineering and construction leaders diagnose context?
2. Is Contextual Intelligence a comprehensive model that can assist leaders to cognitively diagnose a context in order to apply the most appropriate leadership style?
3. What are the benefits to companies in the engineering and construction industry when correctly diagnosing context in comparison to Kutz and Bamford-Wade (2013), seven pre-defined benefits?

The research questions entailed both deductive and inductive methods to test the relevance and comprehensiveness of an existing model. In Chapter 5, the findings were discussed the frequency of occurrences for which an element was 1) identified and 2) discussed amongst the interviewees.

To achieve a single measure, a combined score is developed to allow for ranking and comparison across the deductive and inductive processes. Both deductive and inductive elements and scores are ranked in the ensuing tables for each category.

The combined score sums the percentage of identification and the counts of discussions (In Chapter 5) for each element to equal a score from a total 147 (identification as 100 and discussion out of a maximum of 47 times). The equation is shown below:

Equation for Relevance
(% Identification + # Discussion) / 147 x 100

An example would be that "Element A" was identified by most (75%) and actively discussed (30) and would receive an overall score of (75+30)/147*100=71.

The combined scores for each element are described as the level of "relevancy" for each category in contribution towards an updated and improved "Contextual Intelligence Leadership Model".

Below is Table 20, which illustrates the descriptor for combined scores and relevancy:

Table 20: Combined Scores Relevancy Descriptor

Combined Scores	Contextual Intelligence Relevancy
100-75	Highly Relevant
75-50	Relevant
50-25	Partially Relevant
25-0	Irrelevant

To focus on providing a rich and contextually intelligent view of what elements are relevant for leaders to diagnose context and be contextually intelligent, this research focused only on elements that were either highly relevant or relevant. It is assumed that new elements that are partially relevant or irrelevant should not be ignored but that these should rather be excluded from any amendments or adjustments to the existing model. Existing elements that fall within the same descriptors were similarly excluded. It is with this is mind that any elements that fall within these two categories would be excluded from further discussion.

For this research project comprehensiveness is the measured comparison of the number of 1) categories and 2) elements per category after investigation compared to the original number within the Kutz and Bamford-Wade (2013) Conceptual Model For Contextual Intelligence. These measures are again focused only to relevant or highly relevant elements.

For example; the original conceptual model counted ten elements within the category of "skills and abilities". This is compared to the new list of twelve elements that have been identified as relevant or highly relevant (both deductive and inductive). The analysis would then argue that the original category "skills and abilities" was not comprehensive.

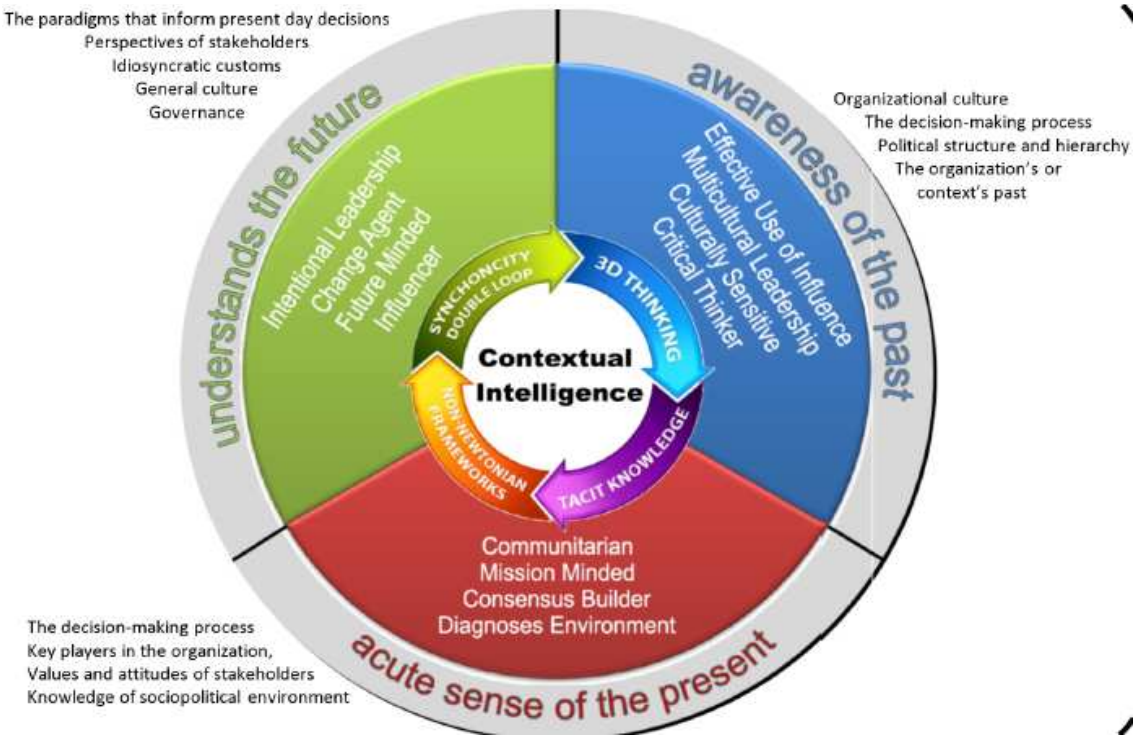
Before the categories and elements of Contextual Intelligence are discussed in detail, it would be valuable to determine and discuss the findings in Chapter 5 and how they relate to the existing structure of the Kutz and Bamford-Wade (2013) Conceptual Model

for Contextual Intelligence. This is important as the structure of the model must be specific or contextually intelligent to the industry for which it is intended.

6.1 Structure of Model

The existing structure of the Contextual Intelligence model currently consists of the three existing categories: 1) skills and abilities, 2) types of leadership and 3) types of thinking. Through both the deductive and inductive processes, these three categories have remained and continue to remain relevant for the structure of Contextual Intelligence.

Figure 18: Contextual Intelligence Model for Organisational Leadership (Kutz & Bamford-Wade, 2013) Structure of Model



One of the main constructs of the model is the application of three-dimensional (3D) thinking (displayed as the most outer ring and one of the types of thinking on the inner ring). The skills and abilities and types of leadership are categorised into the past, the present or the future. “Types of thinking” (as described above) is a category that was deductively and inductively explored through the in-depth interview process. Three-dimensional (3D) thinking was minimally discussed and minimally identified and with a

combined score of 22, it is categorised as “irrelevant” (section 6.4 –Types of thinking below expounds on this).

With this construct now classified as “irrelevant”, certain arguments maybe initiated concerning alternate structures or models. Contextual Intelligence is a result of utilising many different and relevant skills and abilities, different types of leadership and different types of thinking (as presented and discussed in Chapters 5 and 6 respectively). There is very little understanding between the independent variables or elements discussed in Chapter 5 and the dependent outcomes or benefits. Similarly, whilst other authors have offered possible methods of operationalisation, there is very little evidence supporting this. This research report identified one additional category termed intelligence, as well as the difference between highly relevant elements and relevant elements. These new findings contribute towards increasing the comprehensiveness of the contextual intelligence model for the context of the engineering and construction sector. Without the concept of 3D-thinking, and applying the appropriate fourth category of intelligence, it was proposed that a new conceptual model be created for contextual intelligence within the engineering and construction sector:

Figure 19: Conceptual model for Contextual intelligence Within the Engineering and Construction Sector

The circle displays the four new categories and the continuous engagement of all categories to develop and use Contextual Intelligence. The new Conceptual Model has identified elements for each of the categories that are either classified as relevant or highly relevant. Therefore the model structure can be further defined as follows:

Figure 20: New Conceptual Model for Contextual Intelligence with Relevance

Each category and associated elements contributing towards Contextual Intelligence are discussed with considerations of how these may fit within this new conceptual model.

6.2 Skills and Abilities

The skills and abilities required of leaders to diagnose complex contexts can vary considerably and may be used subjectively. The Kutz and Bamford-Wade (2013) Conceptual Model for Contextual Intelligence identified ten skills and abilities that were identified by many or most interviewees and were also actively or highly discussed. Through the in-depth exploratory interviews, another eleven new skills and abilities were identified with only a couple of the new elements being identified and discussed as the original elements. The complete combined scores are provided in Table 21, for all twenty-one elements and these are ranked in descending order.

It was assumed that new elements that are partially relevant or irrelevant would not be ignored but rather would be excluded from any amendments or adjustments to the existing model. Existing elements that are classified within the same descriptors would similarly be excluded. Therefore any elements that were categorised within these sections were excluded from further discussion.

Table 21: Skills and Abilities (Scored, combined and ranked)

	Type	Element	Combined
Highly Relevant	Deductive	Diagnoses Environment	87
	Deductive	Mission minded	81
	Deductive	Critical Thinker	80
	Inductive	Listen	71
Relevant	Deductive	Change Agent	69
	Deductive	Future Minded	65
	Deductive	Influencer	61
	Deductive	Consensus Builder	60
	Inductive	Collaboration	60
	Deductive	Effective Use of influence	55
	Deductive	Culturally Sensitive	53
	Deductive	Communitarian	50
Partially Relevant	Inductive	Understanding	46
	Inductive	Communicator	44
	Inductive	Focus	43
	Inductive	Trust	43
	Inductive	Humility	40
Irrelevant	Inductive	Being Consistent	23
	Inductive	Empathy	22
	Inductive	Integrity	15
	Inductive	Courage	11

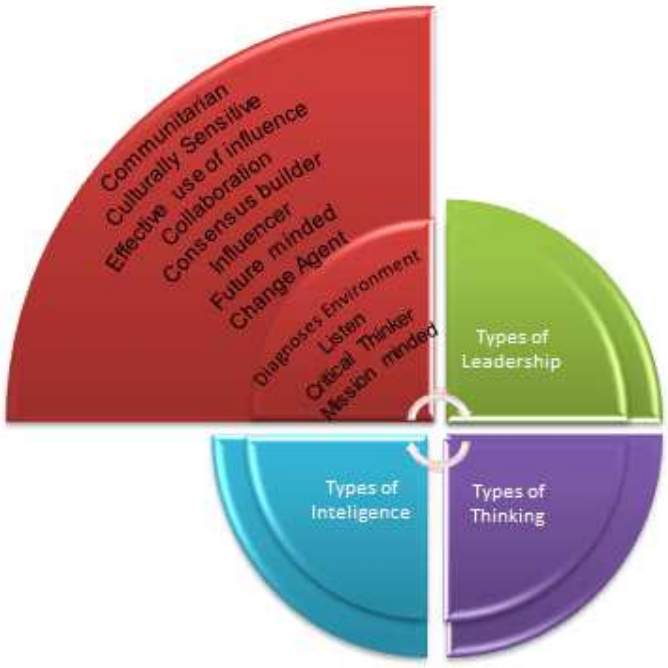
The first new element that is highly relevant was the ability to “listen”. This is a skill of a leader that has constantly been identified in previous leadership studies. Kirkpatrick and Locke (1991) identified that effective leaders are good information gatherers (which contributes to establishing context) by being able to carefully listen directly and indirectly and therefore gain a better understanding of the environment’s activities.

The second new element that was relevant was the skill of being “collaborative” and ensuring collaboration. Leaders that collaborate with others have a richer picture and better understanding of the collective. Leaders collaborate and ensure open, participative and engaging debate which again provide the leader with better context for decision making and allow the leader to be more efficient and effective. Again, Kirkpatrick and Locke (1991) explained that a leader has to rely on their team and simply cannot do everything themselves. To achieve goals as a leader “collaboration” is required.

To improve the comprehensiveness of the skills and abilities category a total number of twelve elements are listed in comparison to the original ten provided by Kutz and

Bamford-Wade (2013). The revised list of highly relevant and relevant elements was generated to form part of the New Conceptual Model for Contextual Intelligence. This is graphically displayed below:

Figure 21: Revised Elements for Skills and Abilities in New Conceptual Model for Contextual Intelligence



The skills and abilities category includes four highly relevant elements and eight relevant elements, thereby improving the comprehensiveness of the Contextual Intelligence Model.

6.3 Types of Leadership

The types of leadership required of leaders to diagnose complex contexts can vary considerably and may be used subjectively. As presented in Chapter 5, the Kutz and Bamford-Wade (2013) Conceptual Model for Contextual Intelligence identified two types of leadership that were identified only by a “few” or “minimally any” and were similarly “discussed” or “minimally discussed” by the interviewees. Through the in-depth exploratory interviews, ten new types of leadership were identified, with three elements being identified by many and these were actively discussed. The complete

combined scores are provided for all twelve elements and are categorised in descending order.

It was assumed that elements that are irrelevant would not be ignored but rather would be excluded from any amendments or adjustments to the existing model. It is with this is mind that any elements that were within this category would be excluded from further discussion.

Table 22: Types of Leadership (Scored, combined and ranked)

	Type	Element	Combined
Highly Relevant	Inductive	Authentic	72
Relevant	Inductive	Participative	60
	Inductive	Transactional	58
	Inductive	Organisational	56
	Inductive	Transformational	55
	Deductive	Intentional Leadership	53
Partially Relevant	Inductive	Demonstrable	48
	Inductive	Charismatic	41
	Inductive	Transcendent	39
	Inductive	Authoritative	36
	Deductive	Multicultural Leadership	27
	Inductive	Ethical	27

Five new leadership styles were identified through the inductive process. Authentic leadership is defined as a "highly relevant" element for contextual intelligence. Authentic leadership encourages stronger relationships and improved communication and therefore provides each leader with a better understanding of any given context. This leadership style opens more dialogue and engagement amongst the leader and team. As discussed in Chapter 2, Ofori (2008) similarly described the need for "authentic leadership" in the engineering and construction industry as he explained that the traditional project management approach is too autocratic and authoritative.

Participative leadership is the first leadership style that was inductively deduced as "relevant". This leadership style similarly relates to relationships and engagement between a leader and their followers. Randeree and Chaudhry (2012) identified participative or consultative leadership as a prominent leadership style in the engineering and construction sector of the United Arab Emirates but qualified to say that leadership styles do vary from context to context.

Organisational leadership was identified and discussed as “relevant” in that leaders need to organise different elements and aspects of project resources in order to be successful. With this in mind, a leader must organise in a way that will contribute towards the project and the individuals will be part of that project. Followers will identify leaders that can identify components and organise within varying contexts (Fraser, 2000).

In order for a leader to be more influential and convince his followers, he/she needs to be acutely aware of the context and what shapes the desires and needs of different individuals at different times. This ability to transform the followers was described by McClesky (2014) who further explained that transactional leadership is a series of exchanges between the leader and follower. The leader needs to be aware of these exchanges and how the interactions can occur to provide additional colour to the context in which they manage projects. All of the above leadership styles identified the need to be utilised, understood and evaluated in varying contexts to allow for improved contextual intelligence.

To improve the comprehensiveness of the types of leadership category a total number of six elements are listed in comparison to the original two provided by Kutz and Bamford-Wade (2013).

The revised list of highly relevant and relevant elements was generated to form part of the New Conceptual Model for Contextual Intelligence. This is graphically displayed below:

Figure 22: Revised Elements for Types of Leadership in New Conceptual Model for Contextual Intelligence

Types of leadership were derived using both the inductive a deductive research processes to develop a revised list of leadership styles to the category of “leadership within contextual intelligence”. The new elements consist of one element that is highly relevant and another five elements that are relevant. The revised list of elements improves the comprehensiveness of the contextual intelligence model.

6.4 Types of Thinking

The types of thinking required of leaders to diagnose complex context can vary considerably and may be interpreted and used subjectively. The existing Contextual Intelligence Model identified four types of thinking that were either identified by most or many interviewees and similarly were either highly discussed or actively discussed by the interviewees. Through the in-depth exploratory interviews, eight new types of thinking were identified, with five elements being identified by many but only being discussed. The last three elements were identified by a few but minimally discussed. The complete combined scores are provided for all 12 elements and are categorised in descending order.

It was assumed that elements that are irrelevant would not be ignored but would rather be excluded from any amendments or adjustments to the existing model. Any elements that fall within this category were excluded from further discussion.

Table 23: Types of Thinking (Scored, combined and ranked)

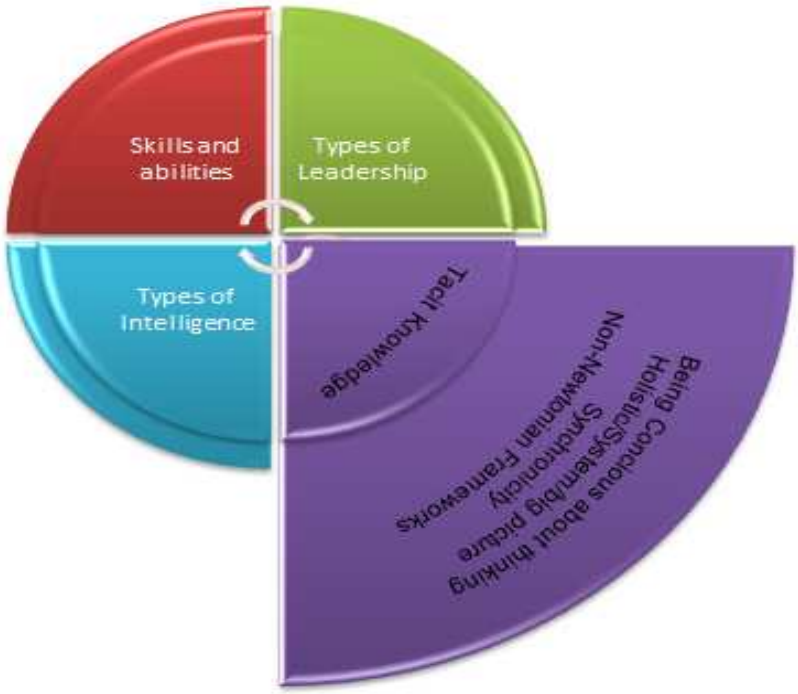
	Type	Element	Combined
Highly Relevant	Deductive	Tacit Knowledge	83
Relevant	Deductive	Non-Newtonian Frameworks	63
	Deductive	Synchronicity - Double Loop	62
	Inductive	Holistic/system/big picture	52
	Inductive	Being Conscious about thinking	50
Partially Relevant	Inductive	Structured processes	48
	Inductive	Positive	44
	Inductive	Lateral	42
	Inductive	Creative	38
	Inductive	Agile	31
Irrelevant	Deductive	3D-Thinking	22
	Inductive	Brainstorming	15

Avolio, et al., (2009) identified complexity leadership in a system perspective and described that leaders need to understand relationships, interactions and connections in the view of a system. This view and thinking in a Holistic/System/Big picture point of view provides insight to context and helps a leader to apply varying leadership styles accordingly.

Being conscious about thinking is a cognitive ability that pre-empts the leader to start thinking in different ways. Kutz (2008) explained that a leader needs to utilise conscious thinking to test and objectively view differing contexts. The ability to think differently and consciously tests different thought patterns and assists all leaders in appreciating the nuances and depth of differing contexts.

To improve the comprehensiveness of the “types of thinking” category a total number of five elements are listed in comparison to the original four provided by Kutz and Bamford-Wade (2013). The revised list of highly relevant and relevant elements was generated to form part of the New Conceptual Model for Contextual Intelligence. This is graphically displayed below:

Figure 23: Revised Elements for Types of Thinking in New Conceptual Model for Contextual Intelligence



Five new types of thinking are included where one element is considered highly relevant and the remaining four elements are relevant. This improves the comprehensiveness and relevance of the contextual intelligence model. .

6.5 Types of Intelligence

The types of intelligence required of leaders to diagnose complex context was not previously a category of the Contextual Intelligence Model. Through the in-depth exploratory interviews, five new types of intelligence were identified by many but were only discussed by a few interviewees. The complete combined scores are provided for all five elements and are classified in descending order.

It was assumed that elements that are irrelevant would not be ignored but would rather be excluded from any amendments or adjustments to the existing model. Any elements that fall within this category were excluded from further discussion.

Table 24: Types of Intelligence (Scored and ranked)

	Type	Element	Combined
Relevant	Inductive	Emotional	67
	Inductive	Technical	67
Partially Relevant	Inductive	Self-awareness	39
	Inductive	Social	26
Irrelevant	Inductive	Spiritual	21

Previously mentioned in Chapter 2, Moon (2010) explained emotional intelligence as an intelligence to diagnose a person's emotions that can be used to empower oneself and others. Diagnosing the human element within the context is important, and helps to determine all the other technical behaviours and other emerging elements. This intelligence is well placed as "relevant" in the Contextual Intelligence framework.

It is interesting that in Section 6.2, "technical skills" and "technical knowledge" were not included as a skill or ability in order to diagnose context. Technical intelligence was included above, which explains the use of technical knowledge intelligently. Interviewees actively discussed the need for the leader to have a technical understanding and to use this intelligence to determine the activities within their environments.

The results above demonstrate that through the inductive process, a new category was identified called "intelligence". The revised list of highly relevant and relevant elements was generated to form part of the New Conceptual Model for Contextual Intelligence. This improves the comprehensiveness of the overall model for the engineering and construction sector. This is graphically displayed below:

Figure 24: New Elements for New Conceptual Model for Contextual Intelligence

New Conceptual Model for Contextual Intelligence utilises only relevant intelligences, which improves the comprehensiveness of the contextual intelligence model.

6.6 Benefits that Result from Contextual Intelligence

The benefits that may be derived from Contextual Intelligence as a leadership construct may be limitless however through the exploratory inductive process, ten new benefits were identified and discussed. The benefits were compared with the existing benefits list and five highly relevant benefits were established from the old and new lists. The most coherent and relevant benefits are:

1. Reducing conflict and increasing awareness of the values ideas of self and others
2. Increasing team buy-in
3. Appreciate external and internal issues
4. More effective in achieving outcome
5. Broader understanding

A complete ranked list and table of benefits is provided below:

Table 25: Benefits (Scored, combined and ranked)

	Type	Benefit	Combined
Relevant	Original	Reducing conflict and increasing awareness of the values and ideas of self and others	59
	Original	Appreciating external and internal influences	59
	Original	Increasing team buy-in	56
	New	More effective in achieving outcome	56
	Original	Increase ability to effectively influence others	54
	New	Broader understanding	54
	New	Better base and foundation	54
	Original	Accelerating ability to contribute in a new context	53
	New	Know boundaries	51
	New	Better relationships	51
	New	Better application of leadership	50
Partially Relevant	New	More efficient in achieving outcome	49
	New	Better decision making	47
	New	Become a better leader	47
	Original	Responding to and profiting from unexpected or complicated change	43
	New	Be a more visible leader	42
	Original	Explaining why there may success in one environment and failure in another	27

Six new benefits are classified as relevant and are predominantly leader focused. Only two of the original benefits are excluded and deemed partially irrelevant.

6.7 Additional Findings

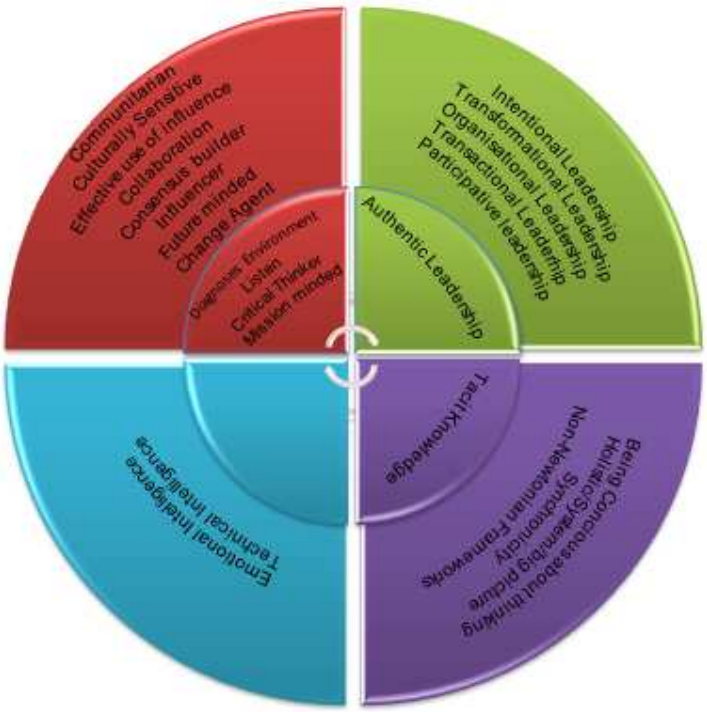
The five new elements were identified as “partially relevant” that include “having understanding”, “being a communicator”, having “focus”, “trust” and “humility”. These are pertinent abilities previously identified by other leadership scholars. Communication is as important for information gathering as it is for information sharing. Larsson and Vinberg (2010) stated that gathering and sharing of information ensures effective leadership. Mothilal (2010) explained that successful leaders are ambitious people who gain incredible focus to ensure what needs to get done, gets done. Trust is important to build relationships and partnerships (Deppe, 2011) which ensure better information gathering and ultimately better analysis of any given context. Humility was a skill identified that would allow a leader to demonstrate that they are approachable and easy to engage. This openness has been identified in prior studies by Judge, Bono,

Ilies and Gerhardt (2002) as one of the five personality traits defined in the five factor model of personality.

6.8 Summary of Discussion

After a review of the Contextual Intelligence structure, categories, elements and benefits, a New Conceptual Model for Contextual Intelligence is presented below. This model differentiates the four categories and for each category the highly relevant and relevant elements are displayed. The comprehensiveness of the contextual intelligence model for the engineering and construction sector has been improved by including an additional category and increasing the number of elements for each category whilst differentiating between highly relevant and relevant. It is offered that through the crafting of these elements a leader may be able to develop their own Contextual Intelligence ability which will lead to improved diagnosis of context and better application of leadership. Prioritisation or concentration of developing more of the highly relevant elements may be useful for leaders in this specific context.

Figure 25: New Conceptual Model for Contextual Intelligence in the Engineering and Construction Sector



The New Conceptual Model for Contextual Intelligence is more comprehensive, detailed and focused which will help leaders improve their Contextual Intelligence ability, improve their diagnosis of context and apply more informed leadership styles.

CHAPTER 7: CONCLUSION & RECOMMENDATIONS

7.1 Introduction

The purpose of this research was to use qualitative methods to test the Kutz and Bamford-Wade's (2013) Contextual Intelligence Conceptual Model for relevance and comprehensiveness in the engineering and construction industry of South Africa. Parry et al., (2014) mentioned that qualitative studies have contributed towards a better understanding of the leadership phenomenon in so far as quantitative studies have failed to explain the social influences and context in leadership literature. This research study intended to determine a conceptual model within the specific context of the engineering and construction industry.

A non-probability quota sample was used to identify 16 industry leaders who were currently practicing or participating within the engineering and construction environment and had been involved in project or programmes over R450m of value within the last two years. Text data was analysed and reviewed using both constrained and unconstrained methods to test the relevancy and comprehensiveness of the model.

The new data was compared with the existing model for relevancy and comprehensiveness. A mix of existing elements was found to be relevant and irrelevant as well as new additional elements that were relevant and which should be considered. The existing categories were similarly reviewed for comprehensiveness and it was discovered that within all categories (including one new category) the number of elements increased. This has contributed towards an improved or more comprehensive list of categories and elements that are focused into being either highly relevant or relevant.

Post analysis, a new and improved contextual intelligence model is offered that provides focus and possible prioritisation of leadership skills, abilities, types or styles, thinking and intelligence to be developed for a leader. The revised model offers new interpretation and arguments are made that Contextual Intelligence or Contextual Intelligence leadership is a leader's ability to focus and develop their skills, abilities, leadership styles, types of thinking and different intelligence which will reduce conflict, increase team buy-in and improve leadership effectiveness.

Leaders in the engineering and construction sector are confronted with considerable complex challenges where some of the keys to success are entrenched in the informal

aspects of project development (Chen & Manley, 2014). Unfortunately, leadership in the engineering and construction sector has largely been ignored in the past as the literature has tended to focus on motivational factors and characteristics (Ofori, 2008). A new focus and thinking about these informal elements is required, especially understanding the context in which project leadership is delivered (Hu, Chen & Le, 2012). Therefore, the ability to diagnose and understand context is increasingly important to ensure the correct leadership styles are employed at the right time and leadership effectiveness is realised. This research study proposed a New Conceptual Contextual Intelligence Model which provides leaders with an understanding of the skills, abilities, styles of leadership, types of thinking and intelligence that are required for leaders to be contextually intelligent. This model could be applied in various scenarios and recommendations for application are presented next.

7.1.1 Leadership development

Gagnon and Collinson (2014) stress the importance of leadership development programmes in context by stating that learning programmes that are developed within the specific contexts of differing organisations are far more effective. Business in the engineering and construction sector of South Africa may review the findings of this research and consider aligning and focusing the development of their leaders to the new conceptual model for contextual intelligence. This will allow for improved contextual understanding and better application of context specific content. Organisations that focus on leadership development may also use the model to align and focus their development programmes towards the highly relevant and relevant elements. Leadership development programmes may employ the highly relevant elements as foundation learning modules and the relevant modules could be presented as auxiliary modules. In support of this approach, Day, Fleenor, Atwater, Sturm and McKee (2014, cite Galli and Muller-Stewens, 2012) by stating that leadership development practices shape the social capital of organisations and that an improved understanding of social context will improve interactions and leadership abilities

7.1.2 Conscious context setting

Arguments may be made that the consciousness and utilisation of the different elements is not always noticeable and therefore a physical display and forced conscious utilisation of the model may encourage leaders to think and apply different skills or leadership in different situations. All engagements that require decisions

should be fully contextualised and therefore companies and practitioners should have a reference model to review and use before any engagements take place. The New Conceptual Model for Contextual Intelligence could be used to consciously establish, define and set the context before every meeting. An example of conscious context setting is found in the HM Treasury, Infrastructure procurement route map (2013) whereby complexity assessment and context setting is the opening or initial process of the procurement strategy design, which allows for more effective and meaningful delivery of projects.

7.1.3 Strategy design & execution review

There are many strategy frameworks and models that assist strategy practitioners in both their design and execution. Whilst the New Conceptual Model for Contextual Intelligence is not intended to comment on the completeness or alignment of a particular strategy design it may provide conscious thought and reflection of how contextual elements may impact or influence the effectiveness of the strategy. Burgelman and Sayles (2015) provide further insight on their previously published book (1988) and state that context determination has an enormous influence on the strategic creation and design within businesses. They continue to argue that understanding context through the process of “Strategic context determination” can help business understand the differences between deliberate strategic actions and emergent strategic nature of innovative businesses. The New Conceptual Model for Contextual Intelligence can assist the leaders to make sense of the context and provide richer insights into the determination of varying contexts.

7.1.4 Project / Business governance and control application

Complex projects today are continuously increasing their formal governance and control processes to ensure risks are reduced and controlled. The application of the governance structure and controls are constantly under debate and very little guidance is provided on what should be reviewed and discussed when setting the context. A holistic model is required that can pre-empt the thought, discussion and review of context to ensure the most appropriate governance and controls are applied. Young and Thyil (2014) support this argument by finding that corporate governance and CSR engagements have changed and must change depending on the different contexts of industry and business. Young and Thyil (2014) continue to state that governance needs to be flexible, adaptable and well suited for each context in which it is applied.

The new Conceptual Model for Contextual Intelligence will trigger the thinking of the governance architects to ensure projects are not overly burdened with onerous governance requirements

7.1.5 Project Leadership appointment

One of the last recommendations is testing individuals against the defined leadership requirements of contextual intelligence. To improve leadership effectiveness and project success, the highly relevant and relevant elements must be present within project and team leaders. Lisak and Erez (2014) argued that leaders' effectiveness is dependent on context – dependant characteristics and therefore a person-environment match will contribute significantly to the overall leadership success. Testing ensures that the leaders designated to project and programmes have the desired requirements to make contextually intelligent decisions and deliver projects that are contextually appropriate and contextually successful.

There are a range of applications where the New Conceptual Model for Contextual Intelligence can be used. This new mode can assist in the development of contextually intelligent leadership and promote more effective leadership delivery. Business and industry is encouraged to utilise the new conceptual model to ensure successful delivery of large complex engineering and construction projects.

7.2 Recommendations for Future Research

The findings that have led to a more relevant and comprehensive model, similarly uncover further questions concerning models of Contextual Intelligence and the development of leaders' Contextual Intelligence.

The literature identified and used in Chapter 1 and Chapter 2 explained that understanding context was critical for leadership success. This is a logical understanding; however a criticism is that this is an assumption that needs to be empirically tested. There is no empirical evidence that being more contextually intelligent will in fact improve leaders' effectiveness and that all the benefits will be realised. Future research could investigate this phenomenon and provide concrete evidence to prove this assumption.

One of the main structural elements of the Kutz and Bamford-Wade (2013) Conceptual Model for Contextual Intelligence was the application of three-dimensional (3D) thinking. This element was minimally identified and minimally discussed throughout the 16 interviews. Whilst this research may find the element irrelevant and therefore excluded from discussion, it may not mean that it is irrelevant as an element or structural element. There is a possibility that the interviewees were not aware of such an element, rather than choosing not to identify or discuss it. Three-dimensional (3D) thinking should therefore be further explored as a possible element and it should be tested with participants that have been briefed or exposed to such a type of thinking.

The Kutz and Bamford-Wade (2013) Conceptual Model for Contextual Intelligence provides over 16 varying elements that a leader needs to develop to become contextually intelligent. With the findings of this research and the definition of highly relevant and relevant elements, focus on the highly relevant elements may provide leaders with a more workable approach to developing their contextual intelligence. Whilst the new model provides focus to more relevant requirements, there is no understanding about exactly how much each element contributes to the overall benefit of contextual intelligence. Quantitative and empirical research may illuminate the elements that have a greater contribution and significance to leadership success.

Similarly, there is little understanding of how each of the elements and categories interact and influence the other. There needs to be further investigation into the understanding of the categories' and elements' relationships and how these relationships can improve the leader's overall contextual intelligence ability.

Should future research gain an understanding of category and element relationships, this will provide further understanding about how to operationalise a model and determine the relationships between the independent and dependant variables.

Other considerations and future investigations could consider the similarities and differences of this model to other contextual intelligence leadership models to ascertain the types of opportunities that may be presented for either further examination, assessment or how to adopt or improve within a specific context.

This research has compared seven existing benefits with ten new identified benefits and has demonstrated the most coherent and aligned top five benefits. Whilst this may provide an overview and summary of the best perceived benefits, there is no certainty that these perceived benefits are actually realised in the workplace. Further investigations could possibly investigate the difference between perceived and actual benefits, the differences and the underlying assumptions and reasons for such differences.

Lastly; Parry et al (2014) argued that qualitative studies and historiometric studies provide considerable benefits in understanding leadership phenomenon. Further arguments explained that timeline studies would provide researchers with greater context and insight into leadership and therefore should be considered in future studies. It is with this in mind that similar recommendations can be offered in that time sensitive studies will offer greater substance and rigor to the validity and comprehensiveness of the Contextual Intelligence Model as an applicable leadership construct for the engineering and construction sector of South Africa.

7.3 Concluding Statement

To improve the understanding of context and leadership in context, literature needs to be developed through both qualitative and quantitative investigations into different contexts. Only with an inquisitive appetite and passion for academic contribution can improvements be made in an attempt to comprehend the ever-changing nuances and complexity of the world in which we live. This research study offered to add only a small insight into the skills, abilities, types of leadership, types of thinking and types of intelligence required for leaders to understand context as well as realise the potential benefits a leader may receive from applying or utilising each of these elements. Future researchers are encouraged to explore the potential operationalisation and creation of models to further determine the dependencies between all contributing variables.

Leadership is one of the informal yet major inputs in projects' successes, and professionals in the engineering and construction sector are encouraged to explore and understand the "softer side" of this system which will ultimately assist them in becoming more effective and successful leaders.

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APPENDIX 1: LIST OF INTERVIEWEES

No.	Interviewee Name	Sent email	Willing	Email	Completed
1	David Budler	Yes	Yes	Dave.Budler@transnet.net	Yes
2	Bessie Mabunda	Yes	Yes	Bessie.Mabunda@transnet.net	Yes
3	Willie Van Dyk	Yes	Yes	Willie.VanDyk@transnet.net	Yes
4	Thabang Modise	Yes	Yes	Thabang.Modise@transnet.net	Yes
5	Hiren Bhatt	Yes	Yes	Hiren.Bhatt@transnet.net	Yes
6	Richman Chivinge	Yes	Yes	Richman.Chivinge@transnet.net	Yes
7	Angelo Sampson	Yes	Yes		Yes
8	Nixon Dlamini	Yes	Yes	sibusiso@talktalk.net	Yes
9	Suzelle Gemmel	Yes	Yes	suzgemmell@gmail.com	yes
10	George Hofmeyer	Yes	Yes	georg.hofmeyr@za.pwc.com	Yes
11	Tanya Jeffrey	Yes	Yes	TJeffrey@turntown.co.za	Yes
12	Francois Joubert	Yes	Yes	<kwanto.risk@gmail.com>	Yes
13	Christiaan Kriel	Yes	Yes	kriel.pos@gmail.com	Yes
14	Pascal Mabelo	Yes	Yes	Projectiq1@yahoo.com	Yes
15	Andrew Metcalfe	Yes	Yes	andrew.metcalfe@za.ey.com	Yes
16	Andrew Stockill	Yes	Yes		Yes

APPENDIX 2: INTERVIEW GUIDE

INTERVIEW GUIDE

Introduction

The researcher will introduce himself and provide background including the business motivation for the research (Tell the story below).

Personal and business story

After my 7th project review, I realised there was something wrong. After the 14th project review I realised a trend was beginning to form and after the 20th project review, I realised that this was a deep rooted issue that deserved exploration. In the beginning of 2014, the company was firmly caught up in the middle of one of the largest infrastructure investment plans it had ever undertaken. Everyone seemed to be in this race to identify a need, develop a project, find the finance and go on and get the necessary infrastructure built. Each project was planned in the same way and the same technical thinking went into every submission. Nine out of ten projects failed. For the most part, none of the project managers could explain how their project would contribute towards the wider business goals, nor contribute towards the wider objectives of our clients and the multitude of stakeholders that are beneficiaries of the investments being made (and these were the easy issues). A bigger concern and at no fault of the managers; was that the entire planning process and application of project management was executed in a vacuum that was static and controlled. A very memorable case was when a business-case was reviewed and revised every month for half a year as the modellers changed the inputs to the commercial case yielding different investment options.

The curious minded and collective that made up this investment review panel started to ask the following questions; “How are we (as a business) failing to understand the environment around us and cater for it in our project development process?” and “How can we cater for this dynamic changing environment in future projects and ensure we deliver against the changing needs and expectations of our customers?”

This started my journey and investigation to explore variables and constructs that could assist in improving the project planning, delivery and management of infrastructure.

After we (the team) had bashed our heads together (Delphi technique, Saunders & Lewis, 2012), an observation was made that we as project teams don’t spend enough

time understanding the stakeholders involved and the environment that makes up the project. One academic amongst us offered that “Soft Systems Methodology” by Peter Checkland developed between 1966 and 1996 was a good starting point. The literature and theory of Soft Systems introduced new paradigms that spoke to the importance of stakeholder identification and the concepts of complexity, systems theory, emergence, dynamism and context. I further explored complexity theory, complex adaptive systems and project and programme governance. Armed with some new knowledge, I started to graphically display hard systems and formal governance process within immediate and external systems all continuously being affected by emerging influences. I posed that agility and adaptability were key in ensuring investments remain relevant and similarly argued that double loop learning (as a practice) inherently contributed to further agility. I extended my discussion to capital investment and strategy experts within the consulting world where we tried to identify approaches to unpacking some of the variables and factors that make up these systems.

The resounding feedback was not what I was expecting. Every expert, practitioner or academic I engaged unequivocally stated that the most important and influential factor within the system was the human element and more specifically management and the way they lead and influence their context… Some offered that the 82% of the issues they found on project delivery were a result a poor leadership or poor management in the process.

Now assuming that is true; it raises even more questions about leadership and management. What are the skills, abilities, experience or knowledge they need to have to really understand the system? In addition, what are the influences, the varying objectives and desired outcomes in order to make a project a success?

What I want to explore is new leadership approaches and paradigms that can appreciate this fast paced and dynamic and global market. I want to understand what is required to make sense of an environment, appreciate and unpack complexity, model and map this environment whilst understanding the actors and agents collective past, present and future. What I want to investigate is how contextual intelligence can be used to help leaders diagnose context and determine the most appropriate leadership style for varying contexts. I also want to understand whether or not contextual intelligence as a construct is perceived to be more useful in public or private engineering and construction management companies

The purpose of this research is to explore the concept of contextual intelligence, the skills and abilities, types of thinking required and the benefits in order to test whether the construct of contextual intelligence is useful as a cognitive context diagnosis tool for engineering and construction companies in South Africa.

Leadership has been identified as the focus of new project management thinking to ensure long term sustainability in dynamic and complex environments. Whilst leadership has been extensively studied over the last century, very little is known about the enabling abilities and thinking required for leaders in different contexts. We know that there are different styles of leadership in literature but unsure of the requirements needed in the application.

A considerable amount of value can be added to leadership theory if we can deduce the skills, attributes and types of thinking required in diagnosing context to ensure correct application of leadership style.

The interview will be an in depth discussion using a semi-structured approach. There will not be a “question and answer” engagement but rather a discussion that covers key areas identified.

All the findings will be treated as confidential and individual transcripts will not be included in the final report. No source, individual or organisation will be identified in the text of the final report but we would seek your permission to keep your name, position and company name on record. Should you be interested, a copy of the interview transcript and final research report will be made available to you.

1. *Demographic Information (5 minutes)*

Tell me a little bit about yourself, like who you are, where you work, education and what you do and the value of infrastructure projects you are currently busy with?

Please confirm:

- Name
- Company
- Job role/title
- Tertiary education
- Professional Qualifications
- Average Value of Infrastructure projects in the last two years

Tell me about yourself as a leader in your business .i.e. what makes you a leader, how long you have been a leader, etc.

- Time employed as a leader in an engineering and Construction Company.

2. *Research questions (1 hour)*

a. Given today's complexity and dynamism what are the attributes that make a good leader?
b. What are the different leadership styles you are aware of and which of these do you think should be used in today's complex and dynamic environments?
c. Do you as a leader utilise different styles of leadership for different contexts?
d. If yes to above – what are these different styles of leadership?
e. What are the different types of intelligences you are aware of and which of these do you think should be used in today's complex and dynamic environments?
f. Do you as a leader believe that by understanding context it will improve your leadership effectiveness?
g. If yes to above – why?

In our research we have identified 3 categories of attributes for a leader to have when diagnosing context. These are:

- **Skills and Abilities**
- **Types of Leadership**
- **Types of Thinking**

h. What are the skills and abilities required for a leader to diagnose context?
i. What are the types of thinking required for a leader to diagnose context?
j. What are the expected benefits for a leader when diagnosing context?

THE END – THANK YOU

APPENDIX 3: PRE-INTERVIEW INFORMATION PACK

PRE-INTERVIEW INFORMATION PACK

Letter of introduction:

TO: xxxxxx

FROM: Daniel Blomfield

DATE: xxxxxxx

What does a leader need to diagnose context and what are the benefits.

Dear xxxxxxx,

I am conducting research in an effort to understand the skills, abilities and types of thinking leaders need in order to diagnose context. This effort extends to understanding the associated benefits to leaders when diagnosing context. This research is in partial fulfilment of the requirements for the degree of Masters of Business Administration (MBA).

Leadership has been identified as the focus of new project management thinking to ensure long term sustainability in dynamic and complex environments. Whilst leadership has been extensively studied over the last century, very little is known about the enabling abilities and thinking required for leaders in different contexts. We know that there are different styles of leadership in literature but unsure of the requirements needed in the application.

A considerable amount of value can be added to leadership theory if we can deduce the skills, attributes and types of thinking required in diagnosing context to ensure correct application of leadership style.

You have been identified as a leader within your engineering and construction business. Your insights and experience will be of tremendous value to the research. Your participation is voluntary and you can withdraw at any time without penalty.

The interview should last 60 minutes and will be an in depth discussion using a semi-structured approach. There will not be a “question and answer” engagement but rather a discussion that covers key areas identified.

All the findings will be treated as confidential and individual transcripts will not be included in the final report. No source, individual or organisation will be identified in the text of the final report but we would seek your permission to keep your name, position and company name on record. Should you be interested, a copy of the interview transcript and final research report will be made available to you.

A letter from the Gordon Institute of Business Science is attached to confirm my association with the institution. Should you have any need for further discussion prior to the interview, please contact me.

Kind regards

Researcher: Daniel Blomfield

Email: danblom77@hotmail.com

Mobile: 073 598 6601

Date: 12/06/2015

Research Supervisor: Dr Charlene Lew

Email: lewc@gibs.co.za

Mobile:

Date: 12/06/2015