

The Influence of Resource Dependency on Collaboration in the Construction Supply Chain

Matteo Donato

Dip (Civil Eng), MBA, MComm

A thesis submitted to the
College of Business
Victoria University

In fulfilment of the requirement
for the degree of
Doctor of Philosophy

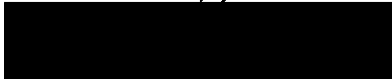
2016

Statement of Declaration

“I, Matteo Donato, declare that the PhD thesis entitled Influence of Resource Dependency on Collaboration in the Construction Supply Chain is no more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes.

This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.”

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Abstract

In the construction industry, supply chains consist of clients, project managers, builders, consultants and suppliers, resulting in a diverse group of trades that extend down to a single labourer. The construction supply chain is often seen as a highly volatile and inefficient mechanism that falls well short of expectations due to its project focus rather than its supply chain management prowess. With relationships in the construction industry being viewed as short term and project based, the development of enduring relationships becomes difficult. It is well documented that the construction supply chain suffers from significant deficiencies in production. Hence it is wasteful and lacks cohesion with relationships being fragmented and at arm's length. In order to improve cohesion and productivity, the relationships among the supply chain actors needs to be improved. However, in order to do so, there is a need to understand what drives the relationship and what key factors determine why actors will enter into a work or project relationship and why the arm's length approach is a constant in the industry.

This thesis extends the research into the influence of resource dependency on collaboration in the construction supply chain, specifically explores the relationship between supply chain actors and at various stages of the procurement process all the way to the project realisation stage. Particularly, the research aims to investigate and identify *“what influence does resource dependency have on collaboration in the construction supply chain?”* In line with the main research objective, four research questions emerged and are used to further explore and determine the relationship between actors at each part of the project cycle and beyond.

Emergent research questions	
I.	<i>“How is dependency exploited by all actors in the supply chain to influence other actors in both the upstream and downstream direction?”</i>
II.	<i>“How do price and trust correlate within the supply chain and how does it impact on the relationship?”</i>
III.	<i>“How does the use of mediated and non-mediated power</i>

enforce/ensure compliance within the supply chain?”

IV. *“How is the relationship between actors affected by dependency, trust/price, (Non) mediated power beyond the project?”*

To answer these questions a conceptual model was developed using the existing literature that encompassed supply chain and supply chain management, construction, trust and price in dyadic relationships, mediated and non-mediated power, collaboration, resource dependency and power regimes in supply chains. The model examines interactions and relationships between actors at various stages of the project cycle namely: selection of suppliers, acceptance of quotes, and realisation of the project.

The conceptual model was tested by using a multiple case study approach involving the interviewing of actors from four construction supply chains that were derived from various segments of the construction industry, namely building and civil construction areas. In total this research comprised of 20 participants consisting of five participants from each supply chain. Participants were selected from different areas of the supply chain and ranged in responsibilities within the supply chain. All the actors selected interacted on a daily basis with suppliers or clients.

The findings contained in this thesis show that suppliers and clients, no matter how small, are fiercely independent and not always willing to enter into long term relationships in the construction supply chain. There is also the supply chain actors' interpretation of collaboration and trust which are not in line with the definitions as provided by the literature. Collaboration extends to working together on one single project at a time rather than the traditional view of establishing long term, beneficial relationships that enhance delivery and, in turn, customer satisfaction. While trust is considered as having a belief in the supplier's capabilities or ability in perform a task rather than, a mutual exchange or a belief in the integrity of the relationship. Further findings showed that actors in the same supply chain have opposing views and goals, which are created by different perceptions depending on where they sat in the supply chain. These opposing objectives contributed to the ideal of remaining independent and maintaining relationships at arm's length.

They tend to maintain, or preferring to maintain, an arm's length relationship with other actors in the supply chain, were not only driven by differing goals and objective but also the need to be able to move with market fluctuations. Upstream actors in particular felt that maintaining a close relationship with a client would empower the client to not only demand better prices but also to restrict their ability to maintain competitiveness in the market.

The findings indicate that the traditional remedies for instilling collaboration in the construction supply chain are not effective. Hence a rethink on how collaborative supply chains in the construction industry can be developed is needed. Actors seem to have more incentive to remain distant than to collaborate and the key driver which are their resources enables them to maintain that separation.

The analysis shows that the principal contribution of the research is that collaboration and trust exist but their definition or how they are perceived by supply chain actors is different to what is expected in a supply chain relationship. The relationship model demonstrates the different interactions and considerations that are required during the procurement process to select a supplier through the life cycle of the project. These interactions between actors in the supply chain ranged from decisions that needed to be made based on the actors previous relationship, availability of resources, price, trust, power (mediated/non-mediated) and how it affects the relationship during the course of the process and beyond.

The managerial implications of this study are not only relevant to the construction supply chain but also to other supply chains where there is a similar procurement process that requires actors to interact before a supply contract is finally awarded. These interactions place different demands on the actor's relationship which may in turn determine the length and type of interaction.

The need for further research is important in order to find a solution to what seems as a standoff in relationships growth with in the construction industry. The main avenue of research suggested is to consider how independent supplier actually are, and how this could be used to further developed a basic framework to examine the potential

need to for independence in relation to the need for resources and use these findings to improve the current relationship so as to create a sustainable supply chain future.

Acknowledgements

I would like to acknowledge the assistance and guidance provided by my principal supervisor, Dr Kamrul Ahsan, and my associate supervisor, Dr Himanshu Shee, without them this paper would not have been possible. Their knowledge, insight and guidance were a valuable asset that assisted me to complete my journey.

I want to thank my wife, Helen, for her support and her belief in me and my ability to succeed and to my children, Despina and Domenic, for their ongoing support over the period of my research.

A special thank you to all the supply chain actors and their companies for their support by opening their doors and making me welcome, providing open and honest feedback and trusting me to explore their world without reservation. Your input is the foundation of this research and for that I am forever grateful.

Dedication

I would like to dedicate this work firstly to my father Domenico Donato (17/2/1928 – 12/03/1998) who due to time and circumstance had to leave his studies and then eventually his home in Italy for Australia and never had the opportunity to follow his passion and continue his studies.

To my father-in-law Arthur Tyris (17/07/1935–02/05/2001) who, by a similar circumstance, left his home in Greece to start a new life in Australia. He had the passion and drive to learn, however never the opportunity.

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CHAPTER 1

1.0 INTRODUCTION

This research thesis aims to investigate the evolution of the relationships between actors in the construction supply chain from the conceptualisation of a project to the realisation using the Victorian segment of the Australian construction industry as a case study. It has been widely acknowledged since the release in England of the Latham (1994) report and then subsequently the Egan (1998) report that construction supply chain relationships across the globe are adversarial (Meng, 2012) with most relationships being maintained at arm's length. The industry itself is also considered to be suffering from a lack of supply chain management principles (Dainty et al., 2001b, Donato et al., 2015) and is incapable of establishing or implementing simple supply chain practices that could be used to improve efficiencies within the industry.

Supply chains in the construction industry are regarded as complex due to their diverse nature created by the complexity of the coordination of services (Segerstedt et al., 2010d) the demands of market (Segerstedt and Olofsson, 2010) and the management relationship between contractors and sub-contractors (Manu et al., 2015). With a wide variety of actors spanning from clients, consultants, project managers, all the way through to sub-contractors, sole traders, suppliers and labourers (Dainty et al., 2001a, Dainty et al., 2001b, Segerstedt et al., 2010a). These actors represent a vast array of service providers, skills and services required to come together to deliver specific projects ranging from small maintenance work to multi story developments and highways (Segerstedt and Olofsson, 2010). Principal contractors, project managers and builders have over the years continued to rely on the outsourcing of supplies and services to the point where external providers are engaged in up to 90% of the works on any given project (Eriksson et al., 2007, Humphreys et al., 2003, Hatmoko and Scott, 2010). However despite the fact that contractors and sub-contractors alike have a great dependency on each other, there still seems to be a vast gap when it comes to understanding why the relationships between construction supply chain actors is so adversarial (Bankvall et al., 2010, Cox and Ireland, 2002, Briscoe and Dainty, 2005).

The need for improvement in performance (Love et al., 2004) along with the industry's diversity and complexity has been well documented and identified on a global scale with reports commissioned by the UK (Latham, 1994, Egan, 1998), Sweden (kommerskollegium, 1996), Finland (KTM, 1996, Silen, 1997), Hong Kong (Grove, 1998, Tang, 2001), Singapore (Construct 21 Steering Committee, 1999) and Norway (Haugen, 1999) to look at suggesting possible remedies to the industry's inability to create a harmonious environment. In Australia the results of research conducted by CIDA (1995) and DISR (1999) confirmed that the issues here are consistent with the rest of the globe where the basic undertone has been the need for the industry to improve collaboration, integration, communication and coordination between customer and supplier throughout the supply chain (Love et al., 2004). The focus of this study is on the interaction and subsequent relationship between actors and how the need for resources impacts on the decision making when considering supplier selection, rather than the supply chain process itself.

The focus of this study is to critically investigate the interaction and subsequent relationship between construction supply chain actors and to identify how the need for resources impacts on the decision making process when considering supplier selection, as opposed to considering the supply chain process itself. Based on resource dependency theory and the project life cycle, the conceptual model is developed to test the interactions and effects of those interactions on their relationship within the supply chain at various stages of the project cycle as means of determining what affect each segment of the project cycle has on the relationship between actors.

With supply chain models and processes from other industries failing to have an impact on the construction industry, understanding the transactional relationships between actors becomes an important facet to understating how actor's interactions affect their decision making process. Consideration needs to be given to the main differences in the various supply chains such as manufacturing and fast moving consumers are supply and deliver where the provider works for the client off site whereas in construction the provider has to work with the client on site. This distinction of working with, rather than for, has a significant impact on the

relationship. By addressing this lack of understanding, the findings will define and assess the transactional relationships through the life cycle of a construction project and provide a clearer understanding of what influences resources have on the relationship and how it affects the interaction between actors, not only at the project level, but beyond.

1.1 Research Motivation

According to the literature improving supply chain cohesion and in turn project performance, the construction industry actors need to understand that maintaining a good working relationship with other actors in the supply chain is essential (Briscoe and Dainty, 2005). The current view of maintaining a strong project focus (Dubois and Gadde, 2002, Eriksson and Westerberg, 2011) has been seen as an inhibitor to strengthening relationships, therefore a collaborative focus would enable better communication and a greater transparency throughout the length of the supply chain to deliver a more effective relationship between buyer-supplier, strengthening the integration process (Christopher and Peck, 2004, Chen et al., 2011). Principal contractors would need to ensure that there is a sound process in place and that the needs and expectations of all actors are clear and attainable (Humphreys et al., 2003). The principal contractor would require a deep understanding of behaviours and how to influence those behaviours.

However one of the most critical issues that has been raised is that main contractors on the one hand rely heavily on subcontractors and suppliers to complete projects (Dubois and Araujo, 2007, Eriksson and Westerberg, 2011), while on the other hand they regard them as the biggest potential for cost saving, creating an environment of unfair practices (Humphreys et al., 2003). Using or implementing best practices from other industries has failed to have any impact as they are seemingly inappropriate within the construction context (Bankvall et al., 2010). Dainty, Briscoe and Millett (2001a) argue that it has been clearly demonstrated that a generic or typical supply chain management model will not work in the construction industry's fluid supply chain and the addition of another unique layer of complexities that segments the supply chain down as far as labour only components.

While the use of sub-contractors and suppliers is considered as pivotal to the success of the project, collaborative partnering to date has only been sporadically used to make improvements to the construction project environment (Love et al., 2004), with only tier one contractors adopting the approach to rectify the deficiencies caused by the fragmentation in the supply chain. However there are little collaborative strategies below the tier one level (Akintoye et al., 2000) which would signify that further improvement is still possible. While the importance of integration is agreed on, the 'how' still seems to follow two lines of thought. Bask and Juga (2001), suggest that prevailing logic in supply chain management emphasises integration and collaboration between sequentially linked organisations. Segerstedt et al., (2010d) states that supply chain management views the entire supply chain, rather than just the next part or level and aims to increase transparency and alignment of the supply chain's co-ordination and configuration, regardless of functional or corporate boundaries (Sandberg and Abrahamsson, 2010).

The construction industry has proven to be a major challenge when trying to find a comparable solution due to the nature of relationships within the context of the industry. Literature has addressed improving performance through mutual objectives (Walker et al., 2002) trust (Akintoye and Main, 2007, Chen and Paulraj, 2004, Pinto et al., 2009) communication (Wood and Ellis, 2005, Magnan et al., 2011), risk (Zaghloul and Hartman, 2003) and continuous improvement (Oakland and Marosszeky, 2006) while paying little attention to supplier selection, supplier dependency and pressures of price. This failure to address or identify the strength of the relationship between two actors and the effects of price pressures has contributed to construction clients not understanding their own demand profile, often finding themselves faced with a highly competitive, volatile and adversarial supply market that results in becoming prey to opportunistic behaviour from larger construction firms (Ireland, 2004). The strength the relationship between actors and the effects of price pressure have provided an opportunity to explore construction supply chains in a different context than the usual or recognised standard supply chain models to enable the shedding of new light on how they work.

1.2 Problems and Issues

In today's construction market place little has changed since the Latham report of 1994 with relationships still being maintained at arm's length and based on a project-by-project basis (Meng, 2012). This would indicate that the construction industry is still regarded as inefficient due to requirements that are specific to a project (Dubois and Gadde, 2002) and the management principles that seem to be lagging well behind other industries, when it comes to collaborative thinking (Meng, 2012). The one predominate, tangible explanation that has been offered is that the industry has a limited idea of supply chain management principles resulting in a lack of clarity within the industry and its understanding of what is required in a supply chain relationship (Segerstedt et al., 2010b). However there are also project specific requirements that also complicate onsite relationships and an ever changing group of suppliers and subcontractors at the lower tiers from one project to the next (Voordijk et al., 2000, Voordijk et al., 2006, O'Brien et al., 2008). These constant changing supply chain actors add to the difficulties of building a cohesive and lasting relationship as the supply chain is highly fluid and continuing interactions are dependent on whether the project is dominated by suppliers, contractors or designers (Voordijk et al., 2000, Voordijk et al., 2006).

Current literature on supply chain management makes the ambiguous assumption that the constituents of the supplier-buyer dyad are willing and able to cultivate mutually beneficial relationships (Hong et al., 2012). However literature relating to power regimes in a supply chains highlight that imbalance in dependency between actors within a supply chain creates fragmentation to the extent where actors who have a low dependency or highly dominate an area have little, if any, incentive to collaborate (Watson, 2001, Segerstedt et al., 2010b). With the construction industry being considered highly fragmented due to poor relationships (Vrijhoef and Koskela, 2000, Cox and Ireland, 2002, Love et al., 2004, Bankvall et al., 2010), these imbalances are self-evident, implying that perhaps in the construction supply chain, the supplier-buyer dyad are either unwilling or unable to cultivate mutually beneficial relationships adding credence to Benton and Maloni (2005) research. This highlighted a gap not only in the construction management and construction supply

chain literature but also in the analysis of the construction supply chain, in particular when resources and relationships are not accounted for in current supply chain models that are implemented in the construction supply chain (Meng, 2012).

Adding to the disparity Fabbe-Costes and Jahre (2008) suggest there is ambiguity in the perceptions of what the 'whole' is as differing perspectives may arrive at alternate conclusions. Also pointing out that too much adaptation can lead to less adaptability creating an environment where change becomes difficult due to interdependence of the supply chain. Building trust has also been considered a key element to building better relationships (Ha et al., 2011) and research by Hartmann and Caerteling (2010) found that when a relationship emerges with a subcontractor they are likely to acquire more work even if past performances varied however the main contractor will only select a known firm when they perceive the price offered for the work to be market-conforming. This would indicate that some leading questions need to be asked about the nature of integration, in respect to how far it can go and what type and level applies for each link in the chain (Cheng et al., 2010, Harland et al., 2007). Dependency on resources may provide subcontractors with an advantage however the validity needs further scrutiny (Donato et al., 2013)

The continued interest in the subject of supply chain management within the construction industry still maintains a relevant and contemporary presence (Ellegaard et al., 2010, Segerstedt and Olofsson, 2010) that has grown in interest among construction academics (Pryke, 2009, O'Brien et al., 2008, Tennant and Fernie, 2013). Much of the existing work has focused on identification of key indicators of supply chain relationships (Meng, 2012). However there has been limited research that focuses on collaboration (Xie et al., 2010, Crespín-Mazet and Portier, 2010, Crespín-Mazet and Ghauri, 2007, Fulford and Standing, 2014). While research by Chen and Chen (2007) have explored the success factors of construction partnering, others such as Larson (1997) and Bresnen and Marshall (2000) have identified the influencing factors relating to adversarial relationships. However while there has been some movement towards collaboration in the construction industry, there are many significant challenges and complexities that still need to be identified and overcome (Dietrich et al., 2010, Fulford and Standing, 2014). One of the reoccurring common factors in most of the studies has highlighted trust (Meng, 2012) as a

reoccurring issue, that possibly contributes to the fragmentation (Dainty et al., 2001a, Dainty et al., 2001b, Love et al., 2002b, Baiden et al., 2006) in the industry that is created by the ever increasing number of small firms that make up the supply chain (Hadaya and Pellerin, 2010, Lönngren et al., 2010, Xue et al., 2007, Xue et al., 2010).

1.3 Opportunities

The introduction of supply chain models into the construction industry followed on from their introduction in the manufacturing industry in the mid 1990's, (Meng et al., 2011) however these models borrowed from other disciplines have been considered as inappropriate and not applicable to the construction context (Fearne and Fowler, 2006, Green et al., 2005, Winch, 2003). Firstly due to the differences between the manufacturing industry and construction industry (Fulford and Standing, 2014) and secondly, and perhaps more importantly, is that these models do not consider the full scope of relationship levels present in the construction supply chain (Meng, 2012, Meng et al., 2011). This points to a need to further investigate the relationships and the motivations that drive the level of interaction between the actors, in particular when there is a wide range of actors that have different skill sets and are generally small businesses that lack the ability to work towards better collaboration (Benjaoran, 2009, Love et al., 2002b, Fulford and Standing, 2014) and the nature of relationships in the industry (Bankvall et al., 2010, Fulford and Standing, 2014).

1.4 Research Objectives

The objective of this research is to determine what influences resources and the need to acquire them efficiently and effectively drives the supply chain relationships between actors throughout the project life cycle. The social exchange between actors is considered important as it affects relationships and the ability to engage in a smooth transaction based power imbalance created by supply and demand (Watson, 2001). Identifying key personal traits that either enable or hinder the development of the relationship will be a key factor in this research as this will show how relationships evolve during the procurement, negotiation and work process.

Beginning with supplier selection rather than the project realisation where actors have already been engaged on the project.

A study by Eriksson, Dickinson and Khalfan (2007) has already identified that there is an enormous dependency on resources, indicating that market forces such as supply and demand could also easily influence supplier selection. However whether the market is depressed or buoyant, availability or scarcity of resources could easily drive the need to work together as opposed to the desire to collaborate for mutual benefit. Determining what the key drivers to identifying, procuring and utilising resources is a critical aspect in understating how actors relate and interact with each other within the construction supply chain at different stages of the project cycle. This interaction during the identifying, procuring and utilisation process has a direct effect on the relationship between actors and it is this direct effect on the relationship and the interactions between actors that forms an integral part of this research. To understand the basis of a construction supply chain relationship, the question that must be researched is.

‘How does dependency impact on collaboration between the client, contractor and supplier in the construction supply chain’?

In practice, like most other industries, the construction supply chain relationships cover a wide spectrum that ranges from the traditional adversarial relationship to collaborative partnering relations (Meng et al., 2011, Meng, 2012). Existing studies have focused on various types of relationship factors (Black et al., 2000, Chan, 2001, Chan et al., 2004) all of which have discussed the advantages of collaboration based on traditional soft enablers such as communication (Cheng et al., 2010, Magnan et al., 2011), trust (Segerstedt et al., 2010c) and risk, reward sharing (Kent and Becerik-Gerber, 2010). These soft factors have been recognised as enablers to improving relationships between actors and improving project performance (Meng et al., 2011, Meng, 2012). However there has been little focus on more tangible hard issues such as the need for resources in order to meet project requirements and how this affects the dependency between actors in the construction supply chain (Donato et al., 2015).

Dependency on resources is paramount in today's market as a great majority of the works are carried out by third party suppliers (Segerstedt and Olofsson, 2010). Construction companies have moved from being the core builders and shifted towards a project management based function (Fewings, 2013, Harris and McCaffer, 2013) leaving the construction process in the hands of their suppliers. With this shift in core competency the understanding of supply chains and in particular the relationships required to successfully drive supply chain relationships is increasing in importance. The need to understand how actors interact based on their need to acquire resources to ensure project success is an important consideration. Reliance on existing theory has proven insufficient to explain why the construction supply chain is still adversarial and fragmented. Resources are a significant part of any project and the interaction between actors to secure resources needs to be considered as a major contributor to the supply chain management process.

Therefore further sub questions emerge that contribute to the research question and these are

- I. *“How is dependency exploited by some actors in the supply chain to influence other actors in both the upstream and downstream direction?”*
- II. *“How do price and trust correlate within the supply chain and how does it impact on the relationship?”*
- III. *“How does the use of mediated and non-mediated power enforce/ensure compliance within the supply chain?”*
- IV. *“How is the relationship between actors affected by dependency, trust/price, (Non) mediated power beyond the project?”*

1.5 Research Approach

As this research is based on testing a conceptual model where there is a lack of theory, the context of the research becomes important. In particular we are trying to test the validity of the model while at the same time setting the ground work to understanding the 'why' rather than the 'how' of the phenomena or event (Rubin and

Babbie, 2008, Gravetter and Forzano, 2012, Yin, 2009). Under such conditions Creswell (2009) suggests a case study approach as the appropriate tool for building knowledge. With the adaptation of a qualitative approach by creating case studies, the researcher can interview supply chain actors in their own environment and allow them to describe what they believe is occurring from their own perspective. In this instance what effect does the need for resources have on the supply chain relationship and partner selection. On site data collection allows the examination of a phenomenon in its natural setting so the researcher has little control over the events being observed, in particular when the object is a contemporary phenomenon within some real life context (Yin, 2009). Once the base of the theory has been validated with this initial research, the conceptual model (Figure 13) can be tested in construction industries and in other business environments or other countries where resource dependency is high and the research methodology can be expanded to encompass quantitative as well as mixed methods.

In this research two distinct areas of construction will be investigated, one in the commercial building sector the other in the civil construction sector. Two supply chains from each sector were selected and both upstream and downstream actors asked to participate in the research. Primary data was collected from interviews with supply chain actors and cross referenced with the existing contractual agreements between the actors across all four supply chains. Specific actors with corresponding positions were selected from each supply chain; these were client, principal contractor, material supplier, equipment/skilled labour supplier, sole trader, owner operator.

Respondents were asked to respond in an open format and convey their own point of view relating to the particular cycle phases of the relations, pre-tender, price agreement, on-site relationship and on-going partnering opportunities. Interviews were recorded and later transcribed and analysed with the assistance of NVivo software to determine themes within the responses.

1.6 Thesis Outline

The structure of this thesis (Figure 1) is arranged into seven (7) chapters. The thesis is structured into three main areas, which are Chapter 2 and 3 review and theory development, Chapter 4 and 5 Validation and Discussion and Chapter 6 and 7 Findings.

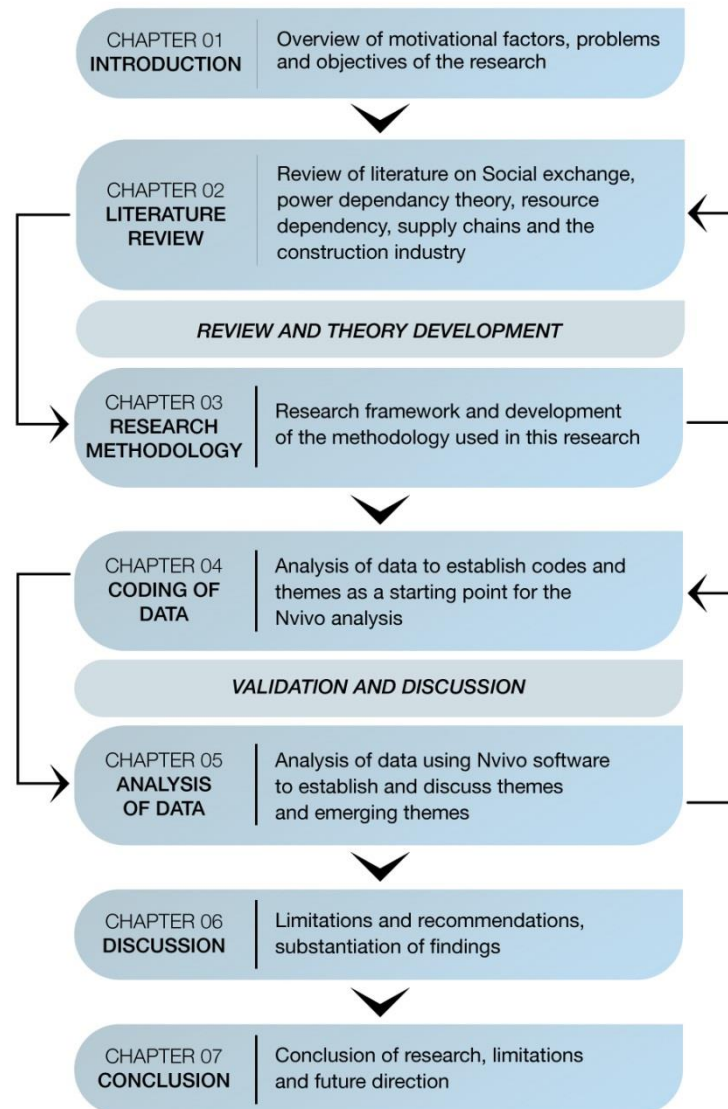


Figure 1: Structure of Thesis

CHAPTER 2

2.0 LITERATURE REVIEW AND RESEARCH FRAMEWORK DEVELOPMENT

2.1 Introduction

Power has been extensively studied in almost every domain of the social, behavioural and political sciences, including psychology, and business studies and has been defined as the ability to influence the behaviour of people (Dahl, 1957, Keltner et al., 2003, Salancik and Pfeffer, 1974, Wrong, 1968) with the exercise of power being accepted as endemic to humans as social beings. Most definitions of power (Dahl, 1957, Keltner et al., 2003, Salancik and Pfeffer, 1974, Wrong, 1968) focus on an individual's intentional and effective capacity to control, modify, or influence others by "providing or withholding resources or administering punishments" (Keltner et al., 2003). According to Buchanan and Badham (2008) no contemporary treatment of power can be considered complete without reference to the French philosopher Michel Foucault (1977, 1978, 1982, 1980) who was concerned with the development of the human sciences, specifically the evolution of forms of discipline and control. Foucault (1977, 1978, 1982, 1980) suggested that power is fluid and exercised, rather than something that can be possessed. Foucault's (1977, 1978, 1982, 1980) perspective of power relations served to remove the obscurity of the political role in controlling and regimenting individuals, opening up the practices of challenge and resistance (Buchanan and Badham, 2008). Essentially, as Foucault (1978) suggested, "where there is power, there is resistance." According to Ashforth and Mael (in Kramer and Neale, 1998) resistance implies opposition against power and the attempt to influence or control another, contending that power and resistance are embedded in a dynamic relationship, where an action will trigger a reaction.

As power is considered to operate both relationally and reciprocally, sociologists speak of the balance of power between parties to a relationship where all parties to all relationships have some level of power (Handgraaf et al., 2008). However the sociological examination of power concerns itself with discovering and describing

the relative strengths in terms of equilibrium or stability. Sociologists usually analyse relationships in which the parties have relatively equal or nearly equal power in terms of constraint rather than of power. Thus power has a connotation of unilateralism however if this were not so, then all relationships could be described in terms of power, and its meaning would be lost (McCornack, 2012). For Foucault (1977, 1978, 1982, 1980) and Foucault and Gordon (1980) power relations consist of two dimensions, bio-power and disciplinary power. Bio-power functions through establishing and defining what is normal or abnormal, and consequently what is socially deviant or acceptable in thought and behaviour (Buchanan and Badham, 2008). The second form of power that Foucault (1977) recognised was that of disciplinary power which operates through the construction of social and organisational routine, targeting individuals and groups.

Keltner, Gruenfeld and Anderson (2003) suggested that power leads to abuse because it reduces evaluation apprehension which increases the likelihood of inappropriate actions. However in modern business abuse or inappropriate use of power becomes an issue in particular when it has become evident that individual businesses can no longer compete as sole autonomous entities, but rather need to establish strong cohesive supply chain relationships (Lambert and Cooper, 2000). These relationships become an important factor in maintaining an effective cost structure organisation that is increasingly required to work closely with their suppliers, customers and other participants in the supply chain in order to strategically compete (Lambert and Cooper, 2000). Understanding and dealing with power and its effects within any relationships along the supply chain become an important aspect of supply chain management. Therefore in today's modern markets that are facing new challenges in a global and ever changing competitive environment, the effect of power on the relationship is important, in particular when the ultimate success of the single business depends on its ability to build strong relationships within its supply network (Lambert and Cooper, 2000, Svensson, 2007).

2.2 Theoretical Background

The supply chain is considered a complex and dynamic environment which spans across a large number of actors (Vijayasarathy, 2010) relying on the collaborative strength of relationships within it to improve its overall performance (Prajogo and Olhager, 2012). In today's competitive markets actors also establish collaborative relationships to achieve varied or differing organisational goals, which do not always align with those of their partners (Sambasivan et al., 2011). The level of trust between actors (Delbufalo, 2012) and the use of power along the supply chain to achieve goals (Meehan and Wright, 2012) have been regarded as two major concepts of Social Exchange Theory, both of which have a direct effect on the relationship between actors within the supply chain (Nunkoo and Ramkissoon, 2012). Likewise Social Exchange Theory also places the interactions between people at the centre of a relationship (Sambasivan et al., 2011) and is considered as one of the most influential conceptual paradigms in organisational behaviour (Cropanzano and Mitchell, 2005).

Being able to access new or critical resources that improve efficiencies and enhance their position in the market is seen as major positive outcomes to an effective collaborative relationship (Sambasivan et al., 2011). Recent findings suggest that both power and dependency are significant in the supply chain management process (Lindgreen et al., 2009, Hoejmose et al., 2013, Holmen and Pedersen, 2010, Spence and Bourlakis, 2009). With Andersen and Skjoett-Larsen (2009) arguing that the social practices of suppliers can be controlled by a client with a powerful bargaining position, while Pedersen and Andersen (2006) also point out that buyers with a weak bargaining position may find it difficult to influence suppliers. This indicates that power asymmetry needs to exist if the buyer is to affect supplier compliance (Locke et al., 2009). Existing literature suggests that there needs to be more focus on the management of relationships in order for a collaborative alliance to achieve success as the actions or reactions of actors in a cooperative relationship can determine a positive or negative outcome (Sambasivan et al., 2011).

This research considers the importance of social exchange, dependency and power and their relevance in supply chain management and the relationships contained within.

2.3 Social Exchange Theory

Social exchange theory was originally introduced by Homans (1958) who attributed historical precedence in exchange theory to Marcel Mauss' 1925 publication of *'Essai sur le don'* (Homans, 1958). The study is concerned with the social exchanges between actors (Blau, 1986, Blau, 1964, Homans, 1961, Thibaut and Kelley, 1959, Thibaut and Kelley, 1986) and is defined as “voluntary actions of individuals that are motivated by the returns they are expected to bring and typically do in fact bring from others” (Blau, 1964). In the early nineteen sixties, Homans (1961) work was based on the behaviour of individuals when interacting with one another in a dyadic exchange focusing on reinforcement principles which believe individual's base their next social move on past experiences, (Cook and Rice, 2003). Thibaut and Kelly (1959) followed in similar fashion, however focused their studies within the theory of the psychological concepts, the dyad and small group (Emerson, 1962, Emerson, 1976). While Blau's (1964) who also followed the concept of exchange theory took a utilitarian focus, encouraging looking forward as in what would be the anticipated reward in regards to the next social interaction (Cook and Rice, 2003).

Although different views of social exchange have emerged, theorists agreed that social exchange involves a series of interactions that generate obligations (Emerson, 1962, Emerson, 1976). Within social exchange theory, these interactions are usually seen as interdependent and contingent on the actions of another person (Blau, 1986, Blau, 1964). Therefore what is seen as one of the basic tenets of Social Exchange Theory is that relationships evolve over time into trusting, loyal, and mutual commitments. However to achieve this, parties must abide by certain “rules” of exchange. These rules of exchange form a “normative definition of the situation that forms among or is adopted by the participants in an exchange relation” (Table 1) (Cropanzano and Mitchell, 2005, Emerson, 1976).

Table 1 Rules and norms of exchange

Reciprocity Rules	Definition
<i>Reciprocity as interdependent exchanges.</i>	Emphasizes contingent interpersonal transactions, whereby an action by one party leads to a response by another. If a person supplies a benefit, the receiving party should respond in kind. In this sense interdependence reduces risk and encourages cooperation.
<i>Reciprocity as a folk belief.</i>	Reciprocity as a “folk belief” involves the cultural expectation that people get what they deserve. Therefore participants in these transactions accept that over time all exchanges reach a fair equilibrium.
<i>Reciprocity as a norm and individual orientation</i>	As a cultural mandate, in which those who do not comply are punished. Implying that a standard exists that describes how one should behave, and those who follow these standards are obligated to behave reciprocally.

Adapted from Cropanzano and Mitchell (2005)

While it is considered that individuals differ in the degree they endorse reciprocity (Clark and Mills, 1979, Murstein et al., 1977) those who are high in an exchange orientation carefully track obligations and keep score, while those low in exchange orientation will be less concerned about obligations and are less likely to care if exchanges are not reciprocated. Research has shown that individuals with a strong exchange orientation are more likely to return a good deed than those who are low in exchange orientation (Cropanzano and Mitchell, 2005). Research has also compared negotiations with reciprocal exchanges. Generally reciprocity produces better work relationships than negotiations and allows for individuals to be more trusting of, and committed to, one another (Molm, 1985, Molm et al., 2000). Furthermore, negotiated exchanges incite more unhelpful power use and less equality (Molm et al., 1999, Molm, 1997, Molm, 1985). This finding has major implications in the construction

industry as nearly all exchanges are negotiated and commitment is made via contracts. Since valuable resources or rewards are exchanged in relationships the involved parties are dependent on these rewards therefore social exchanges influence the distribution of dependence and thus the power in the relationship (Emerson, 1962, Emerson, 1976). This in turn influences the ability to control the relationship (Blau, 1964). So as effective supply chain management is considered as important in an ongoing relationship within a supply chain, the relationships that are created are not only based on economic benefits but also on elements of social exchange (Griffith et al., 2006). Therefore it is expected that only actors who are capable of building both the economic and social aspects of the relationship will succeed to collaborate beneficially (Prajogo and Olhager, 2012).

2.4 Power Dependency Theory

Thibaut and Kelly (1959) were the first to explore how a person's behaviour could be influenced by another if they had control of the outcomes (Molm, 1985). Emerson's (1962) ideas of dependency were later incorporated in the exchange theories of Blau (1964) and further work by Homans (1974). The dynamics of dependency theory revolves around power and power use, with the key concept being based on the principle that mutual dependence is what brings people together to form exchange relationships. This power was interpreted as being the property of the social relationship rather than an attribute of the actor and that it was not necessarily observable and that it would only manifest if the power giver makes a demand that is contrary to the desire of the power target (Emerson, 1962, Emerson, 1976). This idea of power is along a similar context postulated by Foucault (1982) that power is not something that is possessed by individuals, but power is exercised upon the actions of others, consequently breaking away from what was the classical and structuralist view of power which was adopted by Dahl (1957) who suggested that power is the property of the individual, pointing out that individuals may have power in regards to specialised areas, or domains.

Emerson's (1962) theory that power is not the attribute of the person or group but rather the property of the social relation implies that while the relationship may

determine the power exchange, the use of the power variable is still in the hands of the individual. Therefore the power to influence a target is determined by the dependency between actors (Watson, 2001) where the power exchange can be mediated or non-mediated (Tedeschi, 1972) if an imbalance in dependency occurs. Emerson's (1962) suggestion that the power to control or influence another resides in controlling the things he values implies that the only way dependent actors could lessen their dependency, and thus increase their power, was by cultivating alternative sources of desired resources. Support for this ideal was formulated by Pfeffer and Leong (1977) and Provan, Beyer and Kruytbosch (1980). Further theoretical work on power as an exchange process was later expanded to include power-dependence relations between actors operating in a social network as well as between groups of actors (Benson, 1975, Cook, 1977, Emerson, 1962, Emerson, 1976). Using this enlarged perspective, an actor could also lessen their power dependencies by engraining in a dyadic relationship and power derived from relationships within a larger organizational or social network (Provan et al., 1980).

Homans (1974, 1961, 1958) summarised the system initially in three propositions Success, Stimulus, Deprivation-Satiation Proposition adding a fourth in later works (Table 2), (Homans, 1974, Homans, 1961, Homans, 1958, Emerson, 1962, Emerson, 1976). The third column was added for the purpose of this research as an interpretation into a supply chain context with an economic gain in view.

Table 2: Propositions for human behaviour

Propositions	Definition	Supply chain context
1. Success Proposition	When one finds they are rewarded for their actions, they tend to repeat the action.	Profitable, sustainable growth
2. Stimulus Proposition	The more often a particular stimulus has resulted in a reward in the past, the more likely it is that a person will respond	Opportunity to improve or increases share/value

	to it.	
3. Deprivation-Satiation Proposition	The more often in the recent past a person has received a particular reward, the less valuable any further unit of that reward becomes.	Improve positioning in relation to current standing
4. The Value Proposition	The more valuable to a person is the result of his action, the more likely he is to perform the action	Improve profitability

Adapted from Emerson (1976)

2.5 Resource Dependency

Resource dependency theory (Pfeffer and Salancik, 1978) is the study of the power-seeking behaviour of firms in a supply channel according to how buyers and suppliers behave and interact within their environment. Within these buyer-seller relationships, the main focus is on the resources provided by relationship partners who offer external resources, which ensure the firm's long term survival (Roemer, 2004b). Firms survive or succeed if they can exploit their dependence on other firms or other firms' dependence on them to attain necessary resources (Hofer et al., 2012). However, dependency does not necessarily result in adversarial relationships between buyers and suppliers. Dependency relationships may be balanced, interdependent, cooperative, and mutually beneficial (Pfeffer and Salancik, 1978) and buyers can work to establish collaborative relationships with their suppliers by sharing information and jointly defining strategies (Hofer et al., 2012, Hult et al., 2008, Mentzer et al., 2001, Min et al., 2005, Mottner and Smith, 2009). Therefore when organisations need to acquire resources that are critical to the performance of their activities, they generally depend upon their resource suppliers, which are usually other organisations. The extent of this dependence can vary considerably, subject upon the importance of the resource and the existence of and control over alternative sources (Aldrich and Pfeffer, 1976, Blau, 1964). From this perspective,

success in the acquisition of scarce resources indicates an organisation's power relative to other organisations in its environment (Provan et al., 1980).

Jacobs (1974) discussed the organisational control in terms of exchange relationships between organisations and their environments, suggesting that organisational power is a function of the dependence on resource suppliers, and that the degree of dependence is inversely proportional to the number of suppliers available. Benson (1975) proposed that resource acquisition and power in inter-organisational relations are explained not only by dyadic relationships between organisations, but also by the links maintained by organisations within their environment of which both organisations may be dependent. Thus when an organisation maintains extensive linkages to the external environment, they are most likely to be powerful within their organisational network (Provan et al., 1980). Relative dependence indicates whether a relationship is symmetric or asymmetric (Figure 2). If the dependence of both parties is assessed equally, the partnership is symmetric. If the dependence of both parties has different levels, the partnership is asymmetric (Roemer, 2004a, Roemer, 2004b). Therefore when levels of dependencies are not equal and one party is more dependent than the other, management problems are likely to occur in the exchange. In this case of asymmetry, the risk of opportunism arises where the least dependent party having an advantage will manifest tendencies to exploit the partner (Gundlach and Cadotte, 1994, McAlister et al., 1986, Roemer, 2004b, Roemer, 2004a).

Figure 2 : Relative dependence in buyer-supplier relationships

		Customer Dependency	
		Low	High
Supplier's Dependency	Low	(1) Symmetry	(2) Asymmetry
	High	(3) Asymmetry	(4) Symmetry

From Roemer (2004a)

With subcontracting as a key characteristic in construction, attracting up to 90% of the contract value (Hartmann and Caerteling, 2010) selecting the appropriate subcontractor is essential. Supply and demand of resources fluctuates considerably within the industry creating uncertainty among actors (Segerstedt and Olofsson, 2010). Pfeffer and Salancik (1978) proposes that resource dependence consists of three different fundamentals. Firstly, that all dependence comprises the importance of a resource. Second, dependence comprises the extent to which the external party has discretion over the resource. Third, resource dependence rises when there are few alternatives instantly available and there is an imbalance between supply chain actors (Figure 2). Roemer (2004a) interpreted these findings as shown in Table 3 with the third column representing the construction industry perspective as defined by the researcher.

Table 3: Fundamentals of dependence

Pfeffer and Salancik (1978)	Roemer (2004a)	Construction
(1) All dependence comprises the importance of a resource	Supplier sells a large fraction of their products to one particular customer; or, vice versa, when a customer buys a large fraction of their purchases from one particular supplier	When contractor uses one supplier or subcontractor to supply a certain product or perform certain works or in reverse where a supplier or subcontractor works for a single contractor
(2) Dependence comprises the extent to which the external party has discretion over the resource	In buyer-seller relationships discretion over a resource relates to the extent that the partner has control over the resource. This is the case when a partner has the possibility to withdraw their resources from the relationship	Where a contractor or a supplier may cease to either supply further work or services to the respective partner

(3) Resource dependence arises when there are few alternatives instantly available	When the resources provided by a partner in a buyer-seller relationship are difficult to replace due to a lack of alternatives, the dependence increases.	Supply and demand, when skills to perform a certain task or material are in short supply and there is a lack of alternatives, suppliers or contractors. In this case it may also include a shortage of work available.
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Adapted from Roemer (2004a)

2.6 Trust

According to Rotter (1967) the efficiency, adjustment and even survival of any social group is reliant on the presence or absence of trust. Interpersonal trust is defined as the expectations held by an individual or a group that the word, promise, verbal or written statement of another individual or group can be relied upon (Rotter, 1967, Rese and Baier, 2011). Trust is also considered a key enabler to resource sharing and contributing to cooperative behaviour (Rese and Baier, 2011). Therefore if trust is the central point to every transaction that requires contributions for all parties involved (Cheung et al., 2011b) the intention or desire to continue a relationship needs to be considered not only from an organisational level but also from a social context (Chung and Jackson, 2011).

Management literature has also identified trust as key construct in relationships (Seppanen et al., 2007) along with a willingness to be vulnerable with certain limits (Alvarez et al., 2003) and a willingness to share work related information of a confidential nature (Gillespie, 2012). The question of an optimal level of trust was first raised by Wicks et al., (1999) which lead to a number of frameworks for measuring trust (Krause et al., 2007). However according to Day et al., (2013) the complete picture of positive and negative outcomes for developing trust have not been fully developed.

2.7 Price

In every buyer-seller relationship there is a commercial negotiation that is influenced not only by economic factors but also by power relationships between the two actors (Meehan and Wright, 2012). Therefore to compete successfully in a value-conscious environment, sellers need to highlight the value of their offerings to enhance buyer's perception of the product quality or benefits relative to the selling price (Hamilton and Chernev, 2013). The customer's perceived value is operationalised as a ratio between total benefits received to total sacrifices made (Buzzell and Gale, 1987) where the sacrifice can be viewed as a construct of price, time or effort (Wang and Wu, 2012). However the conceptual value of price has been perceived as a single overall value construct that represents a fair price or value for money (Wang and Wu, 2012).

2.8 Mediate and Non-mediated Power

Mediated and non-mediated power are better explained in earlier work by French Jr and Raven (1959) who explored inter-firm power developing a power basis model (Table 4). Their research explored the type of power or powers used throughout a relationship to determine if one party holds authority over another, suggesting that the power giver controls the power base only if the power target perceives the power giver has that power (French and Raven, 1959, Goldhamer and Shils, 1939).

Table 4: Bases of inter-firm power

Power Base	Description
Reward	Source retains ability to mediate rewards to target.
Coercion	Source holds ability to mediate punishment to target.
Expert	Source has access to knowledge and skills desired by target.
Referent	Target values identification with source.
Legitimate	Target believes source retains natural right to influence.
Legal Legitimate	Source retains judiciary right to influence target.

From Maloni and Benton (2000)

The research of power is well grounded within the social and political sciences and can be defined as an organisation's ability to influence the intentions and actions of another (Emerson, 1962). Over the years, scholars have attempted to simplify power research through dichotomization of the different bases into categories such as coercive and non-coercive, mediated and non-mediated each being noted to have a contrasting effect on inter-firm relationships (Maloni and Benton, 2000). Research Brown, Lusch and Nicholson (1995) found that use of mediated (e.g. coercive, legal legitimate, reward) power will lower genuine commitment by the target due to resentment over the subordinate situation whereas non-mediated (e.g. expert, referent, legitimate) power increases commitment (Benton and Maloni, 2005, Maloni and Benton, 2000). While Skinner, Gassenheimer and Kelley (1992) established that coercive power holds a negative association with cooperation, Maloni and Benton (2000) also point out that the level of conflict between two organisations is associated positively with mediated power and negatively with non-mediated power. These findings confirm that the effects of power on inter-firm relationships hold direct implications for the supply chain affecting trust, cooperation, commitment, conflict and conflict resolution which are critical to effective supply chain collaboration (Benton and Maloni, 2005, Maloni and Benton, 2000).

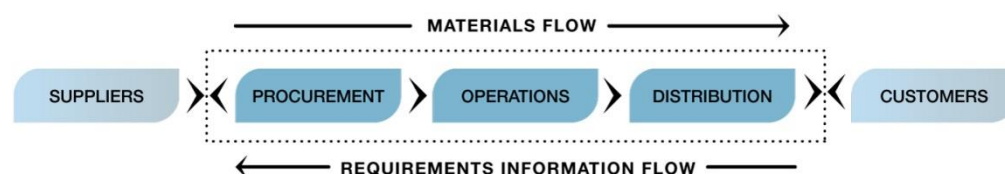
The use of mediated power by buying organisations to influence and control other supply chain participants is commonly seen in practice (Handley and Benton, 2012). Supply chain researchers have applied the power literature (Maloni and Benton 2000) to the analysis of buyer-supplier relationships and have found that the different bases of power affect inter-firm relationships in significant, yet contrasting ways (Handley and Benton 2012). In any project, and especially in construction projects, the complexity increases as many different and sometimes discrepant interests need to be considered, in particular when an actor can be an individual or a group with the power to be a threat or a benefit (Olander and Landin, 2005). Handley and Benton (2012) suggest that organisations that are fully cognisant of the negative relational impact of mediated power, will rely more on mediated power when it is perceived that they have numerous qualified and easily accessible alternatives to the current service provider. Alternatively, when buyers view their sourcing options as limited, or at least unattractive, they appear more inclined to rely on non-mediated methods.

The use of mediated power has also been viewed as an alternative control mechanism relied upon by buyers in conditions where they experience difficulties in effectively deploying contractual and monitoring mechanisms (Handley and Benton, 2012). Researchers have suggested various points of view with some examples from Whitmeyer (2001) who suggests that if the intent was to maximise material gain or profit that power could be measured by the extent to which an actor can affect some social phenomena by differentiating between one's own interest, outcomes and behaviour. While Frazier and Summers (1986) looked at it from a dependency perspective where the power one has over another is directly related to the dependency between the two. A literature review by Belaya, Gagalyuk and Hanf (2009) concluded that while power is a multidimensional concept, they argued that in a supply chain context, measuring power should include aspects of dependency, source of power over the target and power to influence the target.

2.9 Supply Chain and supply chain management

The management of a supply chain is to ensure that the processes and activities have to be well aligned in order to gain maximum benefit and delivering better results while providing products to customers through increased efficiency and effectiveness of internal and external operations (Mentzer et al., 2001).

Figure 3 : Supply chain process



From Christopher, M. (2005, p. 15)

The recognition of supply chains has made it apparent that no single company or business unit fully controls the manufacturing and distribution of its products depending on the contribution of others and the interactions between the various parties involved in the process to deliver a successful outcome (Dudek, 2009a). According to Blanchard (2010) supply chains are defined as much by their

similarities as by their differences. While there may not appear to be much in common between various supply chains, in fact they operate on the same principles. An organisation can be a part of several supply chains depending on the products and services that they provide and may find themselves as a supplier in one supply chain, distributor or partner in another and a customer or even a competitor in a third supply chain (De Man and Burns, 2006, Mentzer et al., 2001). Multiple firms and eventual end-customers are usually involved in a network of upstream and downstream connections that can include material, management or supply or even information and financial flows (De Man and Burns, 2006, Mentzer et al., 2001). Of course the improved competitive standing of the supply chain should deliver an advantage to all members of the supply chain. However, this is not guaranteed, and must be encouraged by the appropriate agreements between partners (Dudek, 2009a). The major theme to realise the objectives lies in the integration and coordination of the supply chain and its processes. A major question hence is how to actually realise a tighter integration and improvement in coordination (Dudek, 2009a).

The term supply chain management is in itself initially proposed to link logistics issues with strategic management to enable the implementation of advanced process to meet the demands of the challenging business environments of the 1980's, that propose intra-company integration of the purchasing, material handling, manufacturing and distribution functions (Dudek, 2009b). Over the years the management of the supply chain has become a significantly important way to enhance competitive strength, and it is commonly argued that the real competition is not company against company but rather supply chain against supply chain (Christopher, 2005, Vaaland and Heide, 2007). This has been a major contributor to the shift from the initial view where an intra-firm perspective was predominant, compared to today's ideal which considers the management of the entire supply chain including external business partners as the main focus (Dudek, 2009a, Dudek, 2009b).

The concept of working with suppliers and customers is as old as commerce itself, but the modern idea of a "supply chain" is fairly recent, (Blanchard, 2010). According to Christopher (2005) a supply chain can be described as a network of organisations "that are involved, through upstream and downstream linkages, in the

different processes and activities that produce value in the form of products and services in the hands of the ultimate consumer” (Figure 3). It encompasses all the activities that are related to the transformation and flow of input materials to finished goods as well as the information exchange, occurring along the supply chain way (Seuring and Müller, 2008).

Supply Chain Management emerged in the 1980’s in order to make the flow of product and information a strategic process (Mouritsen et al., 2003). However various definitions of Supply Chain Management have emerged over the years (Table 5) encompassing a wide range of activities that takes into account the external environment that connects organisations through the flow of material and services (Cooper et al., 1997b).

Table 5: Definitions of supply chain management

Reference	Definition
Lambert, cooper and Pagh (1997b)	Supply Chain Management is the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other shareholders
Mentzer et al. (2001)	Supply Chain Management is defined as the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the Supply Chain, for the purposes of improving the long-term performance of the individual companies and the Supply Chain as a whole.
Christopher (2005)	The management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the Supply Chain as a whole.

Bask and Juga (2001) suggest that some authors use the supply chain concept almost interchangeably with logistics, however according to Christopher (2005) it is a wider concept than logistics. It builds upon it and aims to achieve integration and co-ordination between the processes of the different entities in the logistics pipeline (i.e. suppliers, intermediaries, third party logistics providers and customers) so that superior customer value is delivered at less cost to the supply chain as a whole (Bask and Juga, 2001). It is also regarded as a process that demands innovation and builds on and adds to the concepts of total quality management and just in time theory (Saad et al., 2002). Some of these risks of adopting supply chain management principles have been noted: as a failure to fully integrate the supply chain (Frohlich and Westbrook, 2001) neglecting to balance supply and demand across the length of the supply chain (Frohlich and Westbrook, 2001) and implementing or addressing traditional risk management principles (Fiksel, 2006).

Effective Supply Chain Management offers a vision of client–supplier relationships that are potentially collaborative, and enhance the financial performance of all members of the supply chain therefore trust and a committed relationship between key customers and suppliers is fundamental to improving performance (Hofer et al., 2012, Fulford and Standing, 2014). This should translate into a competitive advantage for all members that can be achieved through improved integration and co-ordination by redesign of process in work structure, information flow and decision authority (Table 6), (Dudek, 2004).

Table 6: Dimensions of supply chain integration

Process Redesign (Hewitt, 1994)	Strategic application (Bowersox et al., 2000)	Interpretation (Dudek, 2004)
Work structure	Operational	How and by whom processes are operated
Information flow	Planning and control	How and by whom data is communicated
Decision authority	Relational	How and by whom decisions are drawn

Adopted from (Dudek 2004, p. 10)

According to Christopher (2005) the source of a supply chains competitive advantage comes from the organisations ability to differentiate itself in the eyes of the customer from its competition or by being able to operate at a lower cost or a combination of both. Some industries still struggle to come to terms with managing the supply chain in a truly coordinated fashion with many smaller firms still preferring to operate independently, finding it easier to focus on their immediate customers and their daily operations (Wisner et al., 2011).

2.10 Collaboration in Supply Chains

Collaboration in supply chains has often been used interchangeably with partnering, alliances, joint ventures or networks (Hughes et al., 2012). Collaboration with suppliers, customers and in some cases even competitors to co-create solutions to problems has become increasingly important to an organisation's business strategy and basis of competitive advantage (Vargo and Lusch, 2004, Zacharia et al., 2011). The need to look outside one's own organisation for collaborative opportunities with partners to ensure the supply chain is efficient and responsive to the needs of a dynamic market has been gaining momentum over the last decade and is seen as common place in today's business environment (Benton and Maloni, 2005, Cao and Zhang, 2011). This newly formed collaborative relationship has meant that the competitiveness of an organisation is highly dependent on the performance of its supply chain and the management's ability to integrate the company's intricate network of business relationships (Lambert and Cooper, 2000).

An essential ingredient to structuring a supply chain network is to identify who the partners of the supply chain should be and understanding that not all members within a supply chain should be included as potential partners as this may complicate the total network (Cao and Zhang, 2011, Cooper et al., 1997a). Performance of the supply chain is measured on the combined efforts of all involved that contribute, even when the management of participating firms is obligated to achieve its own goals, missions and objectives which might in some cases are in direct conflict with each other's stakeholders (Forslund and Jonsson, 2009). This would indicate that implementing partnering is not necessarily straightforward (Chan et al., 2003) and

often it also implies a fundamental change in behaviour and attitudes (Kululanga, 2009, Rhodin, 2002). Moreover, it has been labelled a “paradigm shift” (Larson, 1997) implying that the attitudes of supply chain actors towards parenting would need to change in order to avoid resistance and the raising of barriers (Eriksson et al., 2009). Cooper et al (1997a) demonstrated that it was also important to identify what processes to integrate with supply chain partners and what extent of integration and management should be applied for each of the process links so the issue of when and how far to integrate also becomes relevant for all supply chain processes.

Some researchers argue that there is limited evidence to show a direct link between collaboration and performance (Power, 2005) while others suggest that supply chain partnerships that align behaviours of knowledge sharing, high levels of trust, and joint coordination are reporting supernormal profits for all parties in the supply chain at levels that could not be achieved in isolation (Cadden et al., 2013, Zacharia et al., 2011). What seems to be surprising is that while there is a strong tendency to improve or increase cooperation, procurement processes are still geared towards competition (Eriksson et al., 2008). This inconsistent behaviour could indicate that there is an unwillingness to implement change when partnering is involved (Bresnen et al., 2005, Fernie et al., 2006, Fernie and Thorpe, 2007) as traditional procurement methods place the client in a position of power and control possibly due to companies viewing suppliers as competitors for margin rather than to improve efficiency (Cheung et al., 2011a, Cheung and Rowlinson, 2011). However under a collaborative agreement, this position is replaced by one of mutual respect, equity and information sharing, resulting in more power and control for the supply side (Eriksson et al., 2009). Therefore, despite the extensive amount of effort and time directed towards collaborative efforts, many cooperative programs to improve relationships between buyers and suppliers do not reach intended aspirations (Cao and Zhang, 2011, Gadde and Dubois, 2010, MacDuffie and Helper, 2006, Zhang et al., 2009).

This failure may be due to supply chain participants not having embedded collaborative values and therefore collaboration is not possible with actors that lack a genuine desire to collaborate (Kampstra et al., 2006). Research by Fawcett et al. (2012) pointed out that there are a number of resistors and enablers to supply chain

collaboration (Table 7) that need to be considered and addressed to improve the prospect of a collaborative supply chain. However these are indicative and provided only as a guide.

Table 7: Supply chain resistor/enablers to collaboration

Resistors	Related Comment	Enablers	Related Comment
Organizational structure and functional conflict	Functional Silos where each of the cooperatives focuses on their own business unit	Trust-dominant collaborative culture	Transparency With a philosophy of honesty and open communication
Poor strategic alignment: goals and measures	Conflicts over delivery frequency and service levels, goals are not aligned	Accurate, timely information sharing	Managing the information flow to allow improvement and enable real time decision making
Lack supply chain leadership and know-how	Lack of decision making and direction by management	Aligned supply chain measures and more accurate costing	Benchmark best practices
Resistance to change	Resistance to changed roles and responsibilities	Intra/inter-organizational teaming structures	Multi-disciplinary, centre-led organisation
Insufficient trust/abuse of power	Culture has reduced trust and collaboration	Supplier development and integration	Willingness of supplier to change their paradigm
Inadequate information: Connectivity and sharing	Do not share strategic information	Employee buy-in and empowerment	Demonstrate effectiveness of collaboration
Inadequate alliance	Most of our vendors lack the capabilities to	Learning and experimentation	Constant learning and continues

management practices	collaborate effectively	mechanisms	improvement of processes
Inaccurate forecasting and excess complexity	Poor forecasting makes it difficult to pass accurate information upstream, while complexity will be tomorrow's constraint	Senior-level managerial commitment	Mission and vision driven by senior leadership
Poorly defined roles and responsibilities	Resistance to the loss of power and to changed roles and responsibilities, non-defined roles	Process transparency and tracking of supply chain	Established standard process
Gap in education skills and human resources	Lack of training and skills to make it work	Disciplined decision making and follow through	Centralised decision-making

Adopted from Fawcett et al. (2012)

There are also several studies that show trust as one of the more important enablers for supply chain collaboration (Fynes et al., 2005, Myhr and Spekman, 2005, Sheu et al., 2006) while one of the main causes for failure is often due to buyers imposing pressure on their suppliers to continually improve the quality and delivery of their product while at the same time expecting a reduction in costs (Benton and Maloni, 2005, MacDuffie and Helper, 2006, Zhang et al., 2009). The resultant outcome is that when the imposition of pressure occurs in a commercial exchange by one party who attempts to influence another to take specific actions, a dynamic ensues that can change the course and content of their relationship (Scheer and Stern, 1992). The resultant outcome of the ensuing dynamic depends on the level of dependency between the actors and the power to control or influence the things that are valued by the weaker member (Emerson, 1962). Research has found that power does play a significant role in the supply chain and the different sources of power such as mediated and non-mediated, have contrasting effects on inter-firm relationships within the supply chain, affecting cooperation, communication, commitment, trust,

compliance, conflict, and conflict resolution (Benton and Maloni, 2005, Cox, 2004, Cox et al., 2004, Handley and Benton, 2012, Zhang and Ng, 2012). Handley and Benton (2012) conducted a literature review by that cited numerous articles on the use of power to influence suppliers in covering various industries such as the automotive, retail and services industries demonstrating the extent, use and influence of power.

2.11 Power Regimes in Supply Chains

Large organisations that wield power to control the behaviours of their suppliers and influence the decision makers or actors within the supply chain have received a large amount of attention in the press (Handley and Benton, 2012). These organisations have been renown to use their position and buying strength to demand price concessions from their suppliers (Handley and Benton, 2012, Zhang et al., 2009) influence the suppliers key operating decisions (Chen, 2011) manipulate core elements of the suppliers marketing strategy (Hadjikhani and LaPlaca, 2013) and even pressure the supplier to share proprietary technology with potential competitors (Handley and Benton, 2012, Hill et al., 2009). This type of behaviour would indicate that an organisation with significant buying power might not find it necessary to establish a win-win alliance with its suppliers since it can achieve its own profitability and effectiveness by controlling suppliers that are dependent on its business (Benton and Maloni, 2005). Implying that, organisations with the bargaining power have virtually no reason to yield control or to withhold the exercise of power (Benton and Maloni, 2005). Therefore a dominant party that has the possibility of using or abusing their power within the relationship (Gelderman et al., 2008) has the potential to create adversarial relationships where supplier and the buyer are constantly trying to maximise their own share of value (Cox, 2004). So while the exercise of power can be effective, it is only for the short-term, as it will be destructive for the relationship as the vulnerable party will seek ways to resist (Gelderman et al., 2008, Kumar, 2005).

A supply chain cannot be responsive unless there are satisfied suppliers (Benton and Maloni, 2005) working with their downstream buyers to service or supply the end

user. To enable successful management of the supply chain, it is essential to recognise the power structures that exist between actors (Cox, 1999) as this becomes critical in developing and maintaining a sound relationship across company boundaries. Without an understanding of existing power regimes or what Cox (2004) refers to as “power sources”, actors will find it difficult to maintain a relationship at an appropriate level. In particular when a further layer of complexity is added with Western suppliers who are basically opportunistic rather than deferential and have little incentive to align with a customer unless forced, the dominant players are able to direct or obtain access to all crucial resources in a supply chain structure of dominance and dependency (Cox, 1999, Vaaland and Heide, 2007) leaving the supply chain fragmented and non-cohesive.

The more general concept of power as discussed earlier in section 2.5 with French and Raven’s (1959) influential work classifying power into five sources can be extended to provide a definition that includes a supply chain perspective as an example of each of the sources of power (Table 8). However a simple interpretation or ‘one size fits all’ is not always the case as it is the nature of exchange power that defines the real commercial interests of buyers and suppliers and determines whether they can and therefore should try to manage their direct and indirect relationships with others in their supply network (Cox et al., 2001a). So by definition the buyer’s power relates to their ability to influence the decisions of a supplier in the supply chain (Brown et al., 1995, Goodman and Dion, 2001, Zhao et al., 2008).

Table 8: Bases of inter-firm power

Type of power	Power base	Description	Supply chain examples from Zhao et al. (2008)
Non-mediated	Expert power	Customer has knowledge, expertise or skills desired by the supplier	The customer knows what the final consumer wants or has knowledge and expertise in designing or distributing new products to the final consumers
	Referent power	Supplier values identification with the	If the customer has developed a strong bond through its

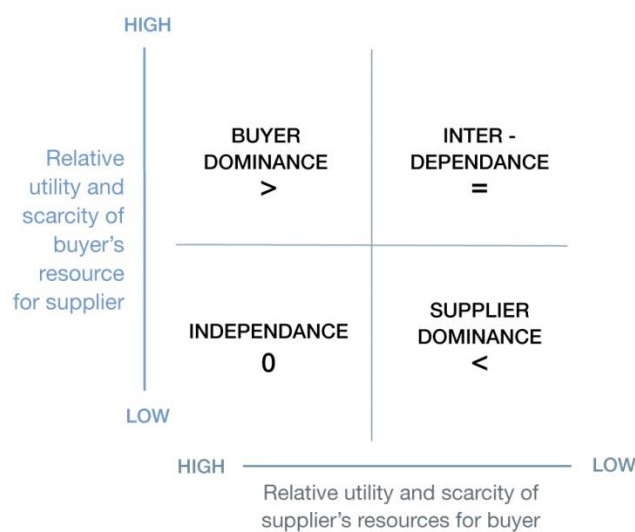
		customer	demonstrated concern, management style and organisational personality, it has power over the supplier, based on positive emotional ties (Goodman and Dion, 2001)
	Legitimate power	Supplier believes customer retains natural right to influence it	The supplier believes that the customer has the right to request and expect things to be done according to its requirements, as part of the supplier–customer relationship. This is a result of the level of importance accorded the customer in the supply chain
Mediated	Reward power	Customer has the ability to mediate rewards to supplier	The customer has the ability to provide rewards that are attractive to the supplier, for example, the customer can decide to give more business to the supplier
	Coercive power	Customer has the ability to mediate punishment to supplier	The customer has the ability to provide punishments that are detrimental to the supplier, for example, the customer can cancel business or reduce the volume of business with the supplier

Adopted from Zhao et al. (2008)

Cox, Sanderson and Watson (Cox et al., 2001b) points out that although power advantages might not always be openly exploited in buyer-supplier interactions, it is the very existence of a power imbalance which conditions buyer and supplier behaviour. In a supply chain context resource scarcity will also impact on the supply chain which is in turn affected by factors such as property rights, economies of scale, information exchange, causal ambiguity, branding, search and switching costs for the buyer, and network good effects (Cox et al., 2001b). According to Cox, Sanderson,

and Watson (2001a) in a dyadic power relationship that exists between specific buyers and suppliers, a framework representing four basic types of buyer-supplier power structure is shown below in Figure 4; buyer dominance, supplier dominance, buyer-supplier interdependence (high mutual dependence) and buyer-supplier independence (low mutual dependence) (Cox, 2004, Cox, 2001a, Cox et al., 2001a) and then expanded in Figure 5 highlighting the relationship between buyer-supplier power.

Figure 4: Exchange power matrix source

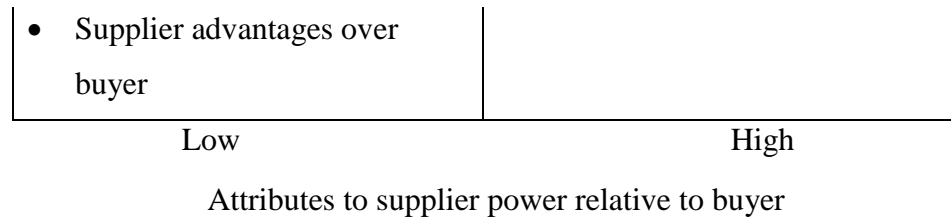


Adopted from Cox et al., (2001a)

Figure 5: Power matrix: the attributes of buyer and supplier dominance source

		Buyer Dominance (>)	Interdependency (=)
Attributed to buyer power relative to supplier	High	<ul style="list-style-type: none"> Few buyers/many suppliers Buyer has high % share of total market for supplier Supplier is highly dependent on buyer for revenue with few 	<ul style="list-style-type: none"> Few Buyers/few suppliers Buyer has relatively high % share of total market for supplier Supplier is highly dependent on buyer for revenue with few alternatives Supplier switching costs are
	Low		

<p>alternatives</p> <ul style="list-style-type: none"> • Supplier's switch costs are high • Buyer's switch costs are low • Buyer's account is attractive to supplier • Supplier's offering is a standardised commodity • Buyer's search costs are low • Supplier has no information asymmetry advantages over buyer 	<p>high</p> <ul style="list-style-type: none"> • Buyer's switching costs are high • Buyer's account is attractive to supplier • Suppliers offering is relatively unique • Buyer's search costs are relatively high • Supplier has moderate information asymmetry advantages over buyer
Independence (0)	Supplier Dominance (<)
<ul style="list-style-type: none"> • Many buyers/many suppliers • Buyer has relatively low % share of total market for supplier • Supplier has little dependency on buyer for revenue and has many alternatives • Supplier's switching costs are low • Buyer's switching costs are low • Buyer's account is not particularly attractive to supplier • Supplier offering is a standardised commodity • Buyer's search costs are relatively low 	<ul style="list-style-type: none"> • Many buyers/few suppliers • Buyer has low % share of total market for supplier • Supplier has no dependence on buyer for revenue and has many alternatives • Supplier's switching costs are low • Buyer's account is not particularly attractive to supplier • Supplier offering is relatively unique • Buyer's search costs are very high • Supplier has substantial information asymmetry advantages over buyer



Adopted from Cox et al., (2004)

Watson (2001) suggests that supply chain fragmentation occurs, if the interdependencies between the actors are not strong, and independent power structures may exist within the supply chain that could undermine the integrity of the integration of that supply chain (Figure 6 and Figure 7) where A is the downstream actor flowing upstream to actor E.

Figure 6: Supply chain fragmentation and interdependent power structure boundary

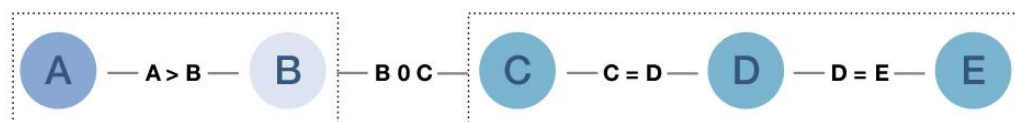


Figure 7: Supply chain fragmentation and a downstream dominance-upstream dependency boundary

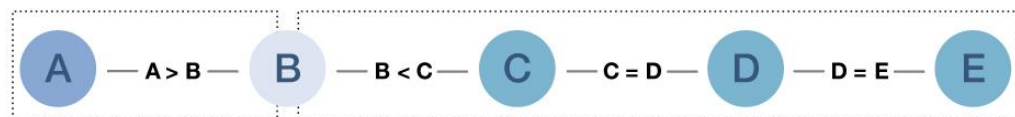


Figure 6 and Figure 7 Watson (2001)

Watson (2001) points out that when buyer/supplier interdependency is high. The probability of supply chain integration is high. However in the case where there is buyer dominance (Figure 6) or the reverse supplier dominance (Figure 7) then a division between actors occurs due to an imbalance of power. Figure 6 also shows that when actors are independent they are also less likely to create a mutually beneficial arrangement (see B0C in Figure 6). Research by Cox, Sanderson, Watson, (2001a, 2001b) on these boundaries/interfaces concluded that the success or failure can be primarily linked to the complexity of the power exchange underpinning the supply network relationships, adding that it is the nature of the power exchange that

actually defines the real commercial interests of buyers and suppliers and determines whether they manage their direct and indirect relationships with others in their supply network. So it is imperative that managers seeking to coordinate their supply chains and understand the boundaries between different types of power sub-regimes within the overall power regime. This is because the power structure within a sub-regime may undermine the search for a totally integrated approach to supply chain management (Watson, 2001).

2.12 Trust in Supply Chain Management

The importance of trust as an antecedent to commitment is essential in ensuring relationship success is an underlying principle of social exchange theory (Ambrose et al., 2010, Liu et al., 2009). It has been recognised as a valuable contributor to many forms of exchange, and supply chain relationships are no exception (Kannan and Tan, 2006). Trust is referred to as the degree to which an organisation believes that its exchange partners are honest and or benevolent (Geyskens et al., 1998). It reflects the willingness and confidence to rely on other parties and is an important form of relational capital (Zhang and Huo, 2013). It is considered critical for mitigating exchange hazards and engendering cooperation among supply chain partners because it reduces the uncertainty of partner's actions and opportunism (Wang et al., 2011, Adler and Kwon, 2002, Yeung et al., 2009, Zhang and Huo, 2013).

Trust is also considered to be among the most essential ingredients in cultivating collaborative relations and developing strong, mutually beneficial relationships that are capable of delivering a competitive advantage (Cannon et al., 2010, Hill et al., 2009, Ireland and Webb, 2007). In supply chain management, trust can be defined as the willingness to rely on a supply chain partner in whom the organisation has confidence (Sahay, 2003) and research has shown that trust can facilitate long-term relationships between organisations. It is expected that a buyer's trust of a supplier will increase the likelihood that the buyer will adopt a long-term orientation toward the supplier (Cannon et al., 2010).

According to Maister, Green and Galford (2000) there are four key criteria to engendering trust in business relationships; credibility, reliability, intimacy and a lack of self-orientation. Trust also encompasses benevolence and competence (Dyer and Chu, 2000, Kumar et al., 1995, Mayer et al., 1995) and refers to an organisation's expectation that their partners will act to benefit their organisational interests regardless of their ability to monitor such behaviour (Kwon and Suh, 2005). Consequently ongoing successful exchanges provide evidence to suggest that parties that share the similar values are able to establish unconditional trust while on the other hand negative interactions will inevitably result in distrust (Jones and George, 1998, Jones et al., 2010). Implying that the outcome of trust is the belief, that a partnering organisation will perform actions that will result in positive outcomes for the organisation while refraining from taking unexpected actions such as disrespectful behaviour, ineffective leadership and performance issues (Kramer and Lewicki, 2010) that result in negative outcomes (Kwon and Suh, 2005).

Trust along with other relational capital and assets, such as power, relationship commitment and dependence, play crucial roles in achieving supply chain integration (Zhang and Huo, 2013) with power and dependence having a direct effect on trust and commitment (Ambrose et al., 2010, Autry and Golcic, 2010, Griffith et al., 2006, Narasimhan et al., 2009). Trust plays an important role in high-value strategic relationships, where specific investment is high and contractual governance alone is not sufficient (Ambrose et al., 2010, Narayandas and Rangan, 2004). As many relationships involve a higher degree of interdependency between companies (La Londe, 2002) the need for information share becomes an important factor which requires a higher degree of trust (Kwon and Suh, 2005).

However current research on trust has been dominated by a focus on improvements in client and principal contractor relations through the use of collaborative procurement procedures and contracts (Laan et al., 2011; Pinto et al., 2009) with limited work done on trust development at the main contractor and subcontractor interfaces of the construction supply chain (Manu 2015). However with such a high percentage of sub-contractors engaged on regular basis on construction projects (Eriksson et al., 2007, Humphreys et al., 2003, Hatmoko and Scott, 2010) it would be expected that the reverse would be the case. Without any guidance this would

indicate that principal contractors would need to carefully consider a trade-off in the priorities they place on either price-driven (market) or trust-driven (relational) governance mechanisms during transactions with subcontractors (Manu 2015).

2.13 Price in supply chain management

Traditional economic theory suggests that a strong focus on price has a negative impact on supplier choice since higher prices will have a negative impact on the buyers budgets (Biong, 2013). This perspective is highlighted by the practice of competitive tendering to determine the selling price (Wuyts et al., 2009). However, when quality is uncertain the effect of price on buyer choice may not be that simple as the lowest-price does not guarantee the overall lowest cost upon completion (Lo et al., 2007, Wong et al., 2008). A fixed price-oriented perspective can minimise costs and in turn reduce the pitfalls of costs that may have been omitted or overlooked in the initial pricing by the buyer and as a consequence it also improves the opportunity to maximise profit. So while the 'lowest-price wins' philosophy has been a consistent theme of supplier selection over the years (Wong et al., 2008) it is this the cost-price imperative that eventually prompts buyers to procure disaggregated services based on the lowest bid (Hartmann and Caerteling, 2010).

Adversarial tactics are a common approach on which manufacturers have historically relied to get suppliers to meet their price reduction expectations (Henke et al., 2008). This is perhaps driven by suppliers who are motivated by the attractiveness of the contract and fear of losing to competitors, suppliers and as such are likely to offer their lowest possible prices and best quality to gain customer preference (Kohli and Suri, 2011, Jentzsch et al., 2013). The need for buyers to maintain a competitive position in an increasingly competitive marketplace makes the achievement of lower prices, or, at the least, maintaining prices while providing greater value, an absolute necessity in virtually every industry (Henke et al., 2008). Therefore this price reduction outcome of adversarial relations is an approach that gained greatest notoriety in the early 1990s under J. Ignacio Lopez de Arriortua, the General Motors VP of Purchasing, who reduced General Motors cost of parts significantly by cajoling and threatening suppliers (Cooper and Gardner, 1993) and cannot be easily

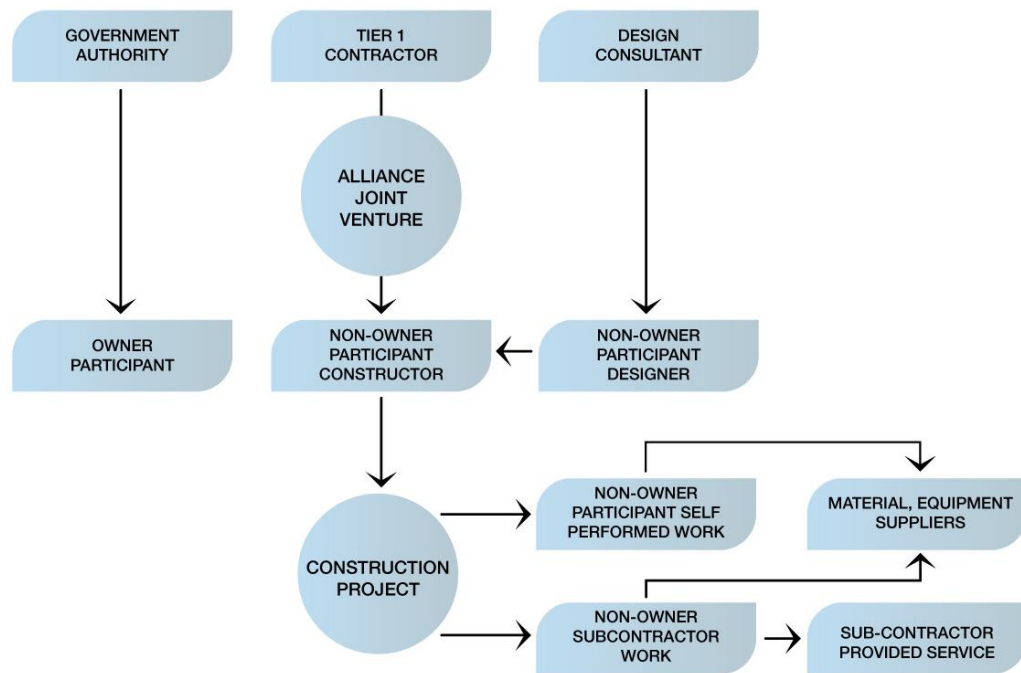
dismissed or overlooked as there may be a tendency to, rather than getting high-quality suppliers at a low price, buyers opting for the lowest prices risk ending up with low-quality supplies.

2.14 Research context and framework/conceptual model development

2.14.1 Construction industry and supply chain

The Construction industry is defined as the “erection, maintenance and repair of immobile structures, the demolition of existing structures and land development” (Segerstedt and Olofsson, 2010). The construction supply chain consists of actors, which encompass the client who is the owner of the project, the project manager who is in charge of the project and liaising with the client, team members, contractors and other stakeholders, builders, consultants, suppliers, and other diverse group of traders that extend down to a single labourer (Figure 8), (Benjaoran, 2009, Fulford and Standing, 2014). In general, the industry is regarded as highly complex due to its ever changing nature of project needs such as skills and material which add another layer of complexity that segments the supply chain down as far as labour only components (Donato et al., 2015). Over the years construction has become so heavily reliant on subcontractors and suppliers, that they are engaged in up to 90% of the works (Eriksson et al., 2007). However the construction industry is seen as lagging well behind other industries, when it comes to collaborative thinking amongst subcontractors and suppliers and other actors in the supply chain. With the general consensus being that the industry has a limited idea of supply chain management principles resulting in a lack of clarity within the industry and its understanding of what is required in a supply chain relationship (Dainty et al., 2001b, Saad et al., 2002).

Figure 8: Construction supply chain



Reproduced with permission from J.D. Paterson and Associates (2012)

One explanation offered for this failure of collaborative thinking is directed at the significantly strong focus the industry has toward the project management rather than the supply chain management (Eom et al., 2008). Adversarialism and opportunism is also considered to be rife at all stages of the project due to the barriers to entry being low, maintaining the high degree of fragmentation and low levels of profitability (Ireland, 2004). Within a construction project, one critical issue that needs to be considered is that while the main contractor on the one hand relies heavily on subcontractors and suppliers to successfully complete a project (Dubois and Gadde, 2000) on the other hand they consider them as the biggest potential for cost saving, and hence creating an environment of unfair practices (Humphreys et al., 2003). This reflects poorly on the industry as it tends to perceive partnering as a way to manage projects and does not provide the subcontractor with any tangible benefits leaving the subcontractor exposed to bullying (Gadde and Dubois, 2010).

Project specific requirements also complicate the issues of collaboration as there is an ever changing group of suppliers or subcontractors at the lower tiers from one project to the next (O'Brien et al., 2008) making it difficult to build a cohesive and

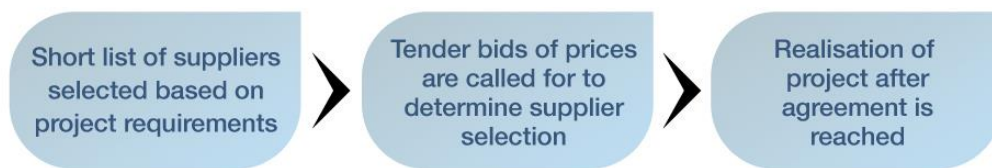
lasting relationship as the supply chain links are constantly changing and involvement of the lower tier group is dependent on whether the project is dominated by suppliers, contractors or designers (Vrijhoef and Koskela, 2000). Much of the literature still suggests collaborative partnering as a solution to strengthening the construction supply chain process (Ingirige and Sexton, 2006, Love et al., 2004). However like most current literature on supply chain management it makes the ambiguous assumption that the constituents of the supplier-buyer dyad are willing and able to cultivate mutually beneficial relationships (Benton and Maloni, 2005). With perhaps the biggest barrier to improving relations between the actors in the supply chain are the sub-contractors and suppliers who are sceptical about partnering as they consider it as a way for contractors to transfer costs upstream, thereby reducing the suppliers' margins (Briscoe et al., 2001, Humphreys et al., 2003). The scepticism in building relationships between supply chain actors implies that there is a belief that actors in a supply chain are focuses on transferring the cost of doing business to other actors in order to improve their margins rather than a focusing on what will make the supply chain more competitive (Christopher, 2005).

Due to the adversarial nature of the construction industry, trust becomes an important issue in particular when trust has been highlighted as critical to the management of a cohesive supply chain (Pinto et al., 2009). Rather than focus on trust building, the industry still tends to select suppliers based on price (Hartmann and Caerteling, 2010). This tendency is perhaps caused by the project specific requirements meaning that there is an ever changing group of suppliers or subcontractors at the lower tiers from one project to the next (Ness and Green, 2013, Voordijk et al., 2000) making it difficult to build a cohesive and lasting relationship. Therefore the development of trust between actors becomes difficult as the short term project based focus contributes to relationships remaining fragmented and at 'arm's length' or in other words distant which are seen as further contributing to the industries inability to come to grips with managing the supply chain (Bankvall et al., 2010, Briscoe and Dainty, 2005, Cox and Ireland, 2002, Fulford and Standing, 2014). However the question still remains about the nature of relationships, in respect to how far it can go and what type and level applies for each link in the supply chain (Bask and Juga, 2001).

2.14.2 Problem Domain and Conceptual Model

From the literature it is apparent that a defined gap exists between the construction industry's understanding of supply chain management and from the traits demonstrated by actors. An even greater gap exists when it comes to understanding why the industry is so adversarial when dependence on a sub-contractor and supplier which can be considered as third party suppliers is relatively high. Price and trust are interwoven into the supplier selection process and are contingent to previous relationships (Hartmann and Caerteling, 2010) and relationships between supply chain actors seem difficult to establish particularly if there is no trading history. The main issue of contention seems to be that the relationship is addressed as a constant and short term rather than an evolving construct that changes at various points in the project procurement and management process.

Figure 9: Supplier selection process



Adopted from Tatari, Castro-Lacouture and Skibniewski (2008)

Within the construction project cycle we can consider that there are three distinct stages of the relationship dynamic such as, establishing the project requirements, selecting suppliers, and project realisation that are quite distinct in the supply chain management process (Fewings, 2013). In construction, the selection of the right supplier or sub-contractor is very significant and crucial to the success of the project (Zavadskas et al., 2010, Nieto-Morote and Ruz-Vila, 2012). The process unfolds through three key phases as outlined in Figure 9. Firstly the specific requirements and objective of the project need to be defined (Nieto-Morote and Ruz-Vila, 2012) to ensure the correct selection criteria is used to assess suitable supplier or sub-contractors in the supply chain that can fulfil the needs of the project. Once a decision is made on who are suited to the project, suppliers and sub-contractors will be invited to participate in a tendering or quotation process, which forms the second

stage of the selection process. The tender/quotation process has been the standard mechanism or traditional method for supplier or sub-contractor selection (Nieto-Morote and Ruz-Vila, 2012, Eriksson, 2010) and can be considered as part of the decision making process when determining who will be awarded the contract (Eriksson, 2010). The final stage of the process is the project realisation and this can be defined as the point where the client enters into the final stage of negotiation with the supplier or subcontractor to define the contractual terms and conditions of engagement.

With contractual transactions generally being considered to be a dyadic exchange, the dependency between the two actors also becomes an important issue, in particular within the construction industry where there is a strong dependency on external contractors and suppliers relationship with the client to ensure the completion of a project. The supply chain actor's point of view within the project cycle commences once there is a formal recognition of project objectives (Fewings, 2013) implying that each supplier acts independently with only the client as a common denominator. This demonstrates that the three stages as shown in Figure 9 can be viewed as independent constructs with only the relationship between supplier and client carrying on from one stage to the next. As a project tends to create a dynamic context for the actors in the supply chain, their behaviour moves through different phases during the lifecycle (Aaltonen and Kujala, 2010) therefore examining the relationship at various points of the life cycle becomes a very important means to understanding how they interact during the course of the project.

Considering there is a high dependency resource such as subcontractors and suppliers within the construction industry and such a strong resistance to partnering, it could be almost conceivable that any co-operation between actors is more of a case of have to rather than want to. According to Benton and Maloni (2005) investigating what creates the power base and how it affects the relationship is an important first step in understanding or identifying dependency imbalances in the supply chain. These imbalances in dependencies create power regimes (Watson, 2001) that lead to larger more powerful organisations controlling the contract (Benton and Maloni, 2005, Benton and McHenry, 2010). Price competition dominated by self-interest and mistrust with actors only looking to achieving their own objectives and maximising

their own profits, with no regard to the impact on others, maintains the adversarial relationships (Meng et al., 2011). Implementing best practices from other industries have not been successful and some researchers have argued the view that the inadequate supply chain performance may suggest that either models or systems used by other industries are not appropriate within the construction context (Fearne and Fowler, 2006, Green et al., 2005, Winch et al., 2003).

With construction it encompasses a large and diverse industry ranging from small maintenance projects to the construction of major infrastructure (Segerstedt and Olofsson, 2010) and this implies that a wide range of resources, skills and competencies are required to meet the challenges of individual projects. Therefore while the construction industry is considered a highly volatile and fragmented industry (Bankvall et al., 2010, Briscoe and Dainty, 2005, Cox and Ireland, 2002, Fulford and Standing, 2014) it is very much a diverse industry in terms of its coverage (Segerstedt and Olofsson, 2010). This diverse and complex nature has also been well documented along with the challenges faced by the industry that are seen as an inhibitor to growth. Reliance on resources such as sub-contractors and suppliers needs to be considered as pivotal to the success of a project, however collaborative partnering as a whole has only been sporadically used to make improvements to the construction project environment (Love et al., 2004) with only tier one contractors adopting the approach. There are little collaborative strategies below the tier one level (Akintoye et al., 2000) which would signify that further improvement is still possible.

Building trust has always been considered a key element to building better relationships and research by Hartmann and Caerteling (2010) found that when a relationship emerges with a subcontractor, they are likely to acquire more work even if past performances varied, however the main contractor will only select a known firm when they perceive the price offered for the work to be market-conform. This would indicate that some leading questions need to be asked about the nature of collaboration, in respect to how far it can go and what type and level applies for each link in the chain (Bask and Juga, 2001).

2.14.3 Dependency, Collaboration and Relationship in Construction in Supply Chain

With today's dynamic markets and volatile economic environment, organisations are struggling to compete effectively if they remain isolated from their suppliers in the supply chain (Thakkar et al., 2008). Organisations are becoming more competitive by implementing business strategies and creating alliances that in some cases may incorporate their competitors as part of their supply chain (Vargo and Lusch, 2004, Zacharia et al., 2011). Mutual dependence brings people together to form exchange relationships, however it also provides a power base that allows one actor to control or influence another by controlling the things he values (Emerson, 1962). Collaboration and co-dependency is achieved through strong trusting relationships (Rogers, 2005). So, when entering into an outsourced arrangement for services, it requires a degree of observation, planning and resourcing however organisations are quick to identify and evaluate technical supplier attributes (previous experience, resources and cost) but slow to identify the "softer" relationship elements such as partnering ability, empathy, collaboration ability, strong leadership, enthusiasm and emotional intellect (Rogers, 2005). While dependency is perceived as being easier to acknowledge in a relationship as it relates to the state of being subordinate to another party's behaviour, it implies that "one's outcome is contingent on the trustworthiness or untrustworthiness of another" (Léger et al., 2006) and is a more tangible construct.

According to Cousins and Crone (2003) power imbalances in a dependent relationship have negative connotations making them one-sided which disadvantages the more vulnerable party and affects the relationship and creates a barrier to collaboration. This imbalance may result from a number of factors such as the high cost of switching to other business partners, high information asymmetry between counterparts, and lack of competitive options, as well as specialized knowledge (Léger et al., 2006). Projects are temporary and needs and requirements vary from project to project, maintaining short term project based relationships (Bankvall et al., 2010, Cox and Ireland, 2002, Cox, 2004). Building long-term relationships with sub-contractors and suppliers would be difficult if the supply chain partners constantly change from project to project. In project environment, contractual commitments between contractor and supplier are based on legal commitments rather than

cooperative values (Walker, 2015) implying that mutual benefits and trust could be a low priority. It could well be considered that a successful project emerges from a collaborative environment rather than a dependency perspective, however the selection of the right subcontractor, not only with the appropriate skill set but also with a tendency to want to collaborate, is also necessary (Fewings, 2013, Aaltonen and Kujala, 2010).

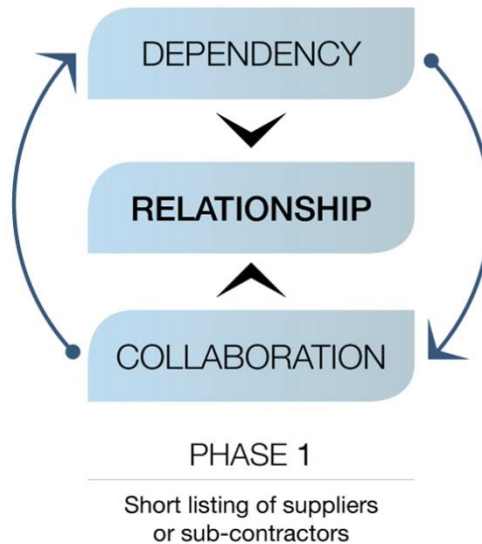
In construction, there is a distinction between organisational strategic partnering and project based short-term partnering, in that a strategic partnership is intended to last for significant periods of time and run over into several projects seeking to make long-term gains, while project relationships are project specific and focus on short-term benefits (Beach et al., 2005). Watson (2001a) suggests that supply chain fragmentation can occur if the interdependencies between the actors are not strong and then there would be a push towards maintaining a high level of independence between actors within the supply chain that could undermine the integrity of the supply chain, suggesting that when buyer/supplier interdependency is high, the probability of supply chain collaboration is high. However in the case where there is buyer dominance or there is supplier dominance, then a separation and disintegration of the relationship occurs due to an imbalance of power. Research by Cox, Sanderson, and Watson (2001a) on these boundaries/interfaces concluded that the success or failure can be primarily linked to the complexity of the power exchange underpinning the supply network relationships, adding that it is the nature of the power exchange that actually defines the real commercial interests of buyers and suppliers and determines whether they manage their direct and indirect relationships with others in their supply network. Hence, in the construction supply chain for a relationship to be considered, there must be a project based need for a collaborative agreement or a mutual dependency between actors that drives them together.

This gives rise to a proposition that

Proposition 1:- *Within a project, dependency and collaboration directly affect the relationship between actors and are inversely related to each other. Implying that the greater the focus on the dependency for the resource the*

less emphases is placed on the need to collaboration and develop a relationship (Figure 10).

Figure 10: Collaboration, Dependency Model



2.14.4 Trust and Price

A great deal of literature has pointed to the importance of trust as a facilitator of positive relationships among project stakeholders (Pinto et al., 2008) and it has become a key area of research within the construction management segment (McDermott et al., 2005, Khalfan et al., 2010, Segerstedt et al., 2010a, Jiang et al., 2012). Trust is seen as an essential ingredient to the improvement of inter-organisational relationships between principal actors in project development, such as contractors, owners, and suppliers (Pinto et al., 2009). Project needs and requirements vary from project to project, so relationships within the construction industry are generally considered short term and based on a project-by-project basis, (Bankvall et al., 2010, Cox and Ireland, 2002, Love et al., 2004). Building long-term relationships that are based on trust with sub-contractors and suppliers would be difficult if the supply chain constantly changes from project to project so developing trusting relationships become a low priority as actors lack the time to engage in

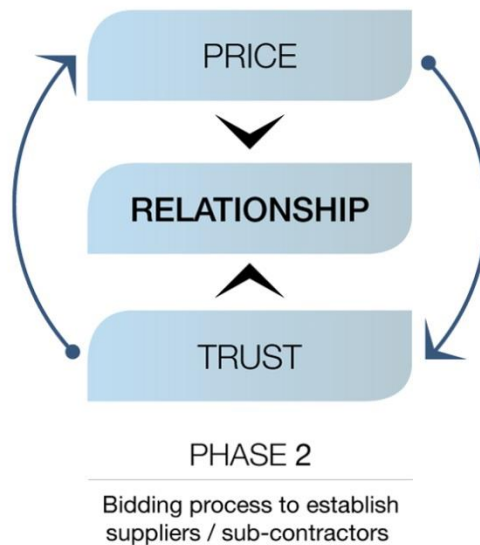
lengthy interactions that contribute to the development of enduring trusting relationships (Jiang et al., 2010).

Therefore while trust has been identified as a determining factor to bring about reduced cost of negotiation, decreased monitoring costs, and increased possibility for attaining mutually beneficial agreements (Khalfan et al., 2007) tender price is still the most significant parameter used in bid evaluation in construction (Eriksson et al., 2008). Companies still rely heavily on formal contracts for governance even though there is a project dependency structure that requires both parties to work together to deliver agreed outcomes (Jiang et al., 2012). Research by Hartmann and Caerteling (2010) found that the main contractors are not willing to compromise on price and will tend to favour a lower price from an unknown contractor rather than a higher bid from a known contractor where there is an existing relationship. So a price based contractor or supplier selection would indicate that there is little credence given to a contractor's financial soundness, management capabilities, and technical expertise during the tender evaluation (Wong et al., 2001). This creates what appears to be a conundrum, as on one hand adversarial relations and mistrusts emerge from competitive bidding, while on the other hand, long-term relationships that may create trust among project participants, could be perceived as preventing the main contractor from taking advantage of favourable offers (Cheung, 2009, Hartmann and Caerteling, 2010, Wong et al., 2005).

Even though principal contractors were considered as cognisant of the benefits of trust between partners, they allowed bidding by new sub-contractors to ensure that incumbent sub-contractors confirmed with market-conforming bids (Hartmann and Caerteling, 2010). By lowering the barrier to entry for new supplier's potentially exerted pressure on incumbent sub-contractors to match what may be considered a market-conforming bid in order to maintain an ongoing relationship. Both Segerstedt and Segerstedt et al., (2010c) and Hartmann and Caerteling (2010) agree that both price and trust cannot be considered as mutually exclusive but are rather an intertwined project procurement mechanism. This may indicate that they are a dichotomy rather than conflicting or mutually exclusive constructs, in particular where procurement is a requirement for a project and this gives rise to the proposition that.

Proposition 2:- *Trust and price are a dichotomy used by the contractor to influence sub-contractors and suppliers to maintain low prices, which directly influences or has an influence on the relationship between two actors (Figure 11)*

Figure 11: Trust, Price Model



2.14.5 Mediated and Non-mediated Power

The research of power is well grounded within the social and political sciences and can be defined as an organisation's ability to influence the intentions and actions of another (Emerson, 1962). Over the years, scholars have attempted to simplify power research through dichotomization of the different bases into categories such as coercive/non-coercive, mediated/non-mediated, each being noted to have a contrasting effect on inter-firm relationships (Maloni and Benton, 2000). Research by Brown et al., (1995) found that the use of mediated power lowered commitment due to resentment over the subordinate situation whereas non-mediated power increases commitment. While Skinner et al., (1992) established that coercive power holds a negative association with cooperation, Maloni and Benton (2000) also point out that the level of conflict between two organisations is associated positively with

mediated power and negatively with non-mediated power. These findings confirm that the effects of power on inter-firm relationships holds direct implications for the supply chain affecting trust, cooperation, commitment, conflict and conflict resolution which are critical to effective supply chain collaboration (Hausman and Johnston, 2010).

The use of mediated power by clients to influence and control other supply chain participants is commonly seen in practice (Handley and Benton, 2012). Supply chain researchers have applied the power literature to the analysis of buyer-supplier relationships and have found that the different bases of power affect inter-firm relationships in significant, yet contrasting ways. Research by Brown et al., (1995) found that use of mediated (e.g. coercive, legal legitimate, reward) power will lower genuine commitment by the target due to resentment over the subordinate situation whereas non-mediated (e.g. expert, referent, legitimate) power increases commitment (Maloni and Benton, 2000). In construction projects, the complexity is considered to increase as many different and sometimes discrepant interests as well as level of relationship need to be considered, in particular when an actor can be an individual or a group with the power to be a threat or a benefit (Olander and Landin, 2005). Handley and Benton (2012) suggests that organisations that are fully cognisant of the negative relational impact of mediated power, will rely more on mediated power when it is perceived that they have numerous qualified and easily accessible alternatives to the current service provider. Alternatively, when buyers view their sourcing options as limited, or at least unattractive, they appear more inclined to rely on non-mediated methods.

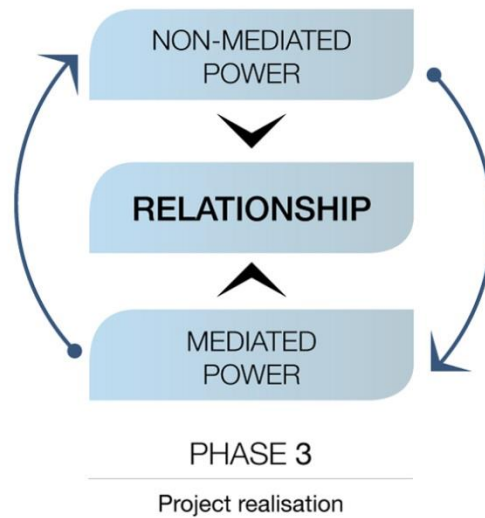
The use of mediated power has also been viewed as an alternative control mechanism relied upon by buyers in conditions where they experience difficulties in effectively deploying contractual and monitoring mechanisms (Handley and Benton, 2012). Researchers have suggested various points of view with some examples from Whitmeyer (2001) who suggests that if the intent is to maximise material gain or profit that power could be measured by the extent to which an actor can affect some social phenomena by differentiating between one's own interest, outcomes and behaviour. While Frazier and Summers (1986) looked at it from a dependency perspective where the power one has over another is directly related to the

dependency between the two. A literature review by Belaya et al., (2009) concluded that while power is a multidimensional concept, they argued that in a supply chain context, measuring power should include aspects of dependency, source of power over the target and power to influence the target. In a construction context, the target could be a sub-contractor, supplier needing work or a client requiring the resources or services to complete a project.

The construction industry has well established processes that seem to have developed into an institutional arrangement between contracting organisations that make reciprocal exchanges under risk-laden contracts. According to Chow et al., (2012) these exchanges are more likely based on fear and/or power rather than trust. However even though these adverse conditions are present, some construction firms manage to overcome these barriers that inhibit the development of the relationship and successfully establish long-term business partnerships (Chow et al., 2012, Wong et al., 2012). The strength of the relationship could well determine the actions of the actors in the supply chain determining the way they act and react, the actual realisation of the project is the third and final phase where decisions are made on who will be part of the project and who will ultimately miss out, therefore the one with the greatest need may hold the power (Watson, 2001) giving rise to the proposition that

Proposition 3: *The decision to use non-mediated or mediated power to determine supplier selection is dependent on the closeness of the relationship and the need for the resources (Figure 12)*

Figure 12: Power Model



2.14.6 Supply Chain Relationship

As mentioned earlier in this document, collaboration has often been used interchangeably with partnering, alliances, joint ventures or networks (Hughes et al., 2012) and has been the subject of varying research often seen as the solution to streamlining the supply chain to deliver a competitive advantage within the desired market space. The construction industry has proven to be a major challenge when trying to find a comparable solution due to the nature of relationships within the context of the industry. Literature has addressed improving performance through, mutual objectives (Walker et al., 2002) trust (Akintoye and Main, 2007, Chen and Paulraj, 2004, Pinto et al., 2009) communication (Wood and Ellis, 2005, Zaghoul and Hartman, 2003) and continuous improvement (Oakland and Marosszeky, 2006) while paying little attention to supplier dependency and pressures of price. This failure to address or identify price pressures has contributed to construction clients not understanding their own demand profile, often finding themselves faced with a highly competitive and adversarial supply market, resulting in becoming prey to opportunistic behaviour from larger construction firms (Ireland, 2004).

The relationship between all supply chain actors at each stage of the project process becomes important, in particular when there is an imbalance of power as this is often considered a major drawback having a negative influence to maintaining long-term relationships and a deterrent to trust (Ferrer et al., 2010). Watson (2001) suggests that when buyer/supplier interdependency is high, the probability of supply chain integration is high, with separation occurring when there is an imbalance of power caused by either buyer or supplier dominance. Research by Cox et al., (2001a) on these boundaries/interfaces concluded that the success or failure can be primarily linked to the complexity of the power exchange underpinning the supply network relationships, adding that it is the nature of the power exchange that actually defines the real commercial interests of buyers and suppliers and determines whether they manage their direct and indirect relationships with others in their supply network. According to both Watson (2001) and Cox et al., (2001b) the level of interdependency between actors can determine the power exchange within a relationship. Imbalances occur within the supply chain when one or a group of actors dominate the supply chain. This separation creates an area of uncertainty where the management of that segment of the supply chain can become difficult (Watson, 2001).

Many cooperative programs across various other industries to improve relationships between buyer and supplier have not reached intended aspirations (Cao and Zhang, 2011, Gadde and Dubois, 2010, MacDuffie, 2005, Zhang et al., 2009). Price pressure has been considered as one of the major causes attributing to this failure, in particular, when buyers impose pressure on their suppliers to continually improve the quality of their delivery or product while at the same time expecting a reduction in cost (Benton and Maloni, 2005, MacDuffie, 2005, MacDuffie and Helper, 2006, Zhang et al., 2009). However what seems to be missing in the selection of the supply chain actors is that the strong focus on price during the tender process can create a competitive environment before the sub-contractor is selected, whereas a trust-based selection process may well constitute a more co-operative environment during the project realisation (Hartmann and Caerteling, 2010). However, Seifert et al., (2012) found that in the retail industry both the supplier and the retailer would prefer to act alone rather than coordinate with the manufacturer when sub-supply chain coordination was suggested. Therefore if contradiction partly explains the popularity

of price-only contracts in practice it may go some way to understanding the peculiarities in the construction supply chain.

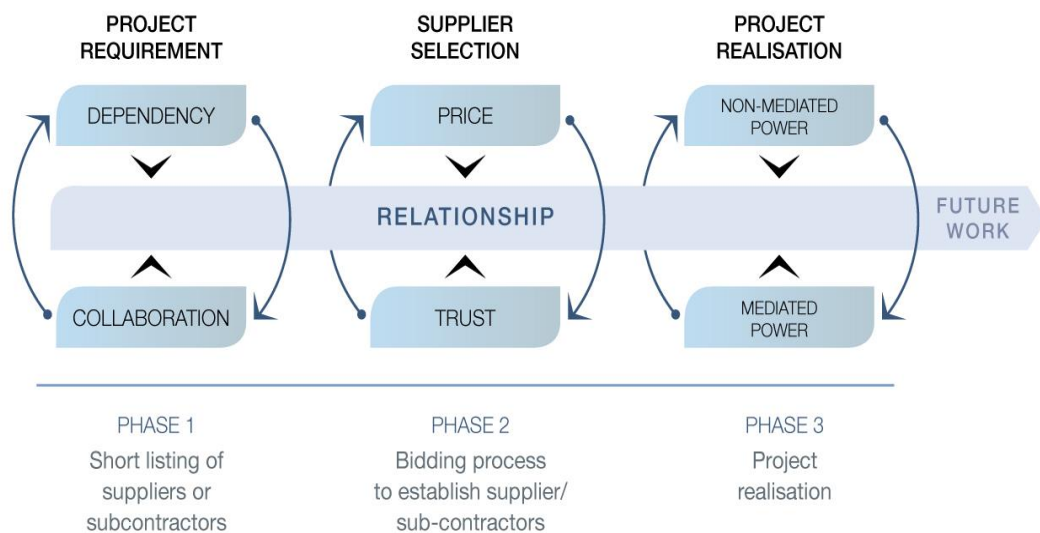
With the realisation that clients, contractors and suppliers need to change their operational structure or they may no longer be able to compete effectively, researchers have argued that managing the supply chain appropriately will ultimately lead to the best solution. Collaboration amongst actors in the project supply chain is considered to be a key factor in gaining a competitive advantage and improving project performance (Ingirige and Sexton, 2006, Love et al., 2004, Zhang et al., 2009). However the use of power to achieve the desired outcome is seen as common place within the supply chain (Handley and Benton, 2012) and is considered a major contributor to the failure of collaborative programs (Zhang et al., 2009). Understanding the relationship at each exchange in the supplier selection process becomes very important as there currently is no understanding how the relationship changes from the selection process to the realisation process.

2.15 Conceptual model

The conceptual model shown in Figure 12 demonstrates that the relationship between actors links the three phases of the project cycle discussed earlier in this chapter (figure 8). This overview provides an insight into the effect that the relationship between actors has on each phase of the selection process and how there is potential for an evolution of the relationship within a construction supply chain on, not only a project level once engagement has occurred, but as a dynamic construct that needs to be considered at each of the three phases where interactions between actors is necessary to facilitate the needs of the project. The relationship however does not necessarily end once the project has been realised. It continues onto the project and then beyond where other projects with similar needs will draw actors together. The model has been designed to provide a deeper understanding of how actors interact and how their interactions affect their relationship and in turn their decision to select one partner over another.

By considering any existing relationships when the selection process commences once the requirements of the project as established, actors begin negotiations into their requirements. The way this interaction is conducted becomes the mainstream to understating the choices that actors make, how they make them and what residual effect remains once the project is completed.

Figure 13: Stages of relationship dynamics in construction project



The model considers that there must be some form of residual relationship between actors beyond a single project only based relationship as suggested by O'Brien et al., (2008). According to Sambasivan et al., (2011) the lack of study in the area of relationship management between actors has resulted in a failure to understand the impact on collaboration and the formation of a collaborative relationship. The need for resources to meet project demands is highlighted by the ever increasing reliance on external supplier (Eriksson et al., 2007, Humphreys et al., 2003, Hatmoko and Scott, 2010). This would indicate that the need for a collaborative relationship to improve the supply chain (Prajogo and Olhager, 2012) may not be a simple choice particularly if resources become the priority, a concept that has had limited research (Donato et al., 2015).

The effect of having to engage in a working relationship based on price rather than trust has also been over looked by researchers (Donato et al., 2015) and this can also

create inhibitors in strengthening a supply chain relationship particularly, if trust is low (Rogers 2005) and selection is based purely on price (Donato et al., 2015). The key drivers to both the project requirements and the supplier selection influence the type of relationship once the project is realised (Figure 13). The model as a whole considers that all three phases are important in realising the dynamics of the relationship and explores the requirements, selection process and dynamics of the relationship that has been largely overlooked (Donato et al., 2015)

2.16 Summary

The literature review has identified that imbalance in dependency between actors within the supply chain creates fragmentation and an imbalance in power that affects performance (Cox, 2001b, Watson, 2001). These imbalances should be identifiable at the beginning of the relationship and with the construction industry being considered as highly fragmented and plagued with performance issues (Bankvall et al., 2010, Cox and Ireland, 2002, Love et al., 2004, Vrijhoef and Koskela, 2000) these imbalances are self-evident. Improving collaboration has been the focal point in much of the literature as a solution to improve supply chain performance in the construction industry (Cheng and Li, 2001, Cheng et al., 2004, Gadde and Dubois, 2010, Ingirige and Sexton, 2006, Love et al., 2004). In construction industry using significant levels of third party suppliers to deliver projects (Eriksson et al., 2007, Humphreys et al., 2003) and dependency on those resources would seem as major concern to supply chain actors. Interactions between actors must in some way affect the relationship not only in the short term, single project context, but in a more long-term-based project to project context.

Hence the relationship between actors and their willingness to collaboration needs to be measured against the individual actor's dependency on acquiring resources and if these are contributing factors to the industry's inability to resolve its long standing poor performance issues. With much of the research within supply chains relationships focusing on dyadic relationships that are already in a buyer supplier relationship (Kähkönen, 2011) there is little work done when it comes to considering the relationship leading up to the engagement of services exchange or the key drivers

that lead up to the selection of partners. Therefore with significant high levels of interaction between actors, the literature review has also looked at possible effects of these interactions though social exchange theory and a number of other factors that affect the relationship, such as cooperation, communication, commitment, trust, compliance, conflict, and conflict resolution (Benton and Maloni, 2005, Brown et al., 1995, Handley and Benton, 2012)n 1995; Cox 2004; Cox et al. 2004; Handley and Benton Jr. 2012; Zhang and Ng 2012). Supply chain theory and supply chain management has also been considered as important contributor to determining how the construction industry compares to other industries. Hence, the research question is

*“How does **dependency** impact on collaboration between the client, contractor and supplier in the construction supply chain?”*

CHAPTER 3

3.0 RESEARCH METHODOLOGY

This chapter aims to outline the reasons and justify the research methodology that will be implemented as the framework of this thesis. The framework will establish the specific details of the most appropriate method for identifying, gathering examining and testing the research data so as to answer the research question. The chapter begins with a discussion on the philosophical paradigm and then continue on to discuss and justify the use of case study methods and why they are employed. The chapter will then define the data analysis techniques to be used and outline strategies used to ensure research credibility and rigor in compiling a qualitative thesis. Using a multi-case study approach, the researcher realises that his extensive experience and knowledge of the industry may influence the outcome of any findings. To mitigate the influence of having worked for 35 years in the construction supply chain a post-positive approach has been selected. The reasons has been be outlined further in this chapter

3.1 Research Paradigms

There are two main types of design in research; qualitative which is a means for exploring and understanding the meaning of what individuals or groups attribute or think of as belonging, as a quality or characteristic to a social or human problem, while quantitative refers to the testing of objective theories by examining the relationship among variables (Creswell, 2009). In a quantitative view, previous studies and theories exist and the variables are known, while in qualitative research, it is of an exploratory nature, variables are unknown and there is a lack of theory so the context becomes important. So according to Creswell (2009) it is the nature and background of the research that typically identifies the type of research methodology that is required and nature of the research questions which requires the researcher to define the boundaries of the world about which the question is asked (Habermas, 1990). In developing the approach, three characteristics of research philosophy are used, which together frame the nature and role of the research inquiry. Ontology

which constitutes knowledge or the reality of a phenomena, epistemology constituting how the knowledge or reality is known and methodology the way in which the reality is interpreted (Creswell, 2009, Guba, 1990, Johnson and Christensen, 2008).

In developing a systematic body of knowledge two principles are used; induction which is associated with qualitative research and deduction which is associated with quantitative (Creswell, 2009). The deductive approach begins with a pre-existing theory which is developed into a hypothesis and then observations are made which confirm the hypothesis. The inductive approach stems from the observation being made and a pattern being identified from which a hypothesis is formed leading to the development of a theory (Bernard, 2013) (Table 9).

Table 9: Assumption and approach of research

Assumption	Quantitative	Qualitative
Ontological	Reality can be objectively defined	Reality is subjective and open to interpretation
Epistemology	Researcher is removed from what is being researched	Researcher interacts with what is being researched
Methodology	Deductive approach	Inductive approach

Adopted from Creswell (2013).

Paradigms like ideologies align our observation so that we are able to make sense of them (Rubin and Babbie, 2008). However different points of view provide for different perceptions and a phenomena or event can be explored and interpreted differently based on the individual's views. Researcher paradigms provide guidelines and standards to ensure there is consistency between researcher's findings by providing a perspective or "a cluster of beliefs and dictates which for scientists within a particular discipline, influence what should be studied, how research should be done, and how results should be interpreted" (Bryman, 2003). It considers the approach to the thinking about and doing the research that encompasses the ideals held by a community of researchers that is based on a set of shared assumptions, concepts, values, and practices (Gravetter and Forzano, 2012, Johnson and Christensen, 2008, Rubin and Babbie, 2008). From a philosophical view point this

refers to a critical examination of the fundamental beliefs and an analysis of the basic concepts of those beliefs, so the researcher needs to have established the philosophical standing before a detailed study can be undertaken (Krauss, 2005, Robson, 2002, Ryan, 2006) (Table 10). As each approach is associated with different traditions in social theory using different research techniques, researchers arrive at an answer for particular questions by using what they perceive to be an appropriate paradigm as a guide to conducting the research (Bryman and Bell, 2011).

Table 10 : Worldview (paradigms)

Worldviews	
Post positivism	Constructivism
<ul style="list-style-type: none"> • Determination • Reductionism • Empirical observation and measurement • Theory verification 	<ul style="list-style-type: none"> • Understanding • Multiple participant meanings • Social and historical construction • Theory generation
Advocacy/Participatory	Pragmatism
<ul style="list-style-type: none"> • Political • Empowerment issue-orientated • Collaborative • Change-orientated 	<ul style="list-style-type: none"> • Consequences of actions • Problem-centred • Pluralistic • Real-world practice oriented

From Creswell (2009)

However while a paradigm may provide a broad view or perspective (Taylor et al., 2009) the definition of a paradigm demonstrates how research can be affected and guided by the selected paradigm (Weaver and Olson, 2006). This research will use a post-positive view this is due to the researcher's background and experience. This in effect is the best approach due the nature of the post-positive approach which takes a scientific approach that follows a series of logical steps while taking into account multiple perspectives from participants rather than a single reality. It is instigated by a theory or conceptual framework that is tested by multiple levels of data analysis (Creswell, 2013). Post-positivists also accept that theories, background, knowledge and values of the researcher can influence what is observed and pursue objectivity by

recognizing the possible effects of biases (Robson, 2002, Ryan, 2006). While constructivism acknowledges the uniqueness of the participant's interpretation of events and how interactions shape our meaning of our world, they have no theory but try to induce one knowing that their own background influences their interpretation (Creswell, 2013). Reich (2009) noted that a constructivist does not look for copies or representations of an outer reality, but perceive humans as observers, participants, and agents who actively generate and transform the patterns through which they construct the realities that fit them.

Advocacy/participatory researchers are looking to create a change by engaging participants as active collaborators in the enquiries (Creswell, 2013) with the aim of creating a political debate and discussion so that change will occur due to the engagement of participants as collaborators (Kemmis and Wilkinson, 1998). While Pragmatism focuses on the outcomes of research rather than the antecedent conditions (Creswell, 2013). There is no commitment to a system of philosophy and will use multiple methods of data collection to conduct the research. This method is salient in practical application. However the epistemology becomes irrelevant (Patton, 2002).

3.2 Research Framework

Within the research framework a researcher can select a form of enquiry that is either quantitative or qualitative or a mixture of both types (Creswell, 2009, Teddlie and Tashakkori, 2011), (Table 11). Quantitative research relies on the collection of numerical data and has its philosophical foundation with the post-positivist paradigm focusing mainly on hypothesis and theory testing. Qualitative research on the other hand focuses on the interpretive paradigm and is used to describe what is being observed (Creswell, 2009, Johnson and Onwuegbuzie, 2004, Weaver and Olson, 2006). Mixed research allows for a combination of both quantitative and qualitative with other paradigm where the exact mix is left up to the researcher to define (Creswell, 2009, Johnson and Onwuegbuzie, 2004).

Table 11: Inquiry approaches

Quantitative	Qualitative	Mixed Methods
<ul style="list-style-type: none">• Experimental designs• Non-experimental designs (surveys)	<ul style="list-style-type: none">• Narrative research• Phenomenology• Ethnographies• Grounded theory study• Case study	<ul style="list-style-type: none">• Sequential• Concurrent• Transformative

From Creswell (2009)

Quantitative strategies encompass complex experiments with many variables which may include equation models that evolve the collective strength of multiple variables. They may provide a numeric description of trends or attitudes or in an experimental context if a specific treatment influences an outcome (Creswell, 2009). Qualitative strategies approach encompasses methodologies such as participatory action research, discourse analysis (Creswell, 2009). The mixed method approach allows the researcher to use a mixture of both approaches to elaborate or expand on findings or provide a more in depth and comprehensive analysis by the merging of the two methods (Creswell, 2009).

3.3 Research in Construction Management/Supply Chain

The field of construction management includes the organisation and management of construction companies, projects, and the professional practices that are engaged in the construction process, this also includes the management of existing buildings and constructed facilities (Raftery et al., 1997). Construction projects are by nature extremely dynamic and complex and habitually consist of multiple interdependent components with multiple interacting feedback processes and non-linear relationships (Love et al., 2002a). They are essentially human enterprises, which cannot be understood solely in terms of technical relations among the various components that are derived from a purely 'scientific' approach that tends to assume that humans tend to follow regular behaviours. So the overarching issue then becomes that of explaining and predicting human behaviour in construction management (Love et al., 2002a). However according to Seymour et al., (1997) empirical investigations into the nature of construction management as a practice,

has not taken place, suggesting that a qualitative approach is the only answer. As the interpretive approach is considered invaluable when there is a need for identifying problems as this approach usually articulates the findings more clearly (Wing et al., 1998).

Construction management researchers have frequently ignored the difference between natural and social sciences (Love et al., 2002a) and an increase in qualitative methods would be advantageous as it has been neglected in the past (Wing et al., 1998). For years positivism and quantitative methods have been increasing in construction management research, leading to a promotion and acceptance of 'natural science' methods to study social phenomena and a concentrated focus on explaining human behaviour (Dainty, 2008). Runeson (1997) argues that Seymour et al., (1997) are incorrect in suggesting that interpretive is the only answer in construction, however concedes that in some cases it is a more appropriate approach in particular when establishing new theories or modifying existing ones. Considering that Construction management is a relatively new field which draws from both the natural and social sciences and does not have established practices like many other domains (Dainty, 2008) it needs to be considered that events studied by social science have thinking participants such as construction managers whereas a natural phenomenon does not. The participants' thinking creates problems that do not have a corresponding set in natural science and the subject matter is no longer confined to facts but also includes the participants' perceptions (Love et al., 2002a).

This indicates that if a post-positivist ontology were solely assumed then the actors being studied would be considered uniform and/or passive agents (Love et al., 2002a). Seymour et al., (1997) suggests that an interpretive approach needs to be implemented so it is possible to make sense of the world that researchers and managers are investigating. This approach yields an investigation that is concerned with the meaning rather than the causality. Wing et al., (1998) agrees with Seymour et al., (1997) idea for better research but disagrees with their approach suggesting that the researchers should choose what they feel is the correct approach based on the question being asked (Creswell, 2009). Therefore the researcher must be able to decide upon the appropriate research methodology and formulate the research strategy in such a way, so that it aligns with the aims and objectives of the study

while, at the same time, ensuring that there is an original contribution to an existing body of knowledge (Panas and Pantouvakis, 2010). In addition, every scholarly endeavour must be conducted within a framework which is directed towards the achievement of validity and reliability for the results and conclusions emerging from the study (Panas and Pantouvakis, 2010, Lucko and Rojas, 2010).

As the foundation of this research is of exploratory nature, where the context is very important due to a lack of theory, its design must then, be exploratory by nature as to provide insight into what is occurring in a particular situation. According to Creswell (2009) this ideology aligns to a qualitative approach as the researcher is seeking the 'why', rather than the 'how' of a phenomena or event (Gravetter and Forzano, 2012, Rubin and Babbie, 2008, Yin, 2009). Adopting a qualitative approach will allow the researcher to interview the actors in a supply chain allowing them to describe what they believe is occurring from their own perspective allowing them to answer questions regarding the nature of the phenomena from their point of view (Leedy and Ormrod, 2013). Therefore, most of the data that will be collected and used is required to assist in the understanding of the evolution and dynamics of Construction Management decision making and other so called 'soft' variables (Love et al., 2002a).

3.4 Research Approach

There are a number of different philosophical approaches to qualitative research which influence the choice of theoretical framework and methodology (Creswell, 2007, Lemanski and Overton, 2011). These philosophies as discussed in section 3.2 (Table 11) provide the lens of how the researcher is going to shape the world he is investigating. Selecting a post positivism lens for this research implies that that, while there is an expectancy that an answer to the question exists, it can be known only imperfectly and probabilistically (Robson, 2002, Ryan, 2006). As a meta-theoretical stance post-positivism broadens the view espoused by positivism and while positivists believe that the researcher and the researched person are independent of each other (Love et al., 2002a, Robson, 2002) the approach to human knowledge is based upon human assumption and that it is unavoidably conjectural. The assertion of these assumptions can be modified or withdrawn in the light of

further investigation and as such the post-positivists accept that theories, background, knowledge and values of the researcher can influence what is observed. However, like positivists, post-positivists pursue objectivity by recognising the possible effects of biases (Robson, 2002, Ryan, 2006). In terms of practice, post-positivist researchers will view inquire as a series of logically related steps, believing in multiple perspectives from participants rather than a single reality (Creswell, 2007).

There are five strategies of inquire that are typical to qualitative research (Creswell, 2007, Creswell, 2009), (Table 12) each of which are specific in the nature of the inquiry and have become more visible since the 1990's (Creswell, 2009).

Table 12: Strategies of inquire

Strategy of Enquiry	Description	Nature of Inquiry
Narrative research	Narrative inquiry uses stories, autobiography, journals, field notes, letters, conversations, interviews, family stories, photos, and life experience to research and understand the way people create meaning in their lives	Requires the researcher to spend considerable time with the participants in order to understand the way meaning is created
Phenomenology	The researcher identifies the essence of human experiences about a phenomenon as described by participants so as to understand the lived experiences.	Looks to develop a composite description of the phenomenon through the interpreting the participants meaning of their lived experience
Ethnographies	Is aimed at exploring cultural phenomena within an intact Cultural Group within their natural setting. The resulting field study reflects the knowledge and the system of meanings in the lives of the cultural group.	Researcher is required to spend considerable time as part of the group in its natural setting
Grounded	Grounded theory is a systematic	There is no preconceived

theory Study	methodology in the social sciences that involves the discovery of theory through the analysis of data. Grounded theory method operates in a reverse fashion from traditional social science research, where the researcher doesn't begin with a hypothesis, but uses the data collected to form a theory.	hypotheses and uses the data collected from participants to formulate a theory
Case Study	A Case study is a descriptive, exploratory or explanatory analysis of a person, group or an event. It is used to explore causation in order to find underlying principles. Case studies may be prospective where a criteria is established and cases fitting that criteria are incorporated or they may be retrospective where the established criteria for selecting cases uses data from historical records for inclusion in the study.	Explores a phenomenon through one or more cases within a bounded system. Cases can be studied in depth or compared with other cases that experience the same phenomenon

Adopted from Creswell (2009); Creswell et al. (2007)

Researchers in the construction field should conduct research, by defining the problem and then applying the most appropriate method chosen from an unconstrained and wide range of available approaches (Raftery et al., 1997). So when the investigation involves the study of a complex environment such as construction projects, the case study approach has been proven to be reliable in capturing the necessary information for the required study (Barrett and Sutrisna, 2009). Even though it remains the most challenging of all social sciences, the case study approach is regarded as an important research strategy used in various fields of study allowing investigators to retain the holistic and meaningful characteristics of real-life events (Barrett and Sutrisna, 2009, Yin, 2009). According to Wing et al., (1998) adopting an interpretive approach can be used to investigate construction management principles. This will provide useful information for identification and conceptualisation of the

problem which subsequently may be theorised and subject to further investigation (Wing et al., 1998). By conducting systematic, critical inquiry into a phenomenon of choice, the researcher can generate understanding to contribute to cumulative public knowledge of the topic (Simons, 2009).

The case study will allow a phenomenon to be explored through one or more cases within a bounded system (Creswell et al., 2007) to provide an in-depth exploration from multiple perspectives of the complexity and uniqueness of a phenomenon with the primary purpose of engendering understanding of the phenomenon (Simons, 2009). It is best adopted when investigating a contemporary phenomenon in an environment where the researcher has little control and the context is important (Yin, 2009). The case study's uniqueness of character also presents a rich opportunity for focused study (Saldaña, 2011). However, like any research methodology, case study has its strengths and limitations (Simons, 2009, Yin, 2009). The common theme here seems to be that while a case study enables in-depth research into a phenomenon to provide a view from many perspectives, it can still be subjective and open to scrutiny due to the small sample that is studied (Simons, 2009). However according to Yin, (2009) the case study approach is still the best method when trying to explain some present circumstance in terms of the how or why some social phenomena works as is the case in this research.

3.5 Research Design

According to Stake (2013) a researcher can select from three types of case studies; intrinsic, instrumental and collective, depending on the nature of the investigation. Intrinsic relates to understanding a particular case rather than building a theory, while instrumental implies that a case is studied to provide insight into an issue or phenomenon or in the refinement of a theory. The collective case study according to Stake (2013) is an extension of the instrumental case study, extended to encompass several cases that are jointly studied to inquire into a phenomenon and are generally a set or a series of cases that are chosen from a larger sample. Testing the validity and reliability of the research becomes an important factor as results must be reliable and a repeat study should yield the same result (Collis and Hussey, 2009). Yin,

(2009) suggests that by using a logical process that encompasses a four test process (Table 13) the research quality and validity is vastly improved.

Table 13: Case study tactic for four design tests

Test	Case Study Tactic	Phase of research in which tactic occurs
Construct validity	Use multiple sources of evidence	Data collection
	Establish chain of evidence	Data collection
	Have key informant review draft case study report	Composition
Internal Validity	Do pattern-matching	Data collection
	Do explanation building	Data collection
	Address rival explanations	Data collection
	Use logic models	Data collection
External Validity	Use theory in single-case studies	Research design
	Used replication logic in multiple case studies	Research design
Reliability	Use case study protocol	Data collection
	Develop case study database	Data collection

Source: Yin, (2009)

3.6 Construct Validity

Construct validity relates to identifying and establishing the correct operational measures for the concepts that are being studied (Yin, 2009). Using multiple sources of evidence allows a convergent line of enquiry to add rigor to the case study, with the most commonly suggested method for validation being triangulation (Creswell, 2007, Stake, 1995, Yin, 2009) as this process will assist in reducing bias in the investigation (Collis and Hussey, 2009). Equally important is the establishment and maintenance of evidence as a chain of evidence provides the reader with the opportunity to follow the case from inception to conclusion (Yin, 2009). The stage of the validation according to Yin, (2009) will allow the informants to review a summary of the draft case study and allow the informants to provide feedback. This

will assist in reducing any bias (Yin, 1981) that could be introduced by using only the researcher's view point giving the research more credibility.

Taylor et al., (2009) suggest that case study research should attempt to achieve depth by including multiple, polar cases and including multiple, analytically similar cases. As the construction industry encompasses a wide range of projects and project types (Segerstedt and Olofsson, 2010) the constants of this research make it impractical to cover all aspects of the industry and as such cases will be selected from the Civil Construction and Commercial Building segment of the industry. Data will be derived from face-to-face interviews, company documents such as tenders and contracts and observations. To establish a chain of evidence, interviews will be recorded and transcribed with the transcripts reviewed by the informant before coding and after the draft report is complete to see if the meaning or interpretation assigned is confirmed by the informants (Ritchie and Lewis, 2003).

3.7 Reliability and Validity

Reliability and validity are terms that are considered more applicable, in qualitative research than credibility and trustworthiness, terms that are frequently adopted for quantitative research (Lincoln and Guba, 1985, Winter, 2000). In the same context there are four key criterion that enhance trustworthiness in quantitative research, which are internal validity, external validity, reliability, and objectivity (Nastasi and Schensul, 2005, Shenton, 2004). While according to Morse et al., (2002) the same four key criteria based on qualitative research that need to be met to ensure reliability are credibility, transferability, dependability and confirmability (Table 14). Adhering to these criteria will ensure that the results are credible, transparent and easily replicated (Lincoln and Guba, 1985, Trochim, 2001). Validity is the degree to which an interpretation accurately represents the social phenomena to which it refers to and can be achieved by triangulation as well as the verification of data by the respondents (Silverman, 2013a). While reliability refers to the extent to which the findings can be replicated, this can be achieved by transparency of the process through outlining of the research processes and data analysis methodology (Silverman, 2013a, Moisander and Valtonen, 2006).

Table 14: Four Criteria of Qualitative Research Trustworthiness

Traditional Criteria	Alternative Criteria	Description
Internal Validity	Credibility	Results of the qualitative research are credible or believable from the perspective of the respondents in the research.
External Validity	Transferability	Results of the qualitative research can be generalised and transferred to other contexts or social settings.
Reliability	Dependability	Results of the qualitative research can be replicated and modified or enhanced in other research contexts.
Objectivity	Confirmability	The extent to which the results of the qualitative research could be confirmed or verified by others.

Adopted from Guba, (1981); Morse et al. (2002); Shenton (2004)

Credibility in the case of this research will be to establish that the findings are aligned with the respondents views and ideas (Yin, 2009) while reliability will be tested by ensuring there is alignment with the researchers' data and the theoretical frameworks that have been developed within this research (Bryman, 2012, Hesse-Biber and Leavy, 2010). This allows two methods of approach to enhance the credibility of the research and the findings in this thesis. As suggested by Yin, (2009) the first important part is the coding process. In this thesis the coding will be used to make a comparative analysis to either support or contradict views in the themes that have emerged during the analysis as well as those that emerged in the literature review that were used to create the conceptual framework (Eisenhardt, 1989). The second part is the validation by respondents in this research, which will add to the credibility (Bryman, 2012) of the findings. This was addressed by the researcher by seeking the opinions of industry experts, respondents and academic colleagues.

As this research has used a multiple case study design, it will be able to satisfy the criteria of replication by measuring the consistency of the findings between cases (Ying et al., 2011). Each case should then demonstrate where there is alignment or non-alignment of the propositions between the case studies (Eisenhardt, 1989). As each case is from a different segment of the construction industry with participants working in different environments, purposive sampling was used to ensure that the information obtained came from information-rich cases that could be examined in depth (Cavana et al., 2001). Multiple cases would also go some way in addressing the question of transferability as it considers the application of findings in several contexts (Winter, 2000, Yin, 2009). Specifically as the thematic analysis used leads to a rich in depth description of the findings that commonly deal with small purposive selected samples, while ensuring that the findings are solid enough to be applied in other areas (Bryman, 2012). The layout of the processes used to collect, code and interpret data, will in themselves address dependability by allowing ease of replication to arrive at the same result (Yin, 2009).

3.7.1 Internal Validity

Internal validity seeks to establish a casual relationship, whereby certain conditions are believed to lead to others conditions as distinguished from spurious relationships and is suited to explanatory or casual studies only and not for descriptive or exploratory studies (Yin, 2009). As this is considered an exploratory study, internal validity was seen as an essential criterion.

3.7.2 External Validity

External validity encompasses defining the domain to which the findings of a particular study can be generalised to a theoretical proposition rather than a population, so that the researcher's goal is to extend theory rather than representing a sample (Yin, 2009). Thus a case study is chosen for its theoretical contribution rather than its statistical value allowing for experimental research and the ability to generalise findings from a specific setting and small group to a broad range setting and people (Neuman, 2012). Case may be selected in order to replicate previous case studies, extend an emergent theory or to enquire into a theoretical position in any

case however the selection should be polar in nature (Lindgreen, 2001) rather than a representative random sample (Eisenhardt, 1989). The theory in this research will be tested through replication which will enhance both construct and external validity.

3.7.3 Reliability

Reliability is based on demonstrating that the operation of a study such as the data collection procedure can be repeated with the same results (Neuman, 2012, Riege, 2003, Yin, 2009). However, the claim that the concept of replication in qualitative research is naive given the likely complexity of the phenomena being studied and the inevitable impact of context and as such relativity in quantitative research is avoided and researchers discuss issues using terms and concepts that are felt to have greater resonance with goals and values (Ritchie and Lewis, 2003). Irrespective of how well the research can or cannot be replicated, the approach still requires the formulation of procedure for data collection to reduce the possibility of missing important data, determining what documents must be analysed, what observations need to be made and identify the type of people to be interviewed (Yin, 1981).

These procedures can be set out and implemented by establishing a case study protocol to ensure that the researcher process and procedures can be followed (Yin, 2009). The object of the case study protocol is the establishment of a uniform research methodology on conducting the case studies, the data collection procedures and the reporting format (Neuman, 2012, Riege, 2003, Yin, 2009).

3.8 Research Credibility

Research credibility refers to the validity of the argument which can be justified when the theoretical claims are supported with evidence from informants (Silverman, 2013a, Tracy, 2010). Input from the participants can confirm if interpretive analyses aligns with their view of reality thus making the analysis plausible and persuasive (Tracy, 2010). Lincoln and Guba, (1985) have argued that ensuring credibility is a critical factor in establishing trustworthiness and stimulate confidence that they have accurately recorded the phenomena being researched. Therefore the reliability and validity of the research findings are important concepts to ensure that rigor and

trustworthiness is achieved in the research (Morse et al., 2002, Rossman and Rallis, 2012). A good ethnography that expresses a reality that seems true and provides “a credible account of a cultural, social, individual, or communal sense of the ‘real’ (Richardson, 2000 p. 254) are all factors that contribute to verifying the findings, conducting researchers within a post-positive context endeavour to “offer causal explanations of social, behavioural, and physical phenomena” (Schwandt, 2000 p. 191).

The post-positive paradigm is considered problematic particularly as the researchers own personality can create bias (Grubs and Piantanida, 2010). This is due to what may be considered as truth in a qualitative research is relative and based on the subjectivity of the researcher’s perspectives (Kuhn, 2012). Triangulation assumes that if two or more sources of data converge on the same conclusion then the conclusion becomes more credible (Denzin, 1978, Nawrin and Mongkolsirikiet, 2012) as the objective is to capture what is really happening utilising more than one source (Grubs and Piantanida, 2010). With the focus on people as data and collection instruments, the emphasis is on an alternative basis for justifying logic and defining the results as a negotiated outcome of the investigator and participants (McKelvey, 2002). Member reflections may take the form of member checks, member validation that refer to methods of “taking findings back to the field and determining whether the participants recognise them as true or accurate” (Lindlof and Taylor, 2010 p. 242). Therefore multiple types of data, researcher viewpoints, and the methods of analysis allow the questions to be analysed with increased scope to provide a deeper and richer understanding and delivering consistent interpretation (Tracy, 2010).

Understanding that not all knowledge is gained from one method is considered a strength of post-positivism and using multiple sources in reaching a goal are common place (Hutton and Perkins, 2008). Triangulation is used extensively in post-positivist research with the aim of implementing several measures into the process (Nawrin and Mongkolsirikiet, 2012). While it is considered a post-positive stance to adopt the position that there is on single truth (Hutton and Perkins, 2008) the approach to this research must be guided by the understanding that each actor will view their part of the supply chain in a different light to another actor depending on where they sit in the supply chain (Christopher, 2005). This means that there is a

different understanding or perception of the supply chain by the actors from upstream to downstream and as such each will hold a different view of their world. Observing the relationships between actors in the supply chain in multiple ways or using triangulation may lead to more than one result as interaction in different parts of the supply chain are explored, however this is not a hindrance, but a view of being able to make better choices to discover the best truth for a particular event or phenomena (Kim et al., 2010). As Simons (2009) points out that, while the use of triangulation of data does not necessarily guarantee the validity of the findings, it does contribute to its credibility.

3.9 Data Collection

Qualitative research encompasses different research methods that are available to collect and analyse data, where the choice of research methodology generally provides the guidelines in which the researcher can collect data. Specific methods in research also imply different skills, assumptions and research practices are employed (Creswell et al., 2007). According to Walsham (2006) interviews form part of an interpretive study, enabling a researcher to carry out data collection without any direct involvement with the participants or their function in the field. Semi-structured open interview questions are used when the data to be collected requires the participants to convey their views and how they interpret or make sense of what is relevant to them (Kvale and Brinkmann, 2009, Leedy and Ormrod, 2013). This method of data collection will enable the researcher to have the flexibility to probe deeper into contextual issues (Creswell et al., 2007) while providing participants with the ability to convey their point of view in their own words (Silverman, 2013a). According to Guba et al., (2011) the open format will allow emerging questions and issues to be explored while perusing the specific information through the initial guideline questions, while also advocating using specific propositions in the case study to increase the limits on scope and increase the feasibility of completing the research (Baxter and Jack, 2008).

Selecting to collect data by conducting face-to-face, one-on-one interviews will, according to Daft and Lengel (1986) provide immediate feedback and interpretation

of meaning that can be confirmed, while at the same time response can provide in depth insights. Creswell (2009) suggests if the researcher maintains a focus on the objective and allows the interview to flow by using open-ended ‘conversational’ questions, the interview will be more fluid as information provided will be related to how individuals conceive their world and how they make sense of it (Leedy and Ormrod, 2013). Preparing one or two central questions and a further five to seven sub-questions, will enable the researcher to narrow the focus, however leaving the questioning open by beginning with ‘what’ or ‘how’ will convey an open or emerging design, so that the questions will evolve and change during the study in a manner consistent with the assumptions of emerging design (Creswell, 2009). Stake (2013) points out that in a case study, the same questions are seldom asked of different participants and that each interviewee will have a different experience and different story to tell so the objective is to attain the description of an episode. This will allow themes and patterns to develop that can be analysed and interpreted by thematic analysis which can be used to reflect reality, and to unpick or unravel the surface of ‘reality’ (Willig, 2001). Therefore an initial set of questions relating to collaboration, power and performance have been constructed as a starting point in order to ascertain the participant’s view of the situation, while targeting the specific constructs required to answer the question by determining the relationship between the three constructs (Appendix 1 interview questions).

There are no set requirements on the number of cases to be studied when adopting a case study methodology and according to (Romano, 1989) the decision on how cases are required should be left to the researcher. However Eisenhardt (1989) recommends that somewhere between four and ten is a practical number as long as the information gathered reaches ‘theoretical saturation’ (Eisenhardt, 1989) or in other words starts to become repetitive. To ensure a representation from across the various facets of construction, four cases consisting of five actors from each supply chain were chosen to participate in face-to-face, one-on-one interviews. However their real names are not used to protect the privacy of the participants (Table 15).

Table 15: Case study participants (see appendix 3)

Participant	Age	Gender	Type of business	Years in Industry	No of Employees
Trevor Watson Supply chain 1-1	54	M	Residential Land Developer, works mainly in outer suburbs, developing new housing estates for the domestic market	28	5
Tim Curry Supply chain 1-2	42	M	Construction Manager, principal contractor provides civil construction equipment and labour	10	18
Brian Roberts Supply chain 1-3	51	M	Manager, logistics and transport services, provides bulk earthmoving and excavation services to principle contractors	17	11
James Holden Supply chain 1-4	48	M	Owner operator, owns one piece of equipment and will work for either principal contractor or logistics services	23	0
Rhys Myers Supply chain 1-5	37	M	State manager for material (Quarry product) delivers to broad cross-section of clients that range from principal contractor to owner operator	8	26
John Sexton Supply chain 2-1	45	M	Commercial Medium Rise Builder, develops property for commercial use, generally medium side, mixed office, light industrial factories	22	25
Richard Wilcox Supply chain 2-2	38	M	Project Manager for principal contractor, builder generally medium rise commercial, will undertake residential is necessary	16	35
Martin Davidson Supply chain 2-3	35	M	Project Manager, small to medium trade provider, skilled workers, plumbing and other related services to commercial building industry	9	7
Albert Gould Supply chain 2-4	42	M	Owner operator, small business provides trade services to building trade (acts as an agent for other sub-contractors). Will engage additional labour or	18	3

			equipment if required to meet client needs		
Simon Falls Supply chain 2-5	42	M	Sole trader, provides trade services to building industry, will work commercial or residential. Has equipment that is for his own use and will as a rule not hire it out for others to use	24	0
Neville Bishop Supply chain 3-1	58	M	Principal Architect representing small to medium rise, residential builder, major refurbishment and renovations (Acts on behalf of government agency)	35	4
Paul Hudson Supply chain 3-2	33	M	Principal contractor working in residential, medium rise buildings provides management services as well as some trades	12	42
Frank Nixon Supply chain 3-3	28	F	Operations manager providing specialist construing service to building industry in particular renovations and refurbishment, core business is contaminated material and asbestos removal services.	5	17
Philip Johnstone Supply Chain 3-4	31	M	Transport Manager, delivering building products such as precast panels, equipment and fixed crane components. Specific logistics business tailored to service the construction industry will deliver to other construction organisations in different segments	8	7
Mick Bryant Supply chain 3-5	36	M	General Manager building products, specific to building, engages owner operators within the transport industry to deliver products. Produces own product.	11	85
Greg Osborne Supply chain 4-1	42	M	Civil contractor undertaking major civil works throughout Victoria. Works generally on infrastructure projects such as highways, freeways, major pipeline and wetlands. Will develop land for residential or commercial use	19	115

			but must be a larger development		
William Dennison Supply chain 4-2	39	M	Principal contractor who undertakes major works on significant projects. Generally carries out earthworks for major freeways of highway as a sub-contractor to the principal contractor or developer. Has own equipment however does engage sub-contract operators to run own plant.	21	15
Donald Westcott Supply chain 4-3	52	M	Construction manager who provides serves such as concrete works, asphalt and drainage works to major projects. Uses own labour, not resourced enough to take on more than two projects at a time, as a rule will not use sub-contract labour, however will hire operated equipment if required.	35	9
Robert Mitchell Supply chain 4-4	27	M	Sole trader with one machine hires out his services to concreters and drainers who require earthworks for concrete pads, pipes or working in confined areas. Generally works on civil sites, however has been engaged on building where he carries out similar duties. Does not hire out his machine only, goes out as driver machine combination	5	0
Alex Sidon Supply chain 4-5	59	M	Director and principal partner supplying pipes and other construction products to the civil contrition industry. Has factory work shop and produces standard pipe fixtures and fitting to the building industry.	32	43

Each supply chain consists of one client, a principal contractor, major supplier/sub-contractor, small operator and a material supplier (Table 16). The actors are listed according to their position in the supply chain from 1 to 5, where 1 is the downstream point and 5 the upstream point. Each actor selected to participate was chosen due to their interaction within the supply chain and positions of authority which enabled them to make decisions on pricing, allocating and carrying out works. The supply chains were classed as listed in Table 19 and were selected to represent a cross section of the industry.

Table 16: Case study supply chains

Supply Chain Case Study	Main Works	Number of annual projects
1	Multi lot, residential subdivisions, in Victoria and Queensland.	Exceeds 30
2	Commercial and residential apartments, Melbourne Area up to 20 storey	Maximum of 2
3	Medium residential apartments, up to 5 storey, including multi storey refurbishments	Maximum of 5
4	Small scale civil infrastructure project, including car parks, landscaping and reclamation of land	Up to 10 per year

Information was collected from the 20 participants by using audio recording of the conversation, whereby the audio recordings were transcribed and ratified by the interviewee before the coding and analysis process. Written notes were also taken to provide prompts to further questions as well as being used as a media for reflection on what was transpiring during the interview, noting such things as body language, voice tone and facial expressions. This enabled the researcher to reflect on the experiences of each interview (Boud et al., 2013, Schön, 1987) enabling the interviewer to review and evaluate the experience of each interview and modify questions to target the existing propositions or address other issues that may arise from a previous interview process. As suggested by Creswell (2013) and Stake (1995) the style of the interview changed with each interviewee and as a result questions were modified slightly. However all

questions were still derivative of those shown in Appendix 1 Interview Questions interview questions and only changed to capture observations made when discussing supply chain relationships with the actors, allowing the researcher to formulate questions about the nature of a phenomenon with the intention of describing and understating the phenomena from the participant's point of view (Leedy and Ormrod, 2013).

While direct observation became very important during the interview process (Walsham, 2006) documents such as contracts, instruments of agreement and works orders were collected to confirm formal relationship arrangements between supply chain actors. The additional information made it possible to compare different types of data such as the observations, interviews and documents to validate the respondent's answers (Silverman, 2013b). Using these different forms of data made it possible to confirm and improve clarity by triangulation (Silverman, 2013a, Moisander and Valtonen, 2006, Ritchie and Lewis, 2003).

3.9.1 Field Notes

According to Thomas (2004) field notes are a descriptive record of conversations and events specifically used to record first impressions and initial thought during the course of the interview (Bryman and Bell, 2011). As this was a process that was also recommended by (Myers, 2013) that should be used in addition to the use of recording devices, field notes were taken throughout the interview process which the researcher filed and catalogued as part of the analysis process (Appendix 2 copy of field notes). The use of field notes also provided the researcher with a source of thoughts and ideas that emerged as the interviews unfolded, allowing the researcher to make additional commentary that might further aid in the analysis of the data (Myers, 2013) and provide a basis for identifying emerging themes from this initial data collection process (Bryman, 2012). The importance of this data derived from these field notes cannot be overlooked as it formed part of the context of what is was considered real by respondents and the researcher (Flick, 2009).

3.9.2 Arranging Interviews

All prospective participants were contacted by phone and invited to participate in this research. Once they had agreed, an email was sent with a formal invitation letter that explained the background of the research undertaken (Appendix 4 letter of invitation) in plain English along with contact details of the researcher. Upon acceptance to participate in an interview, further information was then sent to the participant, which consisted of the sample questions as outlined in Appendix 1 Interview questions, showing a consent form for the participants (Appendix 5 consent form) which would require their signature before the commencement of the interview. There was also several issues that were discussed with the participant before arranging the interview session such as time, location that were intrinsic to the interview.

As most participants were cognisant of the fact that the interview would take anything from 45 minutes to an hour, the date and time needed to be selected would have to be appropriate and flexible enough to minimise the impact on the participant and still allow the researcher the opportunity to conduct the interview in a relaxed and comfortable manner, without fear that the participant would refuse to continue or ask to be excluded from the research. Fortunately industry shutdown days proved to be convenient and where possible utilised for the majority of the interviews, which were normally conducted in the participant's office or place of work. However as industry shut down days occurred twice a month this meant that only a few interviews could be scheduled each on each day, creating a considerable time span of seven months between the first and last interview.

3.9.3 Document Collection

Documentation is considered an important element to collaborate and augment evidence in case studies (Yin, 2009). However while they do not explicitly answer the research question (Yin, 2009) they can provide an insight into the organisations culture and values (Simons, 2009). The benefits derived from the collection of documents according to (Yin, 2009 p. 102) are

- Stable - and can be reviewed repeatedly.

- Unobtrusive - not created as a result of the case study.
- Exact – contains exact names, references and details of an event.
- Broad coverage – long span of time, many events, and many settings.

The expectations are that this would assist the researcher in attaining information on how power relations are created or transformed during the project cycle. Having access to these documents would greatly assist the researcher to validate and verify the selection process and the exchanges that occur during the realisation of the project.

Documents such as tenders, quotes, terms and conditions and work place agreements were obtained by the researcher from participants who were willing to provide the information. Not all participants provided documents, however there were sufficient examples collected to provide a good cross-section of the four supply chains. The documents received were validated for currency and examined for their potential contribution to the research. Each document was considered in terms of relevance, authenticity, easy to understand, could be analysed and could be used in the research (Scott 2006).

3.9.4 Ethics

One of the most important aspects of conducting research and reporting on the findings of the study are the ethical and moral issues that are attached to the responsibilities of the researcher (Myers, 2013). Ethics are the basic principles of how we should behave in relation to other people with whom we interact (Simons, 2009). Appropriate practices in an ethical context entails the protection the rights of the individual respondents (Payne and Payne, 2004) that have participated in this research. The ethical consideration given to respondents was that their input would be anonymous and that any comments made would only be used in the context of this research. The following four points were adopted from Simons (2009) to ensure that the all respondents were informed of the process and showed how the information would be used (Table 17).

Table 17: Ethical conduct

Ethical Issues	Research Approach
Privacy of respondent	All interviews will be confidential with all participants remaining anonymous
Identification of organisation	Tags and pseudonyms will be used to identify participants to reduce the possibility of identification
Consent to use data collected	Permission will be sought from participants to use their transcripts once they have read and approved the content
Intended use of data	The purpose and intent of the study is made clear before commencement

Adopted from Simons (2009)

However while informed consent is sought from all respondents, there is also a need to maintain a duty of care in terms of information that may be sensitive or damaging (Ellis, 2007, Langdridge, 2007) in particular if respondents find certain topics sensitive to discuss (Langdridge, 2007).

As part of the Victoria University requirements when conducting research that requires the input of participants, the research has certain obligations and guidelines that need to be adhered to. These obligations and guidelines govern the moral principles and values of planning, conducting and reporting on the research results. Maintaining integrity and respect for participant's anonymity is essential and therefore strong ethical consideration was given before commencing the research (Myers, 2013). An application for ethical approval for the research was submitted to the Victoria University Ethics committee on the 17th of April 2013 and approved by the 6th of May 2013 for a period of two years (Appendix 7 ethics approval). This process ensures that the moral principles and values were not compromised and that the respect and rights of the individual respondents was protected (Payne and Payne, 2004). This research adhered to the terms and conditions as stipulated by the terms and conditions as set out in the Victoria Universities ethics guide for the research.

3.9.5 The Interview Process

With interviews consisting of open-ended questions, the general view was to enable the participant to provide an insight into the research questions. However as there is always the potential issues of bias, inaccurate recollections or an inability to articulate soundly (Yin, 2009) field notes will assist. As well as field notes being taken as mentioned previously, other information such as documentation were asked for in order to validate comments and process. Most of the participants provided samples of contractual agreements, quotes and terms and conditions of engagement that could be used for triangulation of data (Appendix 6 Sample documents from participants) with questions designed to encourage the respondents to share their opinions and comments on factors that influence their judgment when selecting suppliers or providers for a specific project or task.

Identical questions were asked of all participants, with all questions being selected at random from the outline in Appendix 1 interview questions and were augmented by either pre-determined or emergent questions (Richards and Morse, 2012). This methodology enabled the researcher to discuss events beyond the interview guide to enable the attainment of in-depth data and identify emergent themes. Most of the interviews averaged at around 55 minutes, with the maximum being 90 minutes and the shortest 40 minutes. All interviews were recorded using an MP3 digital recorder and this enabled the conversation to be stored and sent to a professional service for transcribing. Once the transcripts were completed, they were returned to the participant for ratification and then the subsequent use in the analysis phase of the research. With the researcher having both transcripts and recordings, this provided an opportunity to review the data multiple times in order to establish the patterns and themes that will become categories for analysis (Rice and Ezzy, 1999) to be used in the NVivo software.

3.9.6 Document Analysis

According to Eriksson and Kovalainen (2008) an analysis based on documentation provides relevant data in qualitative research. Relevant documents such as contracts, terms and conditions, provision for the hire of resources and supply and delivery of materials would be viewed as important tools which could be used by the researcher to

assist in the interpretation of events and exchanges that could deliver further insight and understanding of the participants and how they engage (Myers, 2013, Yin, 2009).

Similar to other analytical methods in qualitative research, the analysis of documents requires that data is examined and then interpreted in order to derive a meaning and gain understanding (Bowen, 2009). This establishes credibility through triangulation by attempting to find ‘a confluence of evidence that breeds credibility’ (Eisner, 1991 p. 110). According to Bowen (2009) documents can serve a variety of purposes that can assist in enhancing and contributing to the research outcomes. These are,

1. Provide data in the context with which research participants operate
2. Provide insight into questions that need to be answered
3. Provide supplement research data proving insight and adding to the knowledge base
4. Provide a means for tracking change and development
5. Provide a way to verify findings or corroborate evidence from other sources.

The thematic and contents analysis of documents was carried out to determine if there was any consistency in the expressed views of the participants and the actual process outlined in the documentation.

3.9.7 Transcribing Data

Transcription of recorded data refers to the process of converting voice to text by listing to the recorded information and then typing into a word document (Bernard and Ryan, 2009). This is considered an essential process in qualitative research (Maykut et al., 1994) as it serves to prepare the data for later analysis, in this research it converts it to a format that can be input into NVivo software. The process of transcription is also an essential first step (Bernard and Ryan, 2009) in making initial judgments from the data as well as enabling the researcher to recall or identify important behaviours of participants that may have been overlooked during the interview process (Maykut et al., 1994). While there are benefits in the transcribing being carried out by the researcher such as developing a greater familiarity (Maykut et al., 1994) with the work, it is time consuming (Bryman and Bell, 2011). The option of sending out the files to be

transcribed by a professional service was selected. This however did not create a disadvantage as the research was able to listen to the audio data while reading the transcripts to ensure accuracy and gave the research an opportunity to highlight themes and develop codes for later analysis (Bailey, 2008).

3.10 Summary

This chapter established the context of the research and defined the parameter under which it will be conducted and controlled. It also covered the establishment of the content and context of participants and the selection methodology of the research. The chapter discussed the importance of maintaining rigorous methodology in conducting the research in order to explore the construction supply chain and its dependency on resources. A case study approach was outlined in order to give clarity and direction to the research and an outline of how participants were selected and enlisted to participate in the interview process.

Data was collected during semi-structured interviews and field notes were taken to further guide the researcher during the analysis process. All recorded interviews were then transcribed and prepared for coding to enable thematic analysis and content analysis using NVivo software.

CHAPTER 4

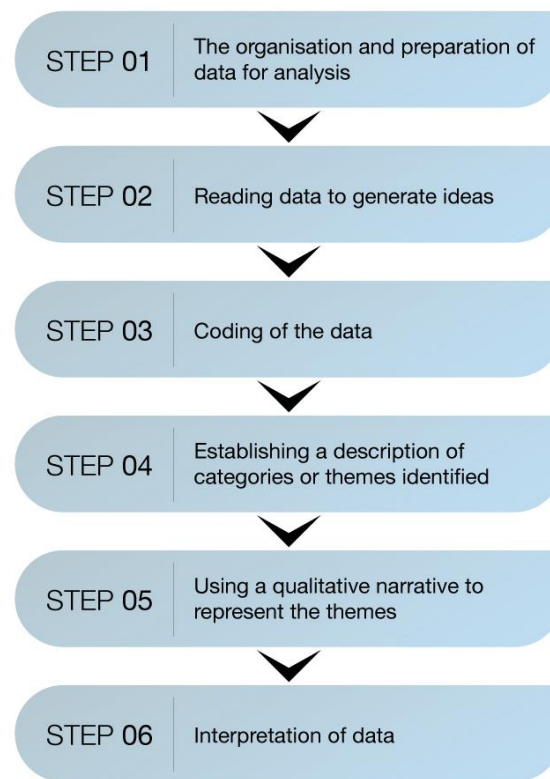
4.0 CODING AND CATEGORISING

4.1 Introduction

The method of processing data can be managed in many forms, reconstructing the data into a meaning and recognisable reality so as to interpret the meaning becomes the ultimate objective (Maykut et al., 1994, Creswell, 2009). King and Horrocks (2010) suggested that a researcher has two options when undertaking the analysis of qualitative data that has been derived from interview transcripts and was to either focus on the language used or content in what was said. In this research I analysed the content of the data in order to investigate the meaning of participants' words and behaviours (Maykut et al., 1994) so as to make sense of the data (Creswell, 2009). As the research is focused on understanding the participant's point of view, the data was analysed as suggested by Creswell (2009) using the suggested six step method (Figure 14) for the analysis of qualitative data. This will enable the researcher to interpret the data choosing the most relevant information and converting it into meaningful information enabling the understanding of the phenomenon being studied.

Using Tesch (2013) eight step methodology for the coding, once the interview transcripts and documents were prepared for coding and analysis, the transcripts were read several times to ensure familiarity with the content. This enabled the researcher to identify data that answered the research question and to establish a base for the data coding. Using the paper based approach enabled the researcher more flexibility and to develop a closer affinity with the data so as to generate preliminary codes and ideas (Flick, 2009). The identified codes set the foundation for the transcripts that were uploaded into the NVivo software to facilitate the coding process (Creswell, 2009) and ensure rigour in the analysis process (Bazeley and Jackson, 2013).

Figure 14: The Organisation and Preparation of Qualitative Data Analysis



Source: Adapted from Creswell (2009)

4.2 Coding and Categorising

According to Creswell, (2009) coding is the process of organising material into segments of text before bringing meaning to the information and when categorised it assists qualitative researchers to make sense of the data (Simons, 2009). In a case study approach, a detailed description of the setting or individuals is made followed by an analysis of the data to create themes or issues (Creswell, 2009, Stake, 1995, Saldaña, 2011). The number of codes or themes will vary according to the nature of the data the method selected for analysis and the amount details the researcher requires (Saldaña, 2011). However Creswell (2007) recommends that no more that 25 to 30 codes are used as this should be enough to derive five or six conclusions from and formulate a case study narrative, while (Saldaña, 2012) suggests that keeping the number of themes and concepts to minimum will maintain a coherent analysis. Saldaña (2012) suggests that codes can be developed and used in either of the following two ways or a combination of both. Firstly before analysis, so that the data is categorised into predetermined codes

or by allowing the codes to emerge based on the information that is collected. As there is a conceptual framework in place, it would seem appropriate to establish at least a set of codes in line with the research (Simons, 2009, Creswell, 2013).

Using the data and the conceptual framework as the point of origin, the subsequent six (6) primary codes were identified as being important to the research and were an apparent starting point for analysing the data. This is due to the nature of the relationship as set out in the conceptual model and their relationship to each other and the propositions as outlined in Chapter 2. The conceptual model also suggests that the relationship between the actors within the supply chain is influenced at each stage of the procurement process, highlighting how the interaction can affect the outcome and change the relationship at any of the 3 stages of the procurement process. Each of the codes selected will relate to part of the model and the formation of the proportions which demonstrate that they contribute directly to the relationship between actors in different ways.

Table 18: Primary codes and themes

Primary Themes
Dependency (on Resources)
Collaboration
Price
Trust
Power (Mediated – Non-Mediated)
Partner selection

4.3 Emerging Themes and Codes

To expand on the codes in Table 19, the transcripts were examined in order to determine what the participants were saying. This was compared to the literature review in Chapter 2 to determine if there were any similarities or differences that could be identified and used to develop a starting point as an identifier to further codes or sub-codes and by drawing on similarities or differences. There is an understanding that collaboration with suppliers, customers and, in some cases even competitors, to co-create solutions to problems has become increasingly important to an organisation's business strategy and

basis of competitive advantage (Vargo and Lusch, 2004, Zacharia et al., 2011). This sets the need to examine how the construction industry views collaboration and relationships within the supply chain. The mutual dependency on resources is highlighted by the volume of work that is carried out by third party suppliers (Eriksson et al., 2007, Humphreys et al., 2003, Matthews et al., 2000). Collaboration and co-dependency is achieved through strong trusting relationships (Rogers, 2005). So, when entering into an outsourced arrangement for services, it requires a degree of observation, planning and resourcing however organisations are quick to identify and evaluate technical supplier attributes (previous experience, resources and cost) but slow to identify the “softer” relationship elements such as partnering ability, empathy, collaboration ability, strong leadership, enthusiasm and emotional intellect (Rogers, 2005).

From the transcripts we can identify that participants tend to agree with the context of the literature as commented on above and themes of, (1) collaboration, (2) relationships, (dependency on) (3) Resources, (4) skills, (5) past experience, (6) are predominant throughout the transcripts other themes that emerged where, the ability to forging a relationship, (7) mutual commitment when required to meet demand and supplying resources, (8) trust, creating a (9) joint working environment, (10) legitimate power which is derived from strong leadership (Table 19).

If we further examine dependency it's easier to acknowledge in a relationship as it relates to the state of being subordinate to another party's behaviour, which implies that “one's outcome is contingent on the trustworthiness or untrustworthiness of another” (Léger et al., 2006). This also provides a power base that allows one actor to control or influence another by controlling the things he values (Emerson, 1962). According to Cousins and Crone (2003) a dependent relationship is negative and one-sided where a power imbalance operates that disadvantages the more vulnerable party. This may result from a number of factors such as the high cost of switching to other business partners, high information asymmetry between counterparts, and lack of competitive options, as well as specialized knowledge (Léger et al., 2006). However project needs and requirements vary from one project to the next, so maintaining short term project based relationships seems to be the normal way of the industry (Bankvall et al., 2010, Cox and Ireland, 2002, Love et al., 2004). Building long-term relationships with sub-contractors and suppliers is when the supply chain is constantly changing from project to project.

Contractual commitments between contractor and supplier are generally seen as the preferred method of engagement and terms are based on legal commitments rather than cooperative values implying that mutual benefits and trust could be a low priority (Mudambi and Helper, 1998).

The transcripts also confirmed that participants had concerns in regards to the extent of the relationship and the effect it had on, (11) power (coercive), (12) market value, (13) partner selection, (14) bargaining power, (15) power (incentivise), (16) arm's length relationships. These themes were also considered important to participants and added to a list for further investigation (Table 19).

Suggestion for participants that a successful project emerges from a collaborative environment rather than a dependency perspective was mentioned a number of times during the interview process. However the selection of the right subcontractor with price and the appropriate skill set is also necessary. Partnerships that are intended to last any length of time or run over into several projects and viewed as relationships that are seeking to make long-term gains, while project partnerships are project specific and focus on short-term financial benefits (Beach et al., 2005). Further work by Watson (2001) suggests that supply chain fragmentation can occur, if the interdependencies (Bankvall et al., 2010) between the actors are not strong and independent, power structures may exist within the supply chain that could undermine the integrity of the integration of that supply chain, suggesting that when buyer/supplier interdependency is high, the probability of supply chain integration is high. However in the case where there is buyer dominance or the reverse, supplier dominance, then a separation occurs due to an imbalance of power. Research by Cox et al. (2001a) on these boundaries/interfaces concluded that the success or failure can be primarily linked to the complexity of the power exchange irrespective of whether it is Mediated or Non-Mediated, underpinning the supply network relationships, adding that it is the nature of the power exchange that actually defines the real commercial interests of buyers and suppliers and determines whether they manage their direct and indirect relationships with others in their supply network. Further codes that have emerged within the transcripts were highlighted and interpreted as the (17) power exchange between actors on a project site, the (18) closeness of the working relationship that they are able to

develop, and the (19) interdependency that may exist between actors or organisations (Table 19).

According to Pinto et al., (2009) a great deal of literature has pointed to the importance of trust as a facilitator of positive relationships among project stakeholders and the initial analysis of the transcripts point to very much the same thing. Participants felt that there needed to be some level of trust in order for any type of engagement to work. However tender price was still the most significant parameter used in bid evaluation in construction (Eriksson et al., 2008). Research by Hartmann and Caerteling (2010) found that the main contractors are not willing to compromise on price and will tend to favour a lower price from an unknown contractor rather than a higher bid from a known contractor where there is an existing relationship. Even though principal contractors were cognisant of the benefits of trust between partners, they allowed bidding by new sub-contractors to ensure that incumbent sub-contractors confirmed with market-conforming bids (Hartmann and Caerteling, 2010) and maintained a commitment to price for the duration of the project (Gilbert and Cvsa, 2003).

The construction industry has well established processes that seem to have developed into an institutional arrangement between contracting organisations that make reciprocal exchanges under risk-laden contracts with a defined price structure (Voeth and Herbst, 2006). According to Chow et al. (2012) these exchanges are more likely based on fear and/or power rather than trust. This has a contrasting effect on cooperation, communication, commitment (Gadde and Dubois, 2010, Gilbert and Cvsa, 2003), trust (Gillespie and Mann, 2004), compliance (Shin et al., 2011, Voeth and Herbst, 2006), conflict, and conflict resolution (Handley and Benton, 2012, Corbett et al., 2012, Zhang et al., 2009).

The remaining themes that were identified in the transcripts presented challenges to the participants in terms of improving relationships between actors. However it seemed evident that there may be some in understanding the individual needs of the actors, which will be investigated in the next chapter during the in-depth analysis. These issues were not caused so much by (20) price, but rather in how to handle the (21) risk management, aspect of the project relationship, maintain a (22) commitment to completing the project, keep open and transparent (23) communication, maintain (24)

compliance, with the contract and be able to implement (25) conflict management principles to ensure that order is maintained (Table 19).

4.4 Definition of Initial Codes

4.4.1 Dependency on Resources

As set out in Section 2.5, the need for resources is based on the view that an exchange requires a bidirectional transaction where something has to be given and something returned. For this reason, interdependence, which involves mutual and complementary arrangements, is considered a defining characteristic of social exchange (Molm, 1997). In construction where there is a significantly high number of third party suppliers (Eriksson et al., 2007, Humphreys et al., 2003, Matthews et al., 2000) partner selection becomes complex as the buyer-seller relationship may focus on the resources provided by the relationship (Roemer, 2004a). Organisations that need to acquire resources which are necessary to the performance of their activities, and in many cases depend upon their resource suppliers, can range from sole providers to organisations (Eriksson et al., 2007, Humphreys et al., 2003).

The greater the dependency, the higher the amount of uncertainty so the higher the effort will be needed to reduce that uncertainty (Nienhuser, 2008). One solution has been to collaborate with suppliers, customers and in some cases even competitors to co-create solutions to problems has become increasingly important to an organisation's business strategy and basis of competitive advantage (Vargo and Lusch, 2004, Zacharia et al., 2011). Resources were then coded to mean an organisation's need acquire a buyer for its offering, where the offering could be the goods or services or access to work. This theme provided undertones of skill sets and the ability to acquire adequate resources (Lambert and Cooper, 2000, van Donk and van der Vaart, 2005, Gold et al., 2009) to ensure that the undertaken task was successfully completed. It was noted that the complexity of the job in essence defined the skills required to perform the task and the availability of these skills hinged on the number of available resources due to supply and demand caused by either economic climate or the number of supplier that offer the service (Manu et al., 2012).

Various other factors contribute towards the availability of a certain set of skills such as availability of materials, lack of alternative solutions, or even in cases it may also include a shortage of work available (Roemer, 2004a). With construction encompassing a large and diverse industry ranging from small maintenance projects to the construction of major infrastructure (Segerstedt and Olofsson, 2010) the required skill set encompasses a wide range of resources, skills and competencies that are required to meet the industries needs and the challenges of individual projects. Skills were then coded to mean as having the necessary credentials to perform the allocated task or the capability to supply the goods or services (Odusami, 2002, Eriksson, 2010).

According to Christopher (2005) the source of a supply chains competitive advantage comes from the organisations ability to differentiate itself in the eyes of the customer from its competition or by being able to operate at a lower cost or a combination of both. However equally important is the ability to meet the demands of supply by adapting to an ever changing environment, where the success of the business depends on the ability to integrate the company's network of business (Lambert and Cooper, 2000, Svensson, 2007) to achieve its desired outcomes. This indicated that having the skills was not enough and that the supplier needed to be able to have these skills and resources available almost on request. Having the ability to perform under pressure to provide a resource (Gann and Salter, 2000, Simatupang and Sridharan, 2008) is coded to mean that the organisation is capable of sourcing internally or from other members of its network to ensure it could meet its obligations and be able to cope with fluctuating supply and demand. This is seen as an important factor in times of high demand, or when resources were scarce.

4.4.2 Collaboration

In industry, collaboration has been viewed in various shapes and forms such as partnering, alliances, joint ventures or networks (Hughes et al., 2012). Irrespective of how the term is defined, working together with suppliers, customers and in some cases even competitors to co-create solutions to problems has become an increasingly important strategy for organisations in order to improve their competitive advantage (Vargo and Lusch, 2004, Zacharia et al., 2011). This newly realised collaborative environment has meant that the competitiveness of an organisation is highly dependent

on the performance of its supply chain and the management's ability to integrate the company's intricate network of business relationships (Lambert and Cooper, 2000). Therefore the ability to forge a relationship determines the level at which the collaborative agreement can reach (Cadden et al., 2010). This would imply that having the ability to form a relationship in one form or another will define the particular code. However it also becomes necessary to identify who the potential partners in the supply chain should be and understanding that not all members within a supply chain should be included as potential partners as this may complicate the total network (Cooper et al., 1997a). This defines the code of partner selection as who will become part of the decision process in the supply chain (Lee et al., 2010, Gosling et al., 2010, Wu and Barnes, 2011). So a joint working environment can be interpreted as working together with selected partners to ensure that they are part of the supply chain and are all looking to attain the same goal (Cadden et al., 2010, Meng, 2012). So that performance of the supply chain is measured on the combined efforts of all involved that contribute (Forslund and Jonsson, 2009).

There is an extensive amount of effort and time directed towards collaborative efforts and there are many cooperative programs to improve relationships between buyer and supplier that do not reach intended aspirations (Zhang et al., 2009, MacDuffie and Helper, 2006, Cao and Zhang, 2011, Gadde and Dubois, 2010). This failure may be due to supply chain participants not having embedded collaborative values and therefore collaboration is not possible with actors that lack a genuine desire to collaborate (Kampstra et al., 2006). Therefore there must be a strong commitment to becoming part of the partnership and the code can be defined as a willingness to work together to improve the supply chain (Cannon et al., 2010, Stank et al., 2001, Chen and Askin, 2009).

4.4.3 Trust

According to Kramer and Lewicki (2010) there is an evaluation of presumptive trust that is undertaken prior to the commencement of a relationship to determine whether the relationship should be instigated. Over time a relationship may elevate to one of identification-based trust (Lewicki and Bunker, 1996) which consists of shared values and goals. Underpinning the development of trust is open and honest information-

sharing (Day et al., 2013). Knowledge-based trust involves regular communication where information is exchanged in regards to needs and approaches to problem-solving, which lends towards establishing a behavioural consistency (Lewicki and Bunker, 1996). The importance of trust as an antecedent to commitment is essential in ensuring relationship success is an underlying principle of social exchange theory (Liu et al., 2009, Ambrose et al., 2010). So Trust is referred to as the degree to which an organisation believes that its exchange partners are honest (Geyskens et al., 1998). As it reflects the willingness and confidence to rely on other parties and is an important form of relational capital (Zhang and Huo, 2013). So from here we find that communication can be coded as the willingness to exchange information (Katz, 1982, Cheng et al., 2010) while trust is coded as having the integrity and reliability to be trustworthy (Kramer and Neale, 1998, Manu et al., 2012).

4.4.4 Price

While principal contractors are cognisant of the benefits of trust between partners, they generally allow bidding by new sub-contractors to ensure that incumbent sub-contractors were aligned with market-conforming bids (Hartmann and Caerteling, 2010, Benton and McHenry, 2010). Exerted pressure on incumbent sub-contractors to match what may be considered a market-conforming bid in order to maintain an ongoing relationship, while the market value is determined by the lowest submitted price, or perhaps the lowest price that an incumbent is prepared to work for. So market value is coded as what is perceived to be the going rate at a particular point in time. This perspective is highlighted by the practice of competitive tendering to determine the selling price (Burt and Boyett JR, 1979, Holt et al., 1995, Wuyts et al., 2009). This is brought on by the need for buyers to maintain a competitive position in an increasingly competitive marketplace makes the achievement of lower prices, or, at the least, maintaining prices while providing greater value, an absolute necessity in virtually every industry (Henke et al., 2008).

Using adversarial tactics by larger organisations to ensure suppliers meet their price reduction expectations are common place (Henke et al., 2008). So it is no surprise to see suppliers who are motivated by the attractiveness of the contract and fear of losing to competitors, that they will offer their lowest possible prices to gain customer preference

(Anderson and Narus, 1999). This would indicate that an organisation with significant buying power might not find it necessary to establish a win-win alliance or relationship with its suppliers since it can achieve its own profitability and effectiveness by controlling suppliers that are dependent on its business (Dobson 2008, Kähkönen and Virolainen 2011). Implying that, organisations with the bargaining power have virtually no reason to yield control or to withhold the exercise of power (Benton and Maloni, 2005). Bargaining power can therefore be defined as the ability to manipulate the market value based on its offering (Benton and Maloni, 2005, Sridharan and Simatupang, 2013). Therefore using an organisation's strong position to attain price reduction outcome in a relationship (Cooper and Gardner, 1993) cannot be easily dismissed or overlooked as there may be a tendency for buyers opting for the lowest prices risk ending up with low-quality suppliers rather than getting high-quality suppliers at a low price, (Akerlof, 1970, Dyer, 1996, Holt et al., 2000). This now provides the essence of risk management as is defined as the point to which the organisation will go before it considers the arrangement untenable (Aloni, 2012).

4.4.5 Power

The basic definitions as set down by French and Raven (1959) who explored inter-firm power developing a power basis model (Table 4) are used to define the interpretation of coercive (Koçoğlu et al., 2011) legitimate (Parmigiani et al., 2011) and incentive power (Meng et al., 2011). Their research explored the type of power or powers used throughout a relationship to determine if one party holds authority over another, suggesting that the power giver controls the power base only if the power target perceives the power giver has that power (Goldhamer and Shils, 1939, French and Raven, 1959). Outcomes of power are dependent on the level of dependency between the actors and the power to control or influence the things that are valued by the power receiver (Emerson, 1962). Where Emerson (1962) theorised that power is not the attribute of the person or group but rather the property of the social relation therefore the relationship could well determine the power exchange, with the use of the power variable still in the hands of the individual. So the code for power exchange relates to the extent an individual perceives he has the power to control a situation (Koçoğlu et al., 2011). Where the power to influence a target is determined by the dependency between

actors (Watson, 2001) and the power exchange can be mediated or non-mediated (Tedeschi, 1972) if an imbalance in dependency occurs.

Maloni and Benton (2000) also point out that the level of conflict between two organisations is associated positively with mediated power and negatively with non-mediated power. These findings confirm that the effects of power on inter-firm relationships hold direct implications for the supply chain affecting trust, cooperation, commitment, conflict, and conflict resolution which are critical to effective supply chain collaboration (Maloni and Benton, 2000). So managing conflict in all aspects is important, however in order to do so it would seem that understanding how it arises and whether it has positive or negative connotations are essential. So managing conflict is coded as the ability to understand and deal with a situation without the need for litigation. So achieving compliance without having to deal with the contrasting effects that mediated and non-mediated power have on inter-firm relationships within the supply chain, that change how people cooperate, communicate, show commitment, trust, comply, and tackle conflict, and conflict resolution (Handley and Benton, 2012, Benton and Maloni, 2005, Yeung et al., 2009, Zhang and Ng, 2012) therefore compliance is coded as agreeing to work amicably without compromising ones values (Shin et al., 2011).

4.4.6 Partner Selection

The basic tenets of social exchange theory suggest that relationships evolve over time into trusting, loyal, and mutual commitments, however in order to achieve this, parties must abide by certain “rules” of exchange (Emerson, 1976). These rules of exchange form a “normative definition of the situation that forms among or is adopted by the participants in an exchange relation” (Table 1), (Emerson, 1976, Cropanzano and Mitchell, 2005). Scheer and Stern (1992) suggested that when the imposition of pressure occurs in a commercial exchange by one party who attempts to influence another to take specific actions, a dynamic ensues that can change the course and content of their relationship.

With the maintaining of these distant relationships and the ever increasing issues short term project focused relationships, trust between actors is perhaps a low priority which

in turn must contribute to relationships remaining fragmented and at ‘arm’s length’ or in other words distant (Fulford and Standing, 2014, Bankvall et al., 2010, Briscoe and Dainty, 2005). Therefore arm’s length has been coded as a relationship which has no interest in evolving into anything more than a workplace relationship (Näslund, 2012). Hence, when entering into an outsourced arrangement for services, the process requires a degree of observation, planning and resourcing and generally organisations are quick to identify and evaluate technical supplier attributes through previous experience (Rogers, 2005) where the experience can come from either direct or indirect contact. Therefore the code for previous experience is defined as having knowledge of your supplier by attaining references or having previously worked alongside them (Bode et al., 2011). This once again relates to the relationship and how it is structured in terms of past experiences.

Within various buyer-seller relationships, partner selection in the construction industry has a strong focus on resources provided by relationship partners who offer external resources, where relationships must ensure the firm’s long term survival (Roemer, 2004b). Providing a simple interpretation or one size fits all is not always the case in particular when it is the nature of exchange power that defines the real commercial interests of buyers and suppliers and determines whether they manage their direct and indirect relationships with others in their supply network (Cox et al., 2001a). Project needs and requirements vary from project to project, maintaining short term project based partner selection mentality, (Bankvall et al., 2010, Cox and Ireland, 2002, Love et al., 2004). One thing to consider is that dependency does not necessarily result in adversarial relationships between buyers and suppliers (Pfeffer and Salancik, 1978), so in some cases it could be construed that organisations are required to work closely with their suppliers, customers and other participants in the supply chain in order to strategically compete (Lambert and Cooper, 2000). Therefore we can code close working relationships as working together in a supply chain without forming a partnership of collaborative relationship that extends beyond a project (Meng, 2012).

Table 19: Definition of initial and emerging themes and codes

	Theme	Brief Explanation	Reference
1	Collaboration	Working together with a partner to improve the competitive	(Stank et al., 2001, Chen et al., 2012,

		advantage of the supply chain.	Hughes et al., 2012)
2	Relationships	Working together on a number of consecutive projects or tasks, where there has been an opportunity to develop a level of trust.	(Cannon et al., 2010, Cheng et al., 2010)
3	Dependency	An organisation's need to acquire a buyer from an external source to enhance its offering, where the offering could be goods, services or core competencies to enable them to access work.	(Lambert and Cooper, 2000, van Donk and van der Vaart, 2005, Gold et al., 2009)
4	Skills	Having the necessary skill set to perform an allocated task or the ability to source and to supply the goods or services capable of performing the allocated task.	(Odusami, 2002, Eriksson, 2010)
5	Past Experience	Having knowledge of your supplier by attaining references or having previously worked alongside them.	(Rogers, 2005, Bode et al., 2011)
6	Ability to build a relationship	The understanding and having the willingness to work together to remain competitive.	(Cadden et al., 2010)
7	Mutual commitment	The organisation is willing to source internally or externally from its network to ensure it would meet its obligations and be able to cope with fluctuating supply and demand	(Gann and Salter, 2000, Simatupang and Sridharan, 2002)
8	Trust	Where trust is identified within the resource-based view as a key	(Kramer and Lewicki, 2010,

		antecedent of building relational capital with suppliers	(Manu et al., 2012)
9	Joint working environment	Working together with selected partners to ensure that they are part of the supply chain and are all looking to attain the same goal.	(Cadden et al., 2013, Meng, 2012)
10	Legitimate (Power)	The target believes that the source retains a natural right to influence, this can come from the fact that they have the expertise or that they hold or have control of the principal contract.	(Parmigiani et al., 2011)
11	Coercive (Power)	Where more powerful in the relationship holds the ability to punish. In construction it is viewed as setting terms of making work available or excluding others from future opportunities.	(Koçoğlu et al., 2011, Maloni and Benton, 2000)
12	Market Value	The perceived going rate at a particular point in time. Or what is recognised as the current value of goods or services	(Manu et al., 2012)
13	Partner Selection	Deciding the supply chain structure, by selecting suppliers or goods and services to be engaged	(Gosling et al., 2010, Wu and Barnes, 2011)
14	Bargaining power	The ability to influence the rates to a higher or lower level than those perceived to be based on the current market rate.	(Benton and Maloni, 2005, Sridharan and Simatupang, 2013)

15	Incentivise (Power to)	This is derived from reward (power), where the source has the ability to provide an incentive (rather than a monetary reward).	(Meng et al., 2011)
16	Arm's length (working relationship)	Relationship which has no interest in evolving into anything more than a workplace or project based commitment.	(Näslund, 2012)
17	Power Exchange	The extent an individual perceives he has the power to control a situation.	(Koçoğlu et al., 2011)
18	Close (Working relationship)	Working together in a supply chain without forming a partnership or collaborative relationship that extends beyond a project.	(Meng, 2012)
19	Interdependency	Individuals or organisations that have or seek a mutual and/or complementary arrangement to deliver a project or task.	(Bankvall et al., 2010)
20	Price	The sum required to carry out a task, where the value is monetary only.	(Henke et al., 2008, Hartmann and Caerteling, 2010, Benton and McHenry, 2010)
21	Risk Management	The point to which the organisation will go before it considers the arrangement untenable.	(Aloni, 2012)
22	Commitment to maintain a price	A willingness to work together to improve the supply chain. While maintain the price	(Gilbert and Cvsa, 2003, Gad and Shane, 2011)

		structure	
23	Communication	A willingness to exchange information between supply chain partners.	(Cheng et al., 2010)
24	Compliance with agreed rates	Price based contractual agreements based on work amicably without compromising ones values.	(Shin et al., 2011, Voeth and Herbst, 2006)
25	Conflict management	The ability to understand and deal with a situation without the need for litigation.	(Handley and Benton, 2012, Corbett et al., 2012)

The codes and emerging codes that were identified from the transcripts and defined in this section were then used as a base line to catalogue the data in the NVivo software. From the analysis using NVivo, the themes and sub-themes were categorised and further sub-themes emerged and were analysed in Chapter 5.

4.5 Data Analysis

The focus of qualitative research is to examine themes within data (Daly et al., 1997). Thematic analysis is considered as a very useful method when analysing data sets (Guest et al., 2012) as it extends beyond the counting of words or phrases embedded in text, by identifying implicit and explicit ideas within the data (Boyatzis, 1998). The formulation of themes is seen as an outcome of coding, categorising or analytical reflection (Saldaña, 2012). By coding data we are able to identify themes embedded in the text by summarising the data (Auerbach and Silverstein, 2003, Boyatzis, 1998) to identify relationships between actors, frequency of themes and the relationships or differences between the themes (Boyatzis, 1998, Gibbs, 2008). Words that occur frequently are considered as being salient in the minds of respondents (d'Andrade, 1995). So a formal analysis of word frequencies is generally done by creating a list of all the words in a text and counting the number of times each occurs (Ryan, 2006). The analysis in this thesis will incorporate a thematic analysis and then a contents analysis to examine emerging themes that relate to the propositions.

4.5.1 Analysis by Themes

Applying thematic analysis in qualitative research is a common practice (Bernard, 2013) in particular when the objective is to examine and interpret a phenomenon or event that is being researched (Fereday and Muir-Cochrane, 2006). Saldaña (2012) suggests that the methods used to code data depend on the type of study undertaken. In this case it is based on the Epistemological questions that address the theory of knowing and understanding of the phenomena. It was therefore decided to follow the process as set out by Braun and Clarke (2006). The data has been analysed by adopting the 6 phases of the thematic analysis process as set out in Table 21. Interviews were transcribed into word documents where the text was reviewed, and analysed while at the same time a set of priority codes were derived primarily from the literature review and related directly to the conceptual module and propositions. These open codes were then adopted as nodes, as set out in Table 20 to be used in NVivo as an initial starting point to comparing the transcribed data. The next process is to introduce axial and then selective coding as a natural progression for the initial open coding to enhance the thematic analysis of the data (Corbin and Strauss, 2014).

Table 20: Phases of Thematic Analysis

Phase	Description of the process
1. Familiarising yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme
4. Reviewing themes:	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic ‘map’ of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each

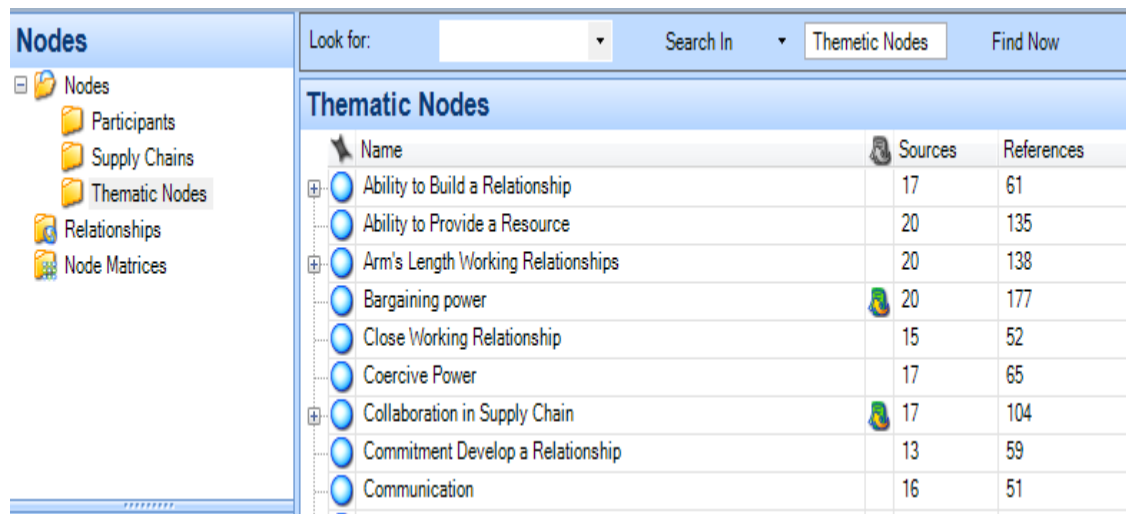
	theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report:	Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back to the analysis of the research question and literature, producing a scholarly report of the analysis.

Source Braun and Clarke (2006)

According to Buetow (2010) axial and selective coding are used to identifying relationships among the open codes by grouping themes that are either connected or have strong similarities. Initial themes that were identified were filtered and refined according to the judgment of the researcher and based on the requirements of the research to provide meaning to the participant's point of view (Braun and Clarke, 2006) based on the propositions. Field notes from the interviews were also used to help refine the themes and to ensure the data was analysed consistently during the process. It was also essential to ensure that the text was viewed in a theoretical or analytical way rather a descriptive focus. Continual reading of the transcripts was required to ensure that all the relevant ideas embedded within the text were identified (Gibbs, 2008) particularly in thematic analysis as the process of continually reviewing the transcripts assists not only in identifying possible themes but also in comparing and contrasting themes (Guest et al., 2012).

The NVivo interface assisted greatly in establishing structure to the research by providing multiple options of arranging and analysing the data in different categories ranging from a single-word response to an open-ended question (Figure 1) which is typical as data analysis strategies of this type will likely vary in size (Saldaña, 2012).

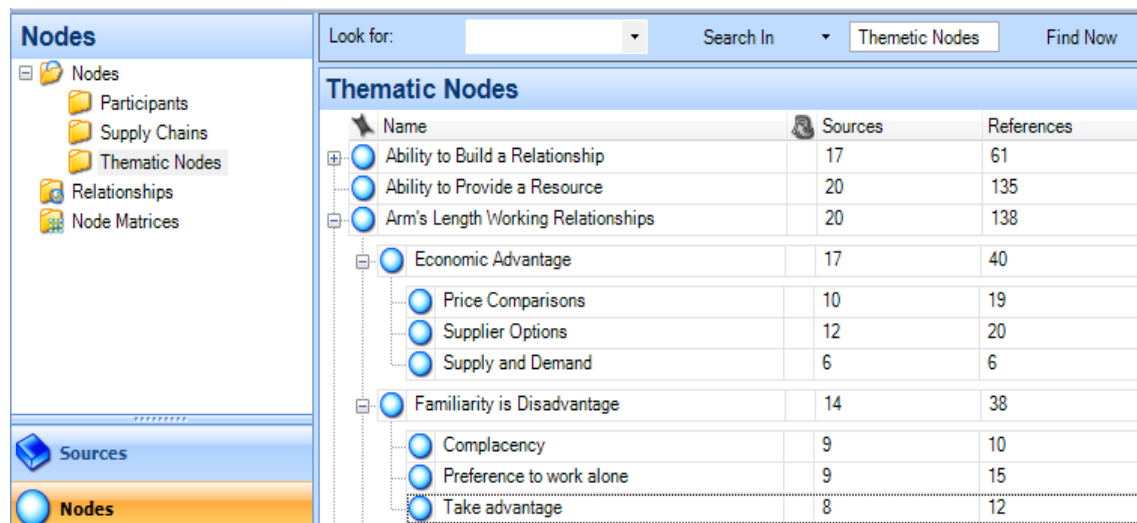
Figure 15: Coding in Thematic analyse using NVivo software



Name	Sources	References
Ability to Build a Relationship	17	61
Ability to Provide a Resource	20	135
Arm's Length Working Relationships	20	138
Bargaining power	20	177
Close Working Relationship	15	52
Coercive Power	17	65
Collaboration in Supply Chain	17	104
Commitment Develop a Relationship	13	59
Communication	16	51

By using NVivo the researcher is able to develop a tree-structured indexing system where themes were developed based on a hierarchical structure (Richards and Richards, 1991) as shown in Figure 16 and examine the number of participants that referred to a particular theme through the analysis of the transcripts. The researcher is then able to eliminate or ignore themes that had a low frequency as these could be considered as having low importance to the participants, while the remaining themes could then be categorised according to the propositions that stemmed from the three main phases of the conceptual model. Any themes that did not demonstrate a strong link with the research were set aside for future consideration. The final stage was to examine all the predominant themes embedded in the data, as these predominant themes then served as answers to the research questions and formed the basis for writing up the data (Anzul et al., 2003). However before any writing was undertaken, the researcher chose to use content analysis to further consolidate his findings.

Figure 16: In-depth Thematic Analyses



Name	Sources	References
Ability to Build a Relationship	17	61
Ability to Provide a Resource	20	135
Arm's Length Working Relationships	20	138
Economic Advantage	17	40
Price Comparisons	10	19
Supplier Options	12	20
Supply and Demand	6	6
Familiarity is Disadvantage	14	38
Complacency	9	10
Preference to work alone	9	15
Take advantage	8	12

4.5.2 Analyses by Content

The use of content analysis is not common in qualitative research (Marvasti, 2004) however it is still an accepted method of textual investigation (Silverman, 2013b). It is used to quantify qualitative data by noting frequencies of events, words, action and other variables related to research data (Crowther and Lancaster, 2012) in which the researcher has established a set of categories and then counts the number of instances that fall into that category (Silverman, 2013b). According to Marvasti (2004) content analysis should follow the following 5 step process

- a. Define the research problem
- b. Decide where the source of the visual material will be
- c. Identify the categories or features that will be the focus of your research
- d. Sample documents from the source previously defined
- e. Measure or count the occurrences of the pre-established categories

Having already identified the principal themes through thematic analysis, content analysis is used to focus on emerging themes that relate to the propositions and add to the validation of the results (McMurray et al., 2004). The content analysis is ideal for identifying themes by highlighting patterns in the data (Boeije, 2002) Allowing the conversion of data into a quantifiable form in order to develop evidence for a given

proposition (Glaser, 1965). This process was managed by the use of NVivo and the codes used to determine which aspects were frequently cited by the participants. Using matrix-coding queries, it was possible to compare any connections between the themes that had been identified (Bazeley and Jackson, 2013).

4.6 Summary

This chapter covered the importance of implementing a rigorous research methodology to ensure the validity and credibility of the findings. By employing a multi case study strategy, the researcher covered a wider scope of participants in different fields of the construction industry. Data collection was carried out in field by way of face to face interviews and the collection of documentation relevant to the research. Interviews were transcribed and coded to identify common threads within the respondent's data. This was carried out by conducting a content and thematic analysis. NVivo software was then utilised to assist in the systemically analysing and coding of data in order to provide a platform for ease of interpretation.

CHAPTER 5

5.0 ANALYSIS

5.1 Introduction

The process of partner selection within any project environment depends on the actual needs of the project and the availability of the resources that are required by the principal contractor. The conceptual model presented in this thesis is designed to show the flow of the project from conceptualisation to realisation and what influences actors to make decisions on how to acquire resources to ensure the success of the project. To test the conceptual model we need to consider the response given by the participants to determine if the acquisition of resource is influenced by the relationship between actors and, if so, does this affect the actions and reactions of actors within the supply chain? The conceptual model (Figure 9) takes into account three distinct phases of the interactions between actors and offers three propositions that align with each of the three phases. Each of these phases will be tested individually to check the validity of each proposition and strength of the conceptual model.

The themes that will be discussed in this chapter will elaborate upon relationship factors uncovered from the employment of both thematic and content analyses through the generation of matrix-coding queries from the NVivo software. More importantly, this chapter will analyse the responses from participants to determine their view of the world and how they define their selection process. This analysis will enable the writer to answer the research question as explained in Chapter 1, to determine to what extent dependency influences the decision making process. Each of the three phases will be analysed individually to measure how they affect the relationship and the actor's roles in the supply chain.

Particular attention will be paid specifically to interpret 'why' the participants act or view their world in a particular way and how they relate to or understand aspects of supply chain management and how it contributes towards a sustainable business; uncovering 'how' the participants selected strategy to achieve their objective and how this affects the construction supply chain as a whole.

5.2 Partner Selection

5.2.1 Introduction

The first phase partner selection was analysed using NVivo to code and analyse each of the participant's responses. Questions were designed to determine the effect of dependency and collaboration on the relationship with the sub-themes that emerged are shown in Figure 17. Factors that emerged during the interview stages of the research that were important to participants in terms of their view of the world and how dependency and collaboration affected their relationship and decision were analysed. The further analysis of these sub-themes provided a greater insight into the way clients, contractors, suppliers and sub-contractors are motivated by the relationship to make decisions on partner selection. Each construct is analysed further in this chapter.

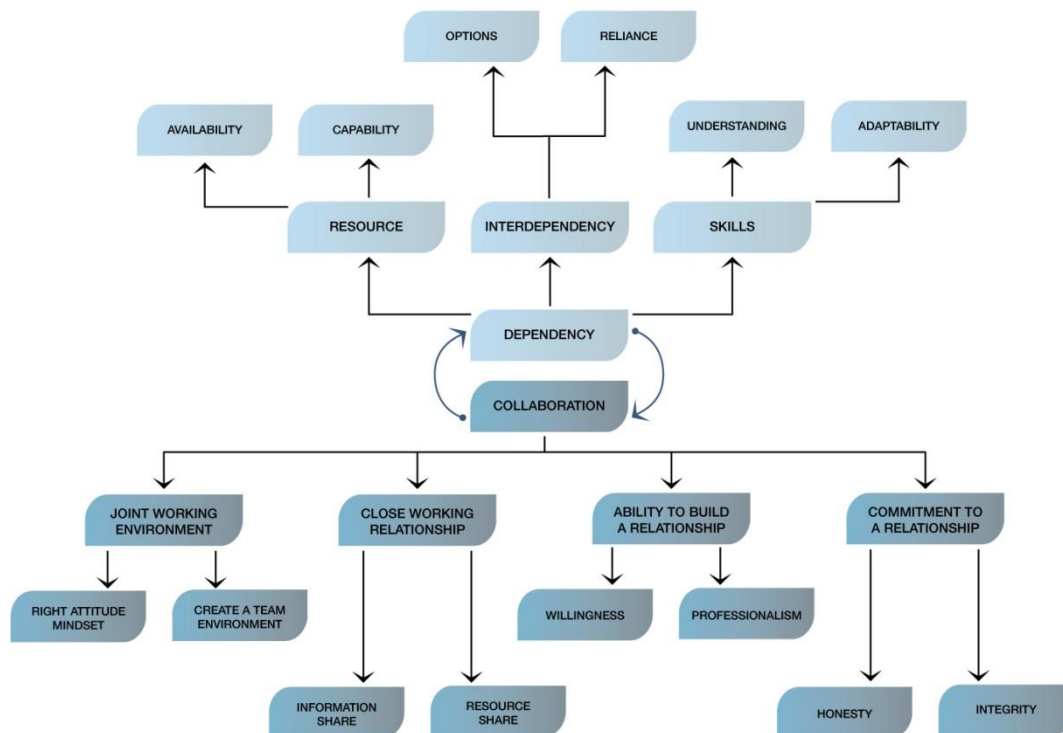
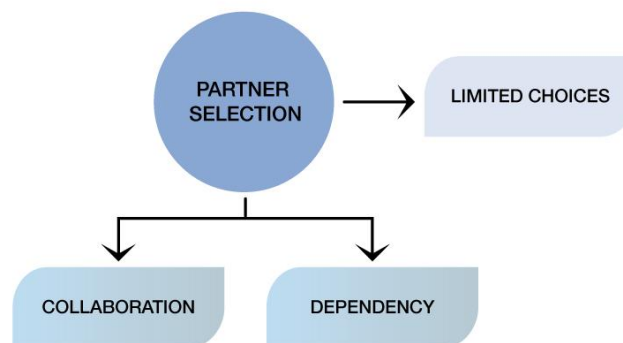


Figure 17 - Themes and Sub- themes of Phase 1 Partner selection

The first part of this section investigates the specific factors that have emerged from the NVivo thematic coding relating to partner selection and how actors short list suppliers

so that they can request and receive offers or bids for work or equipment. As the primary step in the supply chain the relationship between actors and what motivates them to consider working together is a very important aspect of this research (Figure 9). In order to understand the key drivers that brings different actors together whether it is the motivation to collaborate in order to improve performance, or actors driven by the need for resources to ensure successful completion of the project are the primary focus. In other words, does dependency improve collaboration or if dependency forces collaboration. As illustrated in Figure 18, collaboration and resource dependency are specific attributes that determine the motivation to select one partner over another. This was evident in the literature review as well as thematic analysis. A third construct had emerged during the thematic coding process which demonstrated that under certain circumstances selection of partners or supplies was limited due to either supply and demand or restrictions imposed by the type of work being carried out. This construct was not explored in this research as it only rarely occurred and was seen to detract from the principal of actor's choice, in particular as it was linked to availability of supplier/contractor and the timing or duration of projects.

Figure 18: Partner selection thematic codes



The following sections will discuss in detail the themes and sub-themes that emerged as motivations between actors that lead to collaborative agreements or arrangements and the resource dependent selections that are made in the initial phase of a projects inception. In other words, it will examine the pre-tender phase where pricing for a project is initiated and principal contractor or client are in the preliminary stages of sourcing suppliers, contractors or subcontractors, who provide goods and services. It addresses the first of the four secondary research questions,

“How is dependency exploited by all actors in the supply chain to influence other actors in both the upstream and downstream direction?”

and will begin to unravel the answer to the first proposition in relation to the power exchange that occurs between actors during the preliminary selection processes. Where the analysis will show an underlying need to ensure that a competitive advantage is sought to gained or secure the project. Respondents were asked what they considered to be the most important attribute of a supplier or partner, with the initial question posed being *“what do you consider the most important attributes in a supplier or partner, the potential of a partnership arrangement or the resources and skill they possess?”* The question gave respondents the opportunity to reflect on their view of how they engaged and interacted with other actors in the supply chain and what they felt were the key elements to consider before commencing supply negotiations.

5.2.2 Collaboration

The collaborative perspective as defined in Table 19 in section 4.4.6 showed several themes emerging from the NVivo coding that were important to respondents. Irrespective of the project duration, respondents agreed that there was a need to be able to establish some form of positive relationship in order for the project to be successfully completed. Figure 19 shows the four main themes that emerged from the analysis which respondents felt were necessary to facilitate a collaborative relationship. The view on each of these themes was slightly different dependent on whether the respondent was upstream or downstream in the supply chain. However the resultant main context of the themes was the same.

Figure 19: Collaboration theme and sub-themes

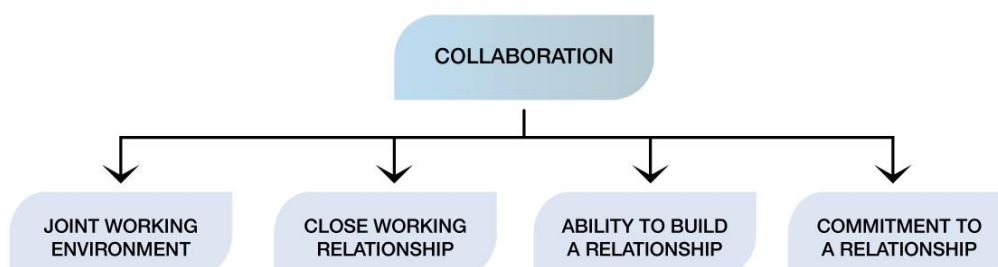


Table 21 shows the matrix query from NVivo for the four main themes, matched against the respondents comments and the number of references made to each theme. Each of these themes were further explored for better insight and understanding as to what each respondent considered important in each of the themes. A number of sub-themes as outlined in Table 21 emerged under those themes already defined in Table 19 and are listed and discussed under each of those parent themes further in this section.

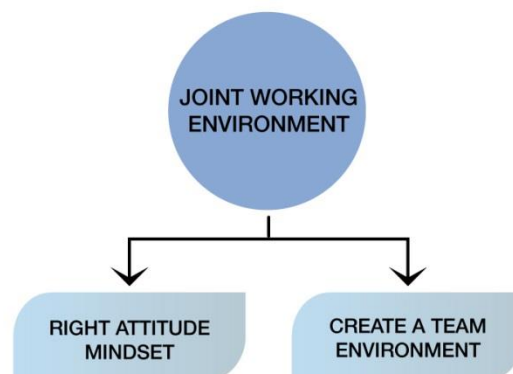
Table 21: Collaboration sub-theme responses

	Sub-themes of collaboration			
	Joint working environment	Close working relationship	Ability to build relationship	Commitment to a relationship
Respondents	15	15	14	12
Coding References	53	40	34	32

5.2.2.1 Joint Working Environment

Joint working environment as defined in Table 19 is regarded as working together with a selected partner to ensure that they are all looking to attain the same goal (Cadden, Marshall and Cao 2013; Meng, 2012). This view was interpreted by respondents as having to, or needing to, work together to obtain an end result rather than wanting to work together to achieve the desired result. The sub-themes that emerged as illustrated in Figure 20 are discussed below.

Figure 20: Themes and sub-themes of Joint working environment



The emergence of a 'Joint working environment' while intrinsic to collaboration in a supply chain (Cheng and Li, 2001, Ingirige and Sexton 2006, Love, Irani and Edwards, 2004, Zhang, Henke and Griffith 2009) was strongly focused towards the actual project team working on site rather than the company environment or company culture, with comments such as "*the working environment needs to be collaborative, partnerships belong in the office*" (Philip) and "*It's about establishing a working environment on the ground*" (Brian). The first response from Philip highlighted that while literature and academics refer to collaboration and partnership as interchangeable (Hughes, Williams and Ren, 2012) respondents had a very different view defining collaboration as a way of working together (11 respondents) and a partnership as something that was mutually binding and legal (13 respondents).

Sample documents of sub-contractors agreements were supplied to demonstrate the general concept of partners and partnering (Appendix 8 sub-contractor agreement) Sub-Contractor agreements. Eleven (11) respondents suggested that it was essential for all members of the project team, including suppliers and subcontractors to have a positive attitude towards work together on a project and collaboration as defined by the respondents was seen as a project based construct and a necessity to achieving a successful outcome. Seven of the respondents also suggested that it wasn't completely about having a positive attitude. However the way you are treated as a supplier and a subcontractor with Frank proposing that it required some "*flexibility in the relationship*" to ensure there is at least some give and take, while several other respondents strongly implying that in some cases the view of right attitudes was perceived as being compliant to the clients request without question (Trevor, John, William). This demonstrated an attitude or strong bias towards conforming to rules set by client or principal contractors rather than working jointly or collaboratively.

It is apparent that many actors were willing to work under direction or supervision from the principal contractor in order to maintain relationships (Albert) and solve problems before they occurred (Frank). Seven respondents felt that working under direction and solving problems along the way formed part of a team environment which was beneficial to the project and assisted in creating a harmonious work environment. John suggested that the team was all about "*working together to get the job done*". However

when it came to knowledge sharing, there was only one respondent (Mick) who considered this as beneficial. The team environment was perceived by eight respondents as the workplace and not as an actual team setting as surmised by Zarraga and Bonache (2003, p. 1227) as *“the most appropriate setting for the creation and transfer of knowledge, while protecting the source of competitive advantage”*. In other words their perception was that a team is a group of people working on a project and it didn't matter if they got along, provided they all focused on the same objective and that was, that the project was completed on time and within budget (Trevor, Neville, and William).

Despite this view, many of the respondents agreed that a relationship was important and the view on how the teams should be constructed was similar, however the realisation of how the relationships would work seemed to some extent to make the team environment unattainable, due to contrasting views on their relationship and role within the supply chain. The upstream actors all felt that they needed to have a strong relationship with their immediate downstream client in order to ensure continuity of work, establish a collaborative process and build trust and as an outcome, gain a competitive advantage over other actors through a longer association with their client (Mick, Donald). While downstream actors had a completely different view of their upstream supplier, consider them as a service provider and was only engaged when required to provide a service (Trevor and Greg).

Each of the actors had one view moving downstream and the complete opposite view moving upstream. In particular many did not considering their own supplier as an integral part of the relationship building process. The views even slightly changed dependent on where the actors were in the supply chain (Table 22). The position in the supply chain presented different degrees of challenges for actors and different agendas. Table 22 outlines the main view conveyed by the majority of the respondents and showed there was a significant difference between views subject to where the actor was positioned in the supply chain. The only variation was Mick who was a new provider in the market and felt that familiarity would eventually strengthen the relationship. Greg, who developed his own land, had established several relationships with a number of suppliers and would only entertain quotes from those suppliers, as he felt that, while having options was good, too many suppliers would complicate the selection process. Neville owned an agency that represented a government department and was bound by

government policy and procedure therefore suggested that his view was a fixed base procurement procedure that was set by the government department he worked for and the end result relied on the outcome of the tender. The views of the majority of the actors are expanded in table 22.

Table 22: Actor relationship perspective in a ‘Joint working environment’

	Downstream view	Upstream view
Level 1 (Client)	N/A	Would consistently price check contractor on each project. Felt that a long term relationship would be a disadvantage
Level 2 (Principal contractor)	Wanted to establish long term relationships, maintain open dialogue and offer rates to span multiple projects	Play off suppliers against each other to achieve best rate. Would ask for prices at tender stage and then ask for re-quote if bid was successful
Level 3 (Main Supplier)	Would price on a project-by-project basis, felt that if they could supply best price, best service, then the relationship would grow	Would offer the work at the lowest end of price scale and adjust prices according to supply and demand. Would seek alternate supplier to ensure rate matched budget
Level 4 (Material supplier, service provider)	The more materials purchased, the stronger they would try and make the relationship. Large clients would receive heavy discounts in order to stop them from sourcing other prices	There are always sole traders and owner operators willing to provide a service. So restricting the field would be a disadvantage
Level 5 (Small enterprise , solo trader,	Would offer exclusive service at discounted rates	N/A

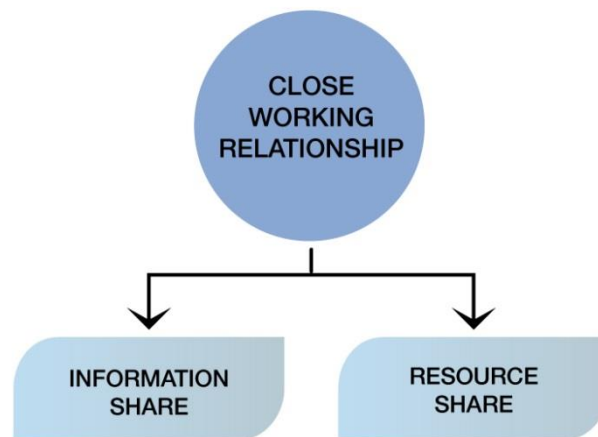
operator)	for long term work. Would prefer to work between two or three clients	
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The opposing view suggests that creating a relationship would increase in difficulty the further upstream an actor is positioned, in particular if they were on site for a short period of time. These factors didn't change even when workloads or availability fluctuated. Actors considered that price fluctuations would have a significantly better effect than changing the approach (Albert, Simon, Frank and Philip). Comments that highlighted this attitude were from across most suppliers with the most agreeing with Simon in the way of *"we look at the market and if we need work we price accordingly"*, while Frank commented *"that we don't have a preconceived notion of partners, we see collaboration as providing the price they want and we win the job"*. This line of thought limited the opportunity of considering collaboration anything more than compliance or complying with a request.

5.2.2.2 Close Working Relationship

A close working relationship is interpreted as (Table 19) working together in a supply chain without forming a partnership or collaborative relationship that extends beyond a project (Meng, 2012). While it may seem to align with, or sound similar to, the previous construct, 'Joint working relationship', this was viewed by respondents as having a close relationship on the current project, without being in a formal partnership or having a formal agreement in place that extended beyond the project itself. In other words they felt that while there was a connection between actors and there was an understanding of what is required to work on a project, actors did not perceive a close working relationship as collaboration or collaborative. This seemed to stem from the view that was previously highlighted, that dependency forces collaboration rather than enhances it.

Figure 21: Themes and sub-themes of Close working Relationship



In the literature partnering or collaboration is seen as all parties engaged on a construction project, as working together in an environment of trust and openness to realise the project efficiently and without conflict (Black, Akintoye and Fitzgerald, 2000). However following on from the analysis of the previous theme 5.2.2.1 ‘joint working environment’ where most of the respondents identified that it was unnecessary to partner in order to attain the required outcome. It would seem that respondents would have little time within the work environment to form a close working relationship under the respondents above stated conditions. However two main constructs emerged from the NVivo analysis as shown in Figure 21, ‘information share’ and ‘resource share’, which in effect suggests that partnering at some level may exist in the context of the project. Information share emerged as the passing on of basic site related information rather than, industry based expert knowledge as previously suggested by Mick. Eleven respondents found it was important to pass on information that would assist with scheduling of the project while the remaining four (Frank, Paul, Simon and James) felt that their own workload is the important factor and preferred not to commit to dates or times as it would impose pressure on their business by locking them into a fixed schedule. In other words they felt that the client had to manage their schedules and workloads until they were available to provide the service.

When respondents were asked to consider what they perceived as a ‘close working environment’ the main response from eleven respondents suggested that having the ability to work in with and get along with the people on the site while being able to comply with requests from downstream to maintain schedules and performance that was

important. Both the information and resource share however was not interpreted or perceived as partnering at any level by the respondents, but rather a necessity that needed to be exchanged when working together, to ensure the project was able to proceed as expected. Responses along the line of *“of course we have to know what they are doing or what difficulties they encounter”* (Paul) *“if they didn’t keep us informed then how could we identify any future problems”* (Greg). Indication that some dialogue was occurring between actors on site was evident from the analysis, however there was no suggestion from any of the respondents that these exchanges were in any way perceived as an indication of collaboration. Eleven (11) of the respondents felt that communication on site was expected from other actors who were working on site, with no expectation that information would flow back upstream. Robert commented that *“all I need to do is let them know when I arrive there and when I leave”*, *“anything else they want they let me know”*. While Trevor, suggested that *“all the subcontractor needs to know is when and where”*. From the NVivo analyses it emerged that actors were willing to work together and would co-operate with each other to ensure that there was an awareness of what was occurring on site however communications were often left to the last minute, this meant that resources were not always readily available and in some cases delays occurred.

The way information and resource was perceived also changed depending where an actor was in the supply chain (Table 23). There was a strong tendency to withhold information from suppliers as respondents felt that due to the short term commitments between actors any kind of intellectual knowledge could be exchanged or used as a bargaining point with competitors to gain a better market share or competitive advantage. Downstream actors expected that their upstream suppliers would comply with set time schedules and often felt that they should not be communicating or chasing suppliers *“why would they submit a price if they don’t have the resources to do the job”* (SC 1-1). While the upstream view was typical of Robert’s Comments *“we have to price multiple jobs in the hope that we will win one or two”*, *“if we are awarded more than we anticipate or they change the start dates, we get caught”*. Downstream actors also seemed to show little tolerance to upstream suppliers in particular if they directly caused delays and the further upstream, the less the tolerance level. This seemingly related back to trust issues (Kramer, Roderick, and Lewicki, 2010) created by either perception or past experiences. Paul commented that *“if a supplier wants to give*

another contractor priority, I won't be waiting for him, I'll get someone else to do the job and I'll remember it next time he is looking for work". However two of three principal contractors who responded to the Resource Share theme did acknowledge that suppliers would seek alternative work if the work load they offered was not consistent (John, Greg). They also acknowledged that in some cases they could not provide sufficient information to enable supplier to schedule their workloads to fit in with demand.

Suppliers however where aware that their clients relied heavily on their services so found it difficult to follow why there was a significant lack of information on the project where some of the remarks were *"I have a small business with a few loans I need to work, if I put all my eggs in one basket I won't survive"* (Alex) *"sometimes I don't get it, they don't call for weeks and then, they expect you to be sitting at home waiting for their call, and when you tell them you are on another job they still expect you to drop everything"* (Philip). In terms of supply and demand, upstream providers would ideally want to supply all their clients, whoever they were not prepared to pass on or engage other resources as they felt that introducing another supplier could be detrimental to their own relationship with the client. However clients had an expectation that suppliers would provide resources and services on demand either through their own resources or by a third party supplier. The supplier demonstrated that there is a level of willingness, for actors to comply, moving from upstream towards the downstream end and an expectation to comply occurs in reverse. However sharing information becomes important on site rather than leading up to the engagement of the services and resource sharing occurred once the supplier was on site. The information transfer was essential for establishing project schedules to determine when the services or resource was required.

There was also a similar issue with resource share in relation to work processes used on site, three respondents (Greg, Neville and Trevor) suggested that suppliers should also be providing necessary information not only to enable scheduling, but also they should be providing information when there was a change in process or when specified products were required to be substituted by other similar products. This caused disruption in particular when works were going to be carried out outside the standard expectations or when there was a 'short cut' taken by either another supplier on the

project or by the client. The need to communicate this change in work practice or product supply was seen as very important as in some cases the follow on effects of one change could proportionally impact on the project as a whole. In other words, several of the principal contractors (Tim, Neville, Richard and William) suggested that in some cases the smaller supplier would intentionally cut corners to improve their margin rather than benefit the project. *“It’s not that they finish ahead of schedule, it’s that the workmanship suffers and that then snowballs through to the next trade”* (Neville).

However, even though there seemed to be a significant amount of confusion and disharmony, actors were still content in working together to complete the project and even consider future projects. This seemed to stem from a context of familiarity with each other and an understanding of how each other worked. Basically the indicators were comments like *“we always disagree on many things, but we like working with them, they get the job done”* (Paul) and *“we know we can work with them, we have worked together on many projects over the last ten years”* (Richard). This seemed to indicate that working with someone you knew was a more favourable option than seeking work with an alternative supplier where there was a need to establish a new relationship. It was evident that here was a very strong link to past experiences and (5.3.2.1) knowledge of who they were working with was a very important key factor. Actors even seemed to make compromises if they could work with someone they knew rather than settle for someone they had not worked with before. Mick suggested that *“I have a choice of who I work with and if I know they are reliable and will look after me then sure I’ll prefer to work for them rather than someone I know nothing about”*.

Table 23: Actor relationship perspective ‘information share’

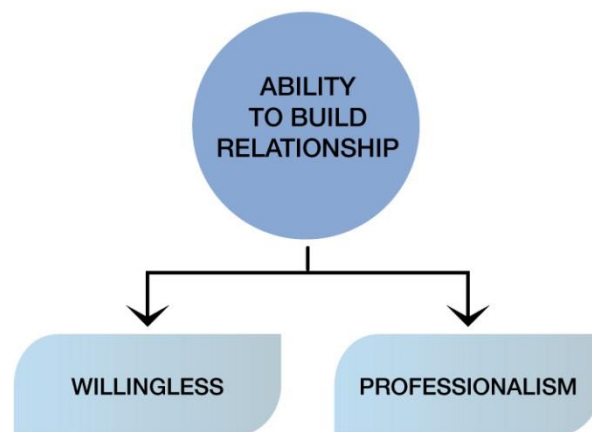
	Downstream view	Upstream view
Level 1 (Client)	N/A	Client would share information with principal contractor. This revolved around project details and expectations
Level 2 (Principal contractor)	Most respondents did not provide specific details, however, beyond the	Principal contractor would discuss scheduling detail, however only when supplier

	necessary project information, the next main topic was future opportunities	arrived on site. Expected supply on demand
Level 3 (Main Supplier)	Would stay in touch with client to keep up to date with pending work and project requirements	Would communicate with supplier only if resources were required. Would communicate when and where and what was required. No other detail was given until the supplier arrived on site
Level 4 (Material supplier, service provider)	Would communicate upstream if there was no work available. Would call to advise of the delivery or arrival time, would also advise if there was a need to reschedule or if items in short supply. If not available, it was suggested by upstream that some supplier would not return phone calls (John, Richard)	Would resource from own pool and not pass out information to smaller providers or use their resources unless there was no choice
Level 5 (Small enterprise , solo trader, operator)	Would communicate upstream if there was no work available. If employed there was no upstream communication	N/A

5.2.2.3 Ability to Build a Relationship

Ability to build a relationship as defined in Table 19, was the understanding and having the willingness to work together to remain competitive (Cadden, Humphreys and McHugh, 2010). This was considered an important trait among actors as it meant that, if an actor had the right attitude and approach, then it could be possible to foster a relationship as opposed to having little or no interest in developing or nurturing anything past the current work environment.

Figure 22: Themes and sub-themes of Ability to build a relationship



The ability to build a relationship emerged as the third key theme in the NVivo analysis which was seen by respondents as important to collaboration. Fourteen respondents suggesting that it was important that all actors needed to display the ability not only to work together but also to build a relationship. The two most common themes that arose was the willingness to work on building a relationship and the professionalism displayed when establishing and maintaining the relationship (Figure 22). Eight respondents felt that the willingness to work together and create a close working relationship is extremely important, with some comments such as *“If you have a positive attitude you can work towards building a relationship”* (Trevor) and *“I try and select someone who is willing to be a partner”* (Paul). This demonstrated that collaboration on some level was required between actors in order to motivate selection as project supplier. Three of the respondents also felt that the willingness needed to extend to sharing some of the inherent risks (Brian, Greg and William) and not just working on a site.

However there seemed to be some scepticism about the sincerity of some suppliers and clients when it came to their motivations to demonstrate willingness. William suggested that the willingness to collaborate was dependant heavily on the cycle of the relationship and the workload, implying that both clients and suppliers are willing to appear to be more flexible if it gains them an advantage. Along similar lines, three other respondents (Simon, Neville and Robert) agreed that some suppliers will fit into your culture and process until someone offers them what is perceived to be a better opportunity. Neville commented *“There have been suppliers that will work with you if it suits them at the time, as soon as you give them a go, then they take you for a ride”, “they seem like a genuine outfit on the surface then they try every trick in the book to pull the wool over your eyes”*. Similar attitude was implied towards clients, *“You do your best to work as cheap as you can, but as soon you start, their attitude changes and they start to get demanding, they stop talking and start telling you not only what to do but how”* (Rhys). This highlighted why the emerging theme of professionalism was also important to the actors in the supply chain. Many respondents felt that there was not enough sincerity between actors in the field and that most of the actors were not up front with their intentions, being guided by the pressures of the project rather than the need to establish a long term relationship.

Downstream actors were concerned about the reliability of suppliers and felt that while they wanted to work with their suppliers they had concerns regarding longevity of the relationship and sincerity of their intentions. While upstream actors expressed concern about the continuity of work and if clients were able to win enough work to keep them engaged beyond the current project (Figure 22). This created a resistance to wanting to form a relationship or make long term commitments, which seemingly added to the perception of clients that all upstream suppliers where not professional in their business dealings. Three of the respondents commented on supplier reliability stating that if a long term job was on offer, then the supplier reliability was greater at the beginning and would then start to wane towards the end of the project, particularly if there was no other project to go onto (Tim, Paul and Greg). While suppliers felt that they were constantly pressured into compliance by the client as Simon stated *“if you’re not available when they need you they throw everything at you, from the amount of work they have given you to, don’t bother pricing the next job”*. The theme would suggest

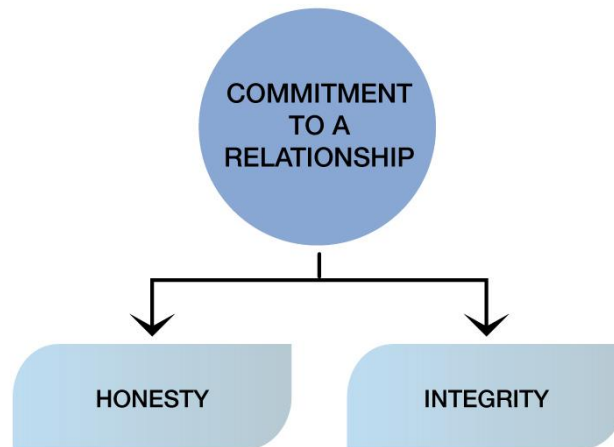
that opposing goals are creating a culture of mistrust through miscommunication of needs and goals in particular when suppliers needed more work to maintain a sustainable business.

Further investigation revealed that many of the above mentioned suspicions and concerns were more prevalent during the peaks and troughs of the market, however as pointed out by Tim *“it always depends on if you’re working or not, if you’re looking then the market is down, if your flat out then it’s up. It’s all perception and where you stand at the time”*. Neville suggested that *“the market is always moving either up or down and there is never a real balance, of course if we are in a recession it’s obvious, otherwise you just need to be aware of the other person’s circumstances”*. Richard suggested *“it doesn’t matter if you’re busy or not if your professional enough the work you are doing should not change the way you act”*. Hence there was an expectation that the professionalism of the actors should not be influenced by changes in the market place of the amount of work in hand at a particular time. However the need to work was a constant driver for upstream actors and this meant that once a project was coming to an end suppliers would start to seek alternative engagements. *“We need to keep on the move it’s not just stop, start. If there is nothing on the horizon with our current client we need to start looking one or two months before”* (Mick, Alex).

5.2.2.4 Commitment to a Relationship

Commitment to a relationship emerged during the NVivo analysis rather than the review of the transcripts as outlined in Table 19. This then was added to the analysis as it is significant particularly following the views of participants that emerged in the previous section, Ability to Build a Relationship (Section 5.2.2.3) where actors were dubious of the intentions of others.

Figure 23: Themes and sub-themes of commitment to relationship



Commitment to the relationship emerged as a theme that created significant concerns about actors in the supply chain. The emergent theme focused on the real intention of both upstream and downstream actors (Figure 23). Postulating the view that actors are not sincere in their intentions and will in some case *“say or do anything to get on the job”* (Greg) or *“they want to throw other work at you, but you have to help them out on this one, then when you go and ask for the other job it’s never there”* (Albert). This raised the point that there needed to be more sincerity when relationships were concerned and that it was a main issue that highlighted why there was a degree of mistrust among actors, in particular if the actors were unknown to them or if they had a reputation of not delivering. Of the twelve respondents, eight were tentative about engaging or being engaged by an unknown actor, in particular if part of the trade-off to working cheaper or quicker was the promise of further work. The other four respondents suggested that they would not consider working for any client under the promise of future work as based on previous experience there was always an excuse not to deliver on a promise, which was seen as a lack of integrity rather than lack of professionalism (Rhys)

Five of the respondents felt that honesty is an integral part of maintaining a commitment to a relationship, as this enabled the building of trust. However not all actors had universally bad experiences with their supply chain. Richard argued that *“we have subbies that have worked for us for over 10 years and have built their business on our relationship”*, while Richard suggested that it was rare to find committed contractors in today’s market *“these days the market seems different and we would not engage with*

someone that didn't have a favourable track record". The consensus for integrity was reflected in several of the comments by the respondents. Rhys *"if you get your foot in the door you have to be willing to work at the relationship"*, Paul *"it helps if they are sincere about working with you"* and Philip *"it's up to both parties to be transparent from the start"* were typical of the responses when asked their view on integrity. There was a clear indication that that this theme was closely linked to trust (Kramer, Roderick, and Lewicki, 2010) however the motivation behind the lack of integrity seemed to be driven by bad experiences between actors who commit to a project or task and then move on once a better offer comes available.

Some issues that were highlighted are reliability (James) poor work ethics (Paul) apathy (Philip) and indifference (Robert) as barriers to committing to a long term relationship. Actors at the upstream end of the supply chain felt that clients were apathetic and indifferent to their needs and as providers of work would use the position to take advantage of suppliers eager for work (Frank, Donald and Robert) while the downstream actors felt that suppliers were unreliable and generally were not true to their word and in some cases were opportunistic particularly in a buoyant market (James, Paul and Greg). The view of the actors meant that there was a strong motivation to maintain an arm's length relationship as expectations to collaborate were low.

5.2.2.5 Summary on collaboration

Downstream actors such as suppliers and subcontractors are more open to a long term relationship than upstream actors such as clients and principal contractors. However it seems that each actor wants to create a stronger relationship with their client downstream rather than their supplier upstream, so the relationship building efforts seems to flow downstream but they are not reciprocated flowing back upstream. This seems to be largely based on the expectations of each of the actors in the supply chain not being met. Where expatiations are in some ways diametrically opposed from downstream to upstream leading to misconception of what is actually happening or is required amongst supply chain partners to form a stronger relationship. The main issue is that actors seem to be focusing on their needs rather than the needs of the supply chain.

5.2.3 Dependency

Dependency as outlined in Table 19 was viewed as an organisation's need to acquire a buyer for its offering, where the offering could be the goods or services or access to work (Gold, Seuring, and Beske, 2009, Lambert and Cooper, 2000, van Donk and van der Vaart, 2005). Reliance on third party suppliers to provide services is just as important for clients as to have sufficient work to keep suppliers engaged by their client. With a significant amount of work being carried out externally to the organisation by a third party (Eriksson, Dickinson, and Khalfan, 2007, Humphreys, Matthews, and Kumaraswamy, 2003, Matthews et al., 2000) dependency rather than reliance plays a major role in the construction industry.

Figure 24: Dependency theme and sub-theme analysis model

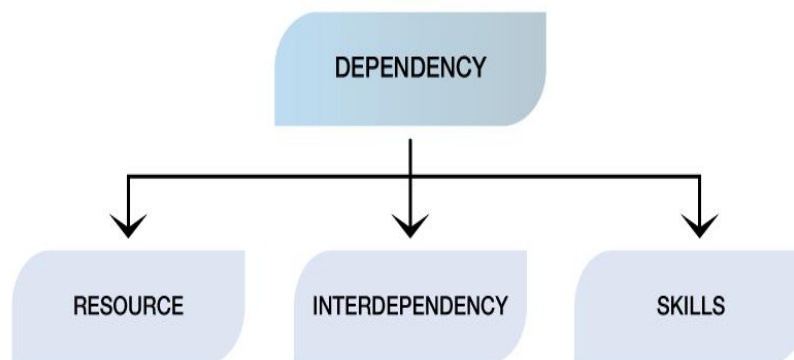


Table 24 shows the matrix query from NVivo for the three main themes, matched against the respondents comments and the number of references made to each theme. Each of these themes were further explored for better insight and understanding into what each respondent considered important to them in each of the emerging themes. A number of sub-themes to the three as stated in Table 24 emerged and illustrated in Figure 24 and will be discussed below.

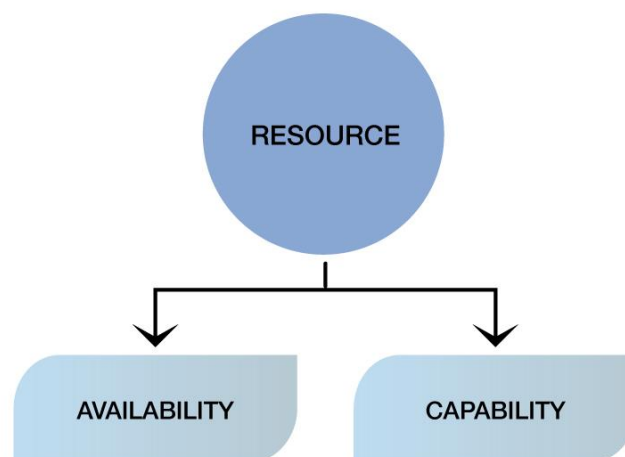
Table 24: Dependency theme responses

	Sub-themes of dependency		
	Resources	Interdependency	Skills
Respondents	16	9	9
Coding References	62	28	24

5.2.3.1 Resources

While dependency on resources is considered a main theme, due to the large number of sub-contractors engaged on a project (Eriksson et al., 2007, Humphreys et al., 2003, Hatmoko and Scott, 2010) resources themselves emerged as a strong sub-theme, this was due to resources not only being the goods and services provided but also the actual work itself. To many suppliers the ability to maintain a constant flow of work was what they considered a valued commodity and having the ability to source and maintain a busy schedule meant that they were able to run and manage a successful business. However the notion of being interdependent or reliant on one supplier or provider was generally considered as detrimental to one's business.

Figure 25: Themes and sub-themes of resources



With the literature already advising us of the heavy reliance on third party suppliers (Eriksson, Dickinson, and Khalfan, 2007, Humphreys, Matthews, and Kumaraswamy 2003, Matthews et al. 2000) it would be expected that there would need to be a large focus on the acquisition of resources. However resources were not just seen as the

supply of goods and services to clients. To the suppliers upstream in the supply chain, it was also the ability of contractors to supply work. It should be noted that the supply of work in this theme should not be confused with continuity of work as discussed in section 5.2.2.3, Ability to Build Relationships. Continuity implies that work is supplied by the same provider on a continual basis, while supply of work implies that it can be derived from many sources.

Two major sub-themes emerged from the NVivo analysis for resources; these are availability and capability (Figure 25). Availability in terms of having available resources when required and capability referring to being able to deliver as required. This was highlighted by three of the principal contractors (William, Tim and Neville) as well as two of the major suppliers (Donald and Frank). Who all agreed that “having the resources available was necessary; however having the capability to do the job was paramount” (Tim). These two factors emerged as important due to the realisation that even though most suppliers and clients are deemed capable of supplying a resource, the resources were not always available and that limitations did exist based on market forces, such as supply and demand. Of the sixteen responses, all acknowledged the need to consider what resources were available, not at the time of pricing but at the time the project was anticipated to commence. This theme had strong ties with the previous emergent sub-themes of Ability to build a relationship (see 5.2.2.3) where it was suggested by William, that “*the willingness to collaborate was heavily dependent on market forces*”. In other words, when work was scarce there was a greater tendency to meet client demands as was the case when resources were in short supply the client would accommodate the demands of the supplier (William).

The overview of the theme suggested that respondents aligned to partnering with suppliers that were known to have the resources required and inviting them to submit rates for prospective projects (Tim, Richard, Mick and Robert). There were also suggestions that in some cases ignoring petitions from unknown suppliers to submit prices was common place (Martin, Robert). Comments reflecting this sentiment ranged from, “*you would only talk to them because they have the resources you need*” (Robert) and “*they have to be able to deliver and if you’re not sure they can, you may have to look elsewhere*” (Rhys). What was also considered as critical was the time it would take to deliver or complete a task, in particular when resources were in short supply (Trevor,

Tim, Rhys). Comments such as *“the biggest challenge is to get what you need, when you need it”* (Trevor) and *“sometimes it doesn’t matter if there is a supply issue, you just have to make it happen or miss out”* (William) reinforced the fact that there was concern when they were not in control of their own resources.

The larger suppliers were cognisant of their abilities and would often consider engaging a smaller single owner operated business to cover the short fall in resources (Brian, Albert, Frank and Philip). However the reliability of the single operator to deliver as required was a concern, as remarked by Frank *“we rely heavily on our owner operators to cover most of our work so if they decide not to show up, it reflects on us”*. Clients were also cognisant that in some cases single owners were used to supply services and that their supplier had no control over the third party supplier, however the expectation was that contingencies should have been put in place in case of short falls (Trevor, Greg). The justification was along the line of *“we are a major client and as they need to ensure we are serviced, it’s not my concern who misses out, as long as we get what we want on the day”* (Greg) and *“if we are not their priority, then perhaps we need to find suppliers that treat us as a priority”* (Trevor). While the response from suppliers related to work continuity along the lines of *“we are expected to sit at home and wait for a call, we have overheads and need to keep working, if they stand us down for a few days we look for work elsewhere. We don’t wait at home”* (Mick) and *“as far as I’m concerned if they want one day on one day off, I have better things to do. It’s either I stay on site until I finish and if they want to chop and change schedules then I can do it too”* (Philip).

The suppliers view was that the issue was an inconsistency in continuity of work and that meant that they were forced to move around from project to project when work was not available on the site they were engaged on, so as to ensure some form of continuity. The major issue was that in some cases when they rotated between two or three projects there was an overlap and this created a shortfall of resources (Philip, Mick and Alex). The outcome was suppliers would be often punished financially if they didn’t conform to demand schedules. Firstly by losing money if we’re to wait until they were required or by imposing a surcharge if they didn’t return on site when asked to. As was noted by Alex *“they tell you they need you at the end of the week so you wait a few days, when you follow up they say. There is a hold up, maybe next week. So you take another job,*

then all of a sudden they change their mind and it's my fault". "They expect I will walk out on the job I am engaged on and come back to their site to finish theirs, if I refuse they tell me they will get someone else and charge me the difference" (Alex). The opposing ideals or goals created animosity between client and suppliers in particular if shortages in resources contributed to delays or additional costs. However neither side was prepared to consider that things may improve if there was better communication to align objectives and outcomes.

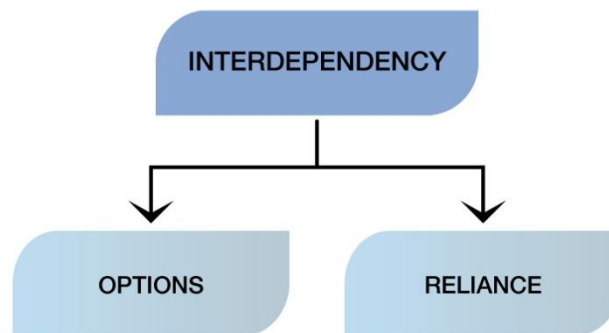
Further comments like *"If they were consistent with the work load there wouldn't be any issues, telling us when we may be required doesn't help plan"* (Mick) and from the client perspective it's about *"the suppliers who are unreliable that makes it difficult to schedule. If you get held up because one trade doesn't show it generally affects the rest of the program"* (Trevor) would indicate that conciliating the differences may be difficult short term.

5.2.3.2 Interdependency

Interdependency as set out in Table 19 is viewed as individuals or organisations that have or seek a mutual and/or complimentary arrangement to deliver a project or task (Bankvall et al. 2010). Respondents argued that interdependencies were to be avoided at all cost, almost sounding like it was a weakness or an inability to manage ones business. Respondents felt that it was possible to work together without being reliant on one another. The general consensus was that the construction industry had too many options and changing providers if required was less restrictive, if they remained independent.

They also argued that interdependency could mean a loss of identity and that other potential clients or suppliers may see them as been mutely exclusive to one organisation. So the prospect of a close association with one company or providing service to one company only was seen as way to preclude oneself from other supply chains, even if they had ample resources to provide service to a number of projects.

Figure 26: Themes and sub-themes of interdependency



The content analysis in this section only emerged with one major theme and one minor theme the major theme was options with only two respondents that mentioned reliance (Figure26). The theme weighed heavily towards avoiding interdependency at almost any cost with actors responses focusing heavily on avoiding interdependency rather than determining if interdependencies existed at any point in the supply chain. Options were focused on the number of suppliers available to clients or in the downstream view, clients available to provide work. Each actor that responded considered themselves as independent and capable of surviving without any direct link or combined reliance to anyone else. The second sub-theme or reliance was not as prominent. However there were indications that there was a resistance to becoming reliant on a limited number of suppliers. Tim and Paul mentioned reliability as a major factor and to rely on only one or two suppliers you would remove yourself from the market. Tim suggested that *“a reliance on say one sub-contractor would mean that you would almost be excluding yourself from the market”* and *“other suppliers would think you were using them to price check”* while Martin suggested that *“this is not an industry where you work with one supplier, things change constantly and not everyone has the flexibility or reliability to keep up”*. However reliance did not cover enough information to enable meaningful analysis. The options theme emerged as a very strong view point as a deterrent to interdependency. While it was evident that actors either upstream or downstream relied on each other for either goods or services or for continuity of work, the view was that they were independent contractors that wanted to maintain their individual identities.

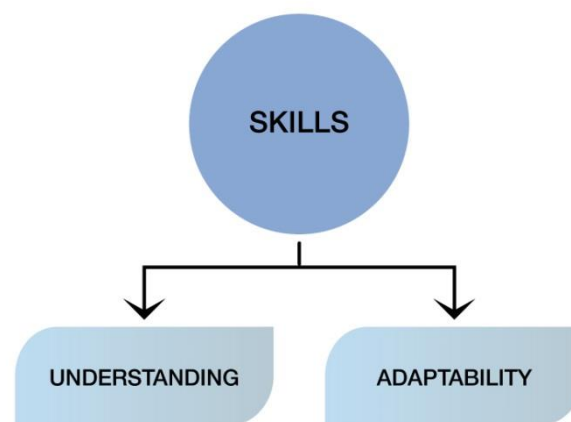
The clients view where it was suggested by John that *“staying at arm’s length is what makes it competitive. At the end of the day if you don’t rely on them, it may scare them into realising you could go away”*. The need or perception for options was best relayed by Trevor, *“we need to have budgets, we win or lose according to those budgets, so if we need to control them (supplier) we can’t if we don’t have options”*. These sentiments were typical of the responses provided, not only by the downstream actors but also by the upstream actors. Even in the case where actors had been working together for a number of years. Richard admitted to having suppliers he relied on by saying *“we have a lot of subcontractors we have a relationship with that is over 10 years but we only do 60% of our work with them, we are depending on them but we are not reliant on them”*. However he still suggested that interdependency was not a consideration, suggesting *“we will source other suppliers to keep our options open”* (Richard). There was likewise William who stated that *“we have a preferred supplier, but would you say we are interdependent, no I don’t think so”*, *“we don’t always use them and they are not always available when we need them”*.

The supplier perspective as mentioned was very similar as suggested by Alex, *“I think you can have an alliance as you call it, or a partnership, but not a relationship that’s interdependent, there are too many options in the market to commit to one”* and Robert *“I don’t think interdependency, I think it’s more working with a few clients and shopping it around the ones you know. I don’t think that’s interdependency”*. The view was that having to close a relationship with one actor in the supply chain would limit options and create a perception that calling for quotes was more in line with price checking rather than option sourcing (Robert). Delving further into this construct proved interesting as there was interdependency between supplier and clients at the resource level. However at the individual level it seemed that actors preferred to keep their distance so as to maintain their individuality in the market place. This was highlighted by comments such as *“it’s a trust issue we don’t want to be held to ransom by a supplier if we are totally reliant on them”* (Brian) and *“we can work together to achieve something out of the project but that’s as far as it goes”* (Rhys). The context of the theme showed a strong resilience and strong tenacity to be independent, in both the upstream and downstream direction, which was a strong inhibitor to relationship forming beyond the project scenario.

5.2.3.3 Skills

The interpretation of skills (Table 19) is viewed as having the necessary credentials or skill set to perform the allocated task or the ability to source and to supply the goods or services (Eriksson, 2010; Odusami 2002). Skill labour as a trade or being resourceful to locate and provide a service is viewed as part of the supply agreement when an actor was engaged as part of the supply chain.

Figure 27: Themes and sub-themes of skills



The analysis of skills using NVivo revealed that understanding and adaptability were important to actors in the supply chain (Figure 27). Actors felt that project managers, supervisors and even labourers required unique skill sets. Understanding related to the actors trade or service and their ability to provide a timely and quality delivery that not only delivered on expectation but also on price (Trevor, Albert and William). While adaptability related to the supplier's capability or agility to provide a service in any site related environment, irrespective of economical restraints, trade related issues or site specific conditions (Trevor, Frank and Mick) in other words there was an expectation that a supplier should be able to detriment the expectations and align themselves with the needs of the project to ensure delivery so as to contribute to a successful outcome.

Both sub-themes were seen as an important factor to a continuing relationship between actors. William highlights that for suppliers *"it only works when you have the skill and ability rather than just the actual equipment"* and *"it is their skill and ability to pull off the job that far outweighs the price"*. Albert further added *"we require people who are*

resourceful and self-sufficient, that are able to understand, fit in and get it done without me having to stand over them". While Albert suggested that *"clients need to be organised and able to make a decision on the spot, if they need to go through too much red tape because they are restricted or can't make a decision then I don't want to be there, I can't afford to be held up"*. This highlighted the main concern expressed by several suppliers relating to having experienced project managers that were competent enough to manage a project no matter the situation (Rhys, Mick and Alex).

The upstream suppliers were consistent with the view that the downstream providers need to be organised and decisive, in particular when a delay would directly affect them. Mick commented that *"it comes down to the quality of the people who run the site"*, *"if they are not consistent with the decisions they make it ends up in a mess"*. The main concern for suppliers was to focus on the organisational skills to deliver a seamless workflow, which according to two respondents was not always possible. Both Richard and Paul suggested that unreliable suppliers had a negative impact on the project by creating schedule overrun which, were always inevitable in particular when there were issues with materials being supplied or works not being completed on time. The client's view of their upstream supplier was that they need to be able to provide solutions to construction problems in particular when issues did arise. The expectation being as suggested by Trevor and Greg was that suppliers often know or realise there is an issue however very few take on the challenge and make it work. Trevor commented *"they need to understand that there is no one fits all so they need to adapt and make it work"*, while William advised that *"suppliers should consider that in some cases they create the issue so they should be prepared to provide the solution"*. The context of adapting a solution was defined as finding an alternative to delivering on their agreed commitment either by using their resources or procuring alternative suppliers.

The ability to adapt to the work environment was considered as essential to proving solutions and viewed as favourable by clients in particular when schedules were tight (Trevor, Richard and Paul). The context of the discussion ranged from adaptability to uncertainty due to weather, shortage of manpower or materials and was a focal point for clients in selecting suppliers. While the upstream view was that variations were an issue and generally caused delays, suppliers would tend to stay away from works that were prone to changes or where the client took too much time to make a decision on

alternatives. In these cases suppliers would ask for decisions to be made on the spot and would consider moving onto another project rather than wait, in particular if there was an abundance of work (Mick). However not all suppliers agreed with this point of view but would try and claim additional charges for waiting (Albert, Alex). Clients would not regard additional charges as acceptable neither was the view that a supplier would abandon the project. It was felt by several of the respondents that suppliers who try to use blackmail to gain additional monies or threaten to leave would not be considered too highly when pricing future work (William).

5.2.3.4 Summary on Dependency

It is apparent that neither the upstream or downstream actors want to become interdependent. Each feel that as they are an independent organisation, commitment to one supplier or client only will work against them in a competitive market as they will be unable to explore better options when they arise. Both upstream and downstream actors agree that there is a dependency that runs through the supply chain. However this does not restrict their ability to trade within other supply chains and they feel that the low barrier to change has more advantages than commitment to one supply chain. The need for this flexibility works as an inhibitor to collaboration as actors have a need to move from one project to the next if there are delays using their need for a resource as justification for the requirement to flexible rather than show concern for needs of the project.

5.3 Supplier Selection

5.3.1 Introduction

The second phase supplier selection is the next step after having decided who is short listed as a potential project partner the analysis examines how actors select which suppliers will provide the goods that will be used on site. Using NVivo to code and analyse each of the participant's responses the themes and sub themes that merged (Figure 28) were analysed and the findings are discussed further in this chapter

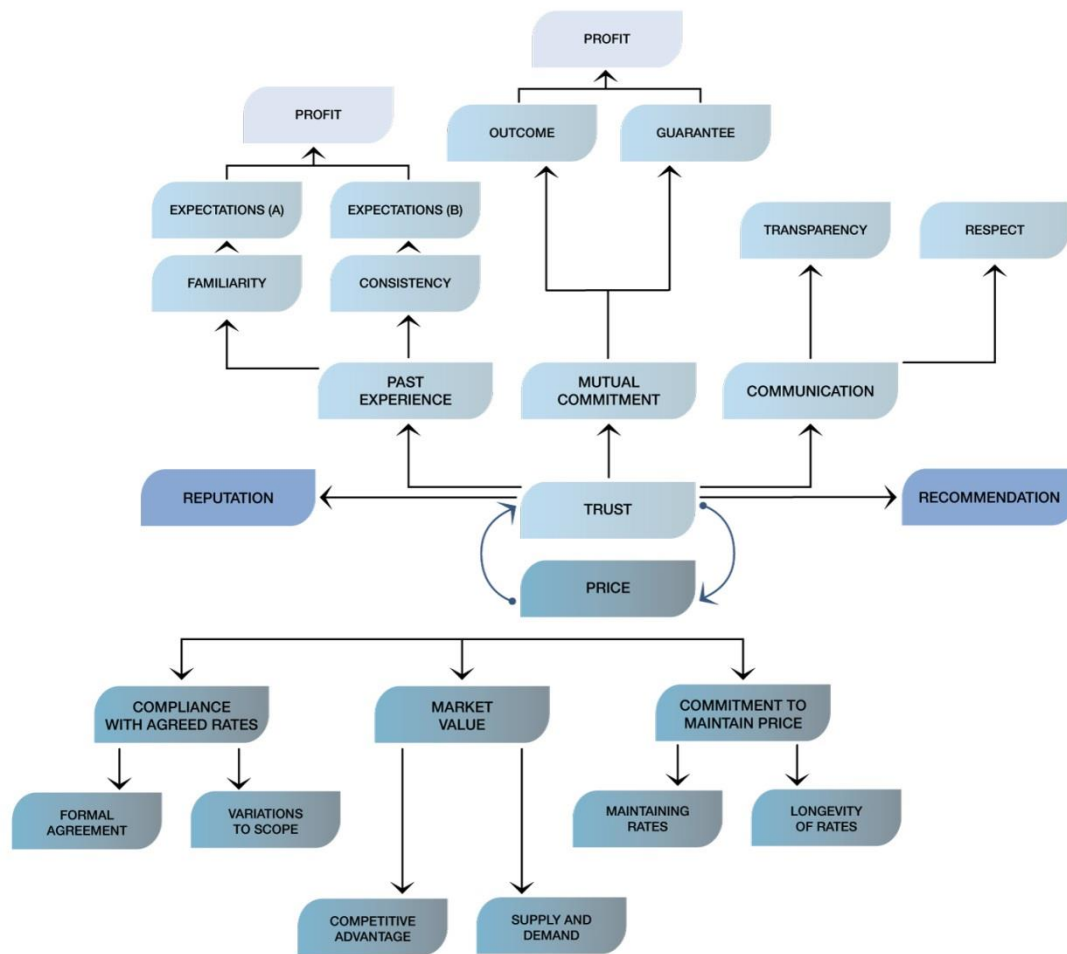
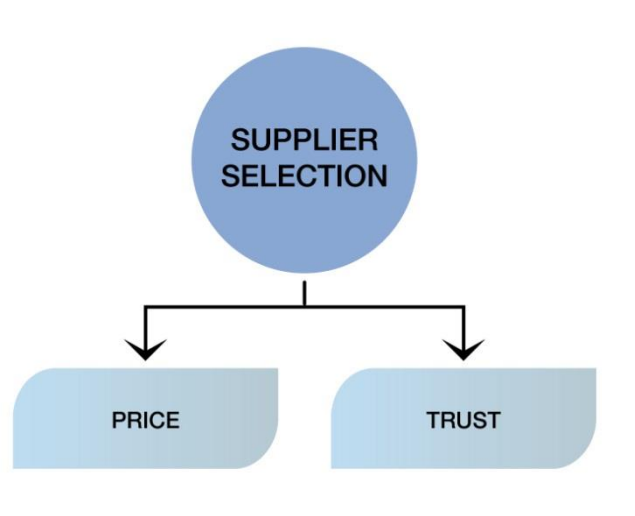


Figure 28 - Themes and sub- themes of phase 2 supplier selection

In this section the research examines factors that have emerged from the NVivo thematic coding that relate to selecting the winning bidder from the potential partners or supplier who have passed through the first selection process and have been asked to quote. Within this second phase of the selection process (Figure 9) actors select suppliers to carry out specific tasks or are invited to become part of the supply chain within a project. At this stage of the process the literature tells us that price is one of the predominant factors in the selection process and that focusing on providing a winning bid is the key (Biong, 2013, Hartmann and Caerteling, 2010, Seifert et al., 2012). The literature also identifies a strong consideration towards trust as a selection criterion, where selection is based on either past experience with the supplier and or their reputation. While literature discusses price based selection and trust based selection as two different constructs, there are strong indicators that both constructs are

interconnected and that the relationship between the two is more of a dichotomy rather than two independent forces (Donato, Ashan and Shee 2015). The importance of this relationship is essential in understanding how actors relate their experience in dealing with price and trust when making a choice. The specific attributes that are considered important will be examined to define the extent of the relationship between price and trust, as well as its effect on the selection of supplier for the project (Figure 29).

Figure 29: Supplier selection thematic codes



While there are a number of criteria for supplier selection, this research focused on the relationship and its influence on price and trust. The following section discusses in detail the themes and sub-themes that emerged from NVivo that were intrinsic to the price-trust relationship and how agreements are reached at the quotation stage or pre project realisation stage. Identifying what factors in the price-trust relationship drives actors in the supply chain to select certain suppliers over others will enable the question of

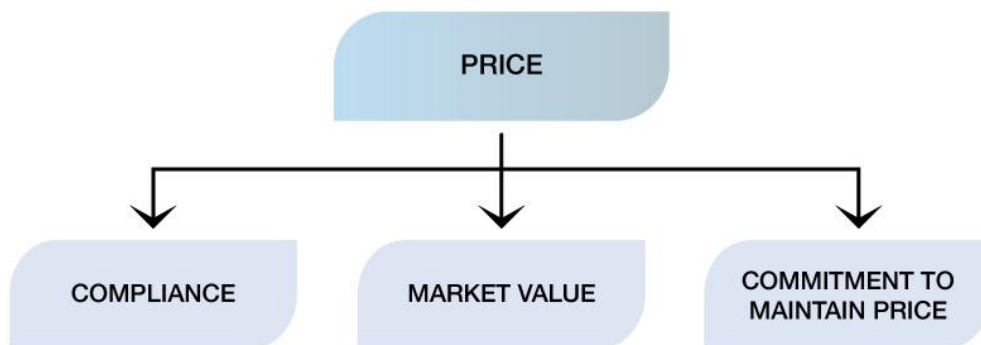
“How do price and trust correlate within the supply chain and how does it impact on the relationship”?

to be answered. In this area of research respondents were asked to consider their views regarding selection of suppliers and how much of the decision was influenced by either price or trust. This view enabled participants to reflect on their selection process and examine how reliant they are on either price or trust.

5.3.2 Price

The NVivo analysis identified three main themes that were considered important by respondents when assessing a supplier's price (Figure 30). These themes were then reviewed and a number of sub-themes were identified as important to participants (Table 25).

Figure 30: Price theme and sub-theme analysis model



The main sub-themes were identified in each of the three themes and analysed below to provide further insight into what drives the selection process. The pre-project realisation was viewed as important as at this point budgets had already been set and principal contractors were required to confirm their pricing before work commenced. Documentation in terms of tenders (Appendix 9 Tender document) and tender interview selection process (Appendix 10 Tender selection process) were made available for further analysis.

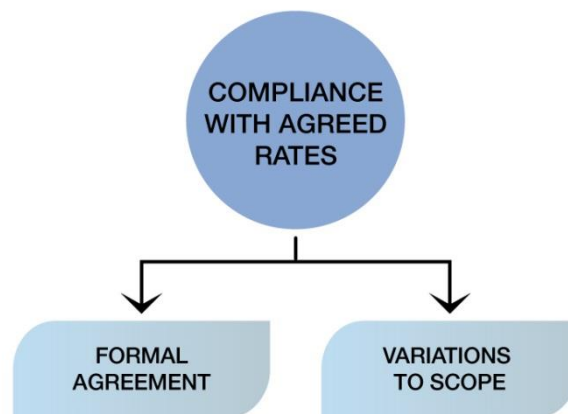
Table 25: Price themes responses

	Sub-themes of price		
	Compliance with agreed rates	Market Value	Commitment to maintain price
Respondents	14	12	9
Coding References	36	31	26

5.3.2.1 Compliance with Agreed Rates

Compliance with agreed rates was viewed as suppliers being able to maintain rates without looking for variations or extras (Table 19). It is defined as a price based contractual agreement based on work amicably without compromising ones values (Shin et al., 2011; Voeth and Herbst 2006).

Figure 31: Themes and sub-themes of compliance with agreed rates



Two main themes emerged from the NVivo analysis; formal agreements and variations to scope, both of which related to the quotation processes that are used to define and establish the scope of works to be delivered. The Variations to scope theme was not as strong a focal point as were formal agreements, however variations to scope were seen as a major catalyst for litigation. Where variations to scope were defined by the respondents as unforeseen changes in the projects original scope, required additional works that had not been priced or considered under scope prior to the commencement of the project (Figure 31) while the formal agreement was seen as an essential instrument to ensure that there was an understanding of rates and charges between client and supplier, clarifying the scope of work as well as the price. Documents outlining formal agreements were supplied by one respondent as a sample for review by the researcher (Appendix 11 Formal agreement). Formal agreements also included contracts, works orders and works instructions that were based on a pre-determined schedule of rates or quoted sum for a specific task. The different perspectives provided by the participants where upstream actors see agreements are becoming more complex, while downstream

actors feel that contractors are not complex but are trying to encapsulate a wide range of contingencies, which could create variations to scope.

According to Trevor and Neville, formal agreements are essential to ensure compliance not only with the submitted rates but also with the requirements of the project. The terms and conditions, as well as expectations, are clearly noted so there is no confusion, therefore as a client Trevor suggests that *“In terms of an agreement we have to ensure that we are all on the same page so when a supplier signs it we expect that he understands”*. The main issue that seems to arise is that most documents are not always being read before a commitment is given. Frank explains that *“some documents are 3 inches thick and I know some people skim over them, we raise issues before we sign”*, *“however I have worked with other suppliers that I know have an attitude of just signing the contract and working the details out later”*. This reactive approach to contracting seems to have driven the industry to produce complex documents to avoid issues as acknowledged by Neville, *“we do produce what may seem like an adversarial document, but it’s not, our documents, they are clear, and by and large don’t create ambiguity or conflict”*. The issues that do seem to arise are when there is some deficiency in the documentation or a change to the scope of works and there is a need to negotiate rates for the non-fixed changes or additional works (Neville).

Variations to scope, creates an issue simply because many actors are of the belief that they provide an opportunity to rort the system and add or change additional costs. The client’s perspective demonstrated a concern in terms of oddities in rates that were submitted for additional works. Richard suggested that in many cases *“the hourly rate seems to be out of proportion between the standard contract and the provisional works”*, *“so this makes it hard to trust suppliers who attempt to justify a rate that is 20 to 30 percent over what was expected”*. This suggested that a higher rate would be charged for additional or unexpected works and in many cases the discrepancy was noticeable. This was confirmed by Trevor and Neville who also commented respectively, *“we try to avoid additional works as the rates seem out of proportion”* and *“there is always some doubt when variations are priced as to how they arrive at the sum submitted”*. To avoid this, the approach seems to be that of a tighter and more rigorous system of documentation that will encapsulate a wide variety of contingencies

to avoid variations to scope however there will always be unexpected tasks or works that need to be addressed.

From the supplier's perspective, variations to scope are seen as part of the job and sometimes cause considerable inconveniences. In particular when rates are asked for upfront as a provisional sum, provisional sums are indicative only and may or may not arise. The general view by the supplier is that a provisional item is just that 'provisional' and they only make an allowance just in case (Mick). In the suppliers view having to reschedule resources to contend with changes attracts additional costs, even if they are on the project site. James commented that *"a variation is an inconvenience that we need to contend with so if they throw one at me I have to cover my costs"* and Mick suggested that *"we add additional charges to a variation, we have to, it takes days before its approved and by the time we get the go-ahead we could be working elsewhere so we need to price as an independent job and most times they are small and fiddly"*. The point of view from suppliers is that the client can ask for a provisional item to be carried out at any time and if it has to be done in isolation from the rest of the project, then they will incur additional costs. At the same time they see an unforeseen variation as a provisional item and price it accordingly.

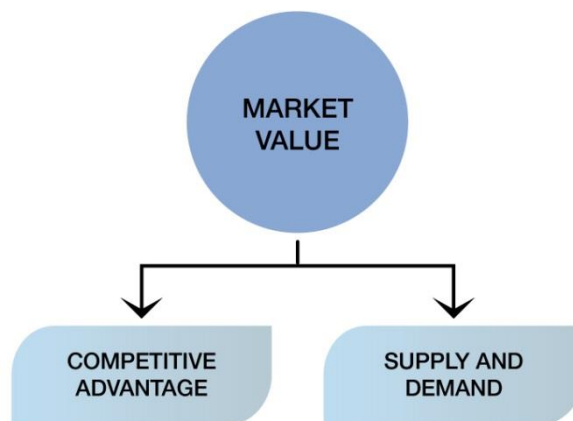
This is highlighted by several suppliers with comments like *" we finish the work and then they decide we need to come back and change something, we have to bring back all our tools set up again and they expect we do it at the same price as a job 5 times the size, it doesn't work like that"* (Robert). While Albert surmised it as *"a task that occurs while we are on site I can manage however when I price a variation in some cases I can't do it for the same price as some of the items on the contract"*.

The differences in views indicated that there are some contentious issues when it comes to variations scope, as there seems to be an expectation on the client's part that rates will remain consistent, while the supplier sees the additional charges as part of the contracting process.

5.3.2.2 Market Value

The market value as defined in Table 19 is the perceived going rate at a particular point in time (Manu et al., 2012). However in construction market value is sometimes seen as the lowest price that a supplier is prepared to submit (Uber and Runeson ,1985) even if the price was considered as unsustainable. With a fluctuating market that relies heavily on supply and demand, it is difficult to determine where the lowset available price actually sits so contractors and sub-contractors struggle to maintain a competitive advantage.

Figure 32: Themes and sub-themes of market value



The analysis of market value revealed two main sub-themes, competitive advantage and supply and demand or in other words the ratio of availability of resources versus work load. Competitive advantage emerged as the more dominant theme (Figure 32) with downstream clients looking for any possible opportunity to gain an advantage over competitors and win work. The analysis showed that while there is an expectation of suppliers providing the best possible price, there was also an expectation that service delivery was not to be compromised. Therefore the lowest price was not always considered as the best value. However in the majority of cases the lowest price was used as a bargaining tool to persuade other suppliers to review and perhaps lower their prices before the client would consider awarding them the project. The analysis also revealed that while market value was set by supply and demand, clients considered that the lowest quoted price that a supplier was willing to commit to was a good indicator for market rate. Price checking to ensure the best possible option had been offered, was

predominant among the principal contractors as their objective was focused on a continued work flow for their client, therefore if they could maintain rates within a consistent range, that was at least equivalent to market value, there was a strong possibility that works could flow from one project to the next (see 5.3.2.3 Commitment to maintain price).

Maintaining a competitive advantage that allowed them to win work over their competitors was considered essential by clients and principal contractors. According to Greg *“The need to maintain a competitive position as far as pricing is concerned is critical, there is a lot of competition in the construction sector”* and *“on selling can also be affected if your construction costs are too high”*. Similar concerns were expressed by Richard who added that *“if you allow prices to creep up you could see yourself unable to sell the development”* and Paul who stated that *“we have to be price driven, with overheads and interest rates even if they are at about 6% at the moment you can quickly overrun your budget”*. Frank suggested that there has been a change in culture over the last 15 years from a very relationship driven industry to price based structure. The belief that price was a motivator not only because of the market forces but also that there was no guarantee that the partnership would exist beyond the project (Frank). Price checking was considered essential by several actors as a simple process of testing the market particularly when there were changes in workloads that affected supply and demand. The main incentive to maintain a routine of checking was driven by the point of view as expressed by, Greg that *“it’s not the major national suppliers that are the issue, it the smaller ones who are opportunist and ride the supply and demand wave, these are the ones we need to test”*.

However while clients believed that price checking was an effective mechanism to attain best value, suppliers considered it as a way of manipulating the market by forcing prices down. The suppliers view is that clients *“use your competitors as their bargaining power to get you to reduce your rate”* (Alex) generally you are advised that *“the market has changed and that we’ve got to come to some sort of arrangement, because our competitors are using these sorts of rate and if we don’t match them we will all be out of a job”* (Mick). However according to Mick and ALEX the market is not always as fluid as it has been made out to be and generally prices are stable, its only when a few major contractors are going for the same job that *“price checking and price*

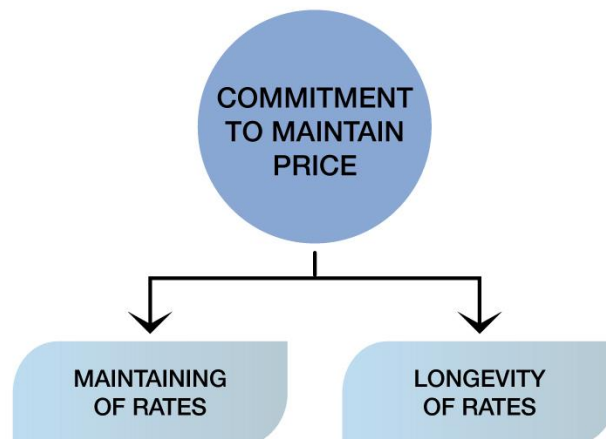
reductions occurs because we are told if we don't sharpen the pencil we will lose the job" (Alex). The perception on the supply side is that client uses the no work scenario as tactic to lower rates and improve their margins (Mick, Robert and Alex) while Simon commented that *"it's our own fault if we held our prices there wouldn't be an issue, we all have overheads so we can't work for nothing, yet it sometimes seems like some people do"*. However the client's perspective in contrast is summed up by Paul's comments in regards *"I don't think of it in terms of manipulating or anything like that, it's just about trying to get the best value, we don't force anyone to drop their rates"*.

The cycle of supply and demand as a key driver fluctuation in rates was perhaps more localised than economic based as most actors considered their situation and continuity of work as a key driver to move, raise or lower their rates. The less likely they were to have a continuity of work, the greater the possibility that they would lower rates. Donald commented that *"if work became scarce for us we would have to assume that competitors are working cheaper, so we would have to adjust our rates accordingly"*. This would have to be reflected all the way up the supply chain (Greg) to ensure continuity of work.

5.3.2.3 Commitment to Maintain a Price

In Table 19 commitment to maintain a price is defined as a willingness to work together to improve the supply chain, while maintaining a price structure (Gad and Shane, 2011, Gilbert and Cvsa, 2003). However with some projects running over a long period of time, principal contractors required some commitment that price increases would not occur, mid project. Maintaining the initial quoted rates over a long period of time on a single project or from project to project was considered as an important enabler to be able to avoid price checking by clients and allowed a non-contested move from one project to the next without the need to re-submit quotes.

Figure 33: Themes and sub-themes of commitment to maintain price



The final theme examined in this segment of the analysis was commitment to maintain a price (Figure 33). There was only one strong view point here and that was to maintain rates at a constant rather than have them fluctuating with the ebb and flow of the supply and demand cycle. The second most important issue was the longevity of the rates. Many actors felt that being able to hold a rate for an extended period of time allowed some predictability in pricing. However it was price fluctuations that were only considered problematic if there was an increase, not a reduction. Downstream actors considered it very important to have continuity not only in workload but also in rates, identifying this as an enabler to negotiate and maintain a consistency in work by offering stable and sustainable prices, leaving them with the time and opportunity to focus on their business, rather than continually having to go to the market for quotes. This was seen as a benefit simply because no variation in rates meant that time and resources would need to be spent on reviewing quotes for every project detracting them for time needed to operate and maintain a business. While the upstream actors also recognised the simplicity of maintaining a constant rate, they felt that process was not sustainable and they would prefer to price according to the market.

The motivation for non-variation in rates was driven by opportunity to lock in their client on more than one project at any time and ensuring a market advantage, however this was not sustainable unless suppliers could hold or maintain their rates. Tim commented that *“if we can lock in rates for a year or two we could have good flow of work, so we can focus on the job rather on where the next one is coming from”*. This was particularly attractive to the clients and was considered favourable in particular as it

would ensure stability in costs and sale prices as remarked by John, *“we can plan our sales and marketing knowing the exact cost 12 months out”*. The same view however was not shared by suppliers who considered it a disadvantage as clients would take advantage of suppliers and try and lock them in when rates were low, according to Simon, *“there is always talk about consistent prices, so when things move up they want us to hold the rate, when things go down then it all changes and it goes out the window and we are expected to drop our rates, there is no consistency then so we would rather price as we go”*. This highlights opposing views that downstream actors looked for consistency from their upstream suppliers, while upstream actors regarded flexibility as important rather than being locked into a long term deal.

However in some cases when workloads were diminishing, principal contractors felt they had to commit to fixed rates in order to secure continuing work. This would then cause a roll on effect to suppliers as contractors had to either accept reduced margins or source suppliers who were prepared to accept a reduced rate of pay. Richard claimed that *“when we are asked to consider holding our rates for the next job and we don’t have enough work on our books we generally take it and worry about the rest later”*. While Tim suggested that *“clients know when to apply the pressure so we try to meet the request for the sake of the relationship, then try and fit everything under the budget”*. Suppliers would then be subject to scrutiny and price checking by the client in an endeavour attain the best possible price. James commented that *“it’s normal when the rate is reduced they approach you for a reduction, but when the rate goes up you’re forced to ask for an increase, often you don’t always get it either”*. Pressuring suppliers to cut rates is not seen as a power play but what needs to be considered is that in an environment that runs from project to project, longevity is a luxury so when a client offers a continual workload they expect that you hold your price from job to job over a reasonable period of time. *“Therefore it is more a temptation to keep the competition out than a power play”* (Tim)

5.3.2.4 Summary on Price

The need to ensure compliance when it comes to project requirements has meant that contracts used on projects have become complex and costly to draw up, understand and administer. This seems driven by the need to hold prices at quoted levels and avoid the

burden of additional charges that come from changes to project scope. Trying to match competitors on price rather than differentiation of the service provided seems to also be a key factor as downstream clients try to reduce costs by any means possible in order to offer a lower price.

When workloads diminish, suppliers tend to accommodate the lower prices. Therefore it is understandable that when workloads increase, suppliers become more resistant to lower the price for their services. The main point of contention seems to be that the lowering or increasing of prices can occur midway through a project so actors tend to take advantage of market and economic situations as they arise.

5.3.1 Trust

Figure 34: Trust theme and sub-theme analysis model

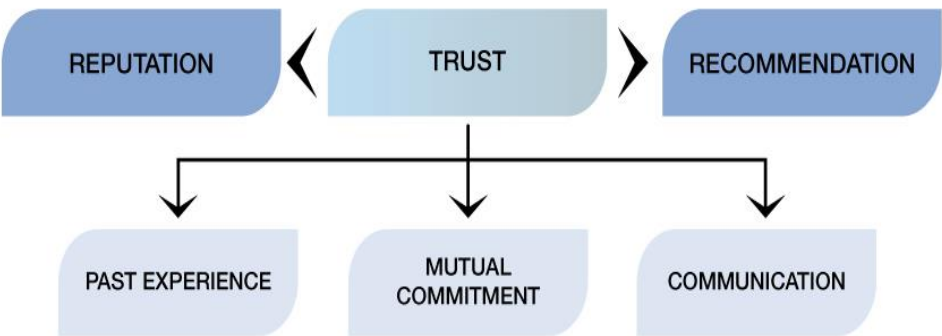


Table 26 shows the matrix query from NVivo for the three main themes, which emerged from the interviews. Each of the themes were further explored for better insight and understanding to what each respondent considered important to them in each of the themes. During the NVivo analysis of trust, there were three themes that commonly occurred and the emergent three are listed in Table 26. Two further themes that also emerged were reputation and recommendations which were not included in this analysis as many of the actors would only source actors on reputation or recommendation, only if a known alternative was doubtful or inferring that the choice was forced rather than by a selection process. Selecting actors in the supply chain based on their reputation or recommendation was viewed as trusting the point of view of a third party rather than having firsthand knowledge of the actor that was attained by prior contact or with the actor, a point that is not covered in this research.

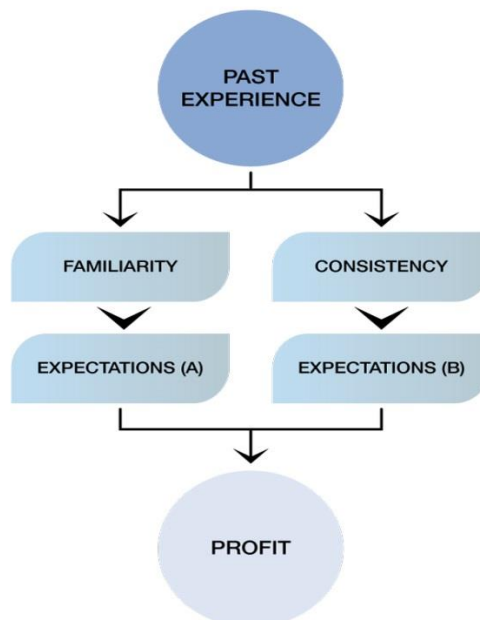
Table 26: Trust themes responses

	Sub themes of trust		
	Past experience	Mutual Commitment	Communication
Respondents	19	14	12
Coding References	84	45	26

5.3.2.1 Part Experience

Knowing who to engage or who will be your supplier is very important in a supply chain therefore as defined in Table 19 past experiences were considered as having knowledge of your supplier by attaining references or having previously worked alongside them (Bode et al. 2011; Rogers 2005). Prior knowledge of actors in a supply chain was important in terms of their credibility and reliability in terms of providing a service.

Figure 35: Themes and sub-themes of past experience



Past experiences with clients and suppliers provided the main criteria of reference for trust. Many actors gauged the value of their relationship based on past experiences with

actors within the supply chain as important. With the two key sub-themes that emerged are familiarity and consistency generated from actors having worked together on previous projects (Figure 35). Familiarity was derived from actors working together on previous project, while consistency referred to the supplier or client delivering the necessary resources, on time and on budget on each and every occasion without compromise to product or service. Due to past experiences from having worked together on previous projects, there was a level of expectation in regards to an actor's capabilities, work ethic and skills. Familiarity then was the main driver that determined what these expectations were and it led actors to refer back to previous projects to gauge if an actor would be a suitable supplier. Client expectations therefore emerged as a strong sub-theme of familiarity. With consistency to deliver over the period of the relationship based on the measure of any impact bought on by any disruptions which may have occurred over that period due to failure of meeting a commitment there were also expectations in terms of consistency in delivery. However expectations as far as consistency was involved had a different view point in that it was an essential requirement and failure to provide a consistency in service meant that there would be a discontinuity in the relationship.

Past experience was seen as an important indicator to selection of suppliers, as most actors felt more comfortable working with other actors who they knew (Simon, Neville and Paul). Suppliers were more comfortable with repeat clients, as this provided security as pointed out by Simon, *"if we have worked with them before and we know what their like then we know what to expect"*. There was also a similar point of view from Alex, who expressed the opinion that *"no matter how you look at it, if I don't know who they are I feel uncomfortable working for them"*. It was evident from the comments in this theme that actors wanted to know who they were dealing with and what their expectations were in terms of outcome. Paul went further to suggest that *"if I know their good and bad points I can work with them to get what I need"*, where attaining the needs was more commonly highlighted by clients than suppliers. This led onto the theme of expectations, where clients would gauge an outcome based on previous performances. This however was not always seen to be the case as the consistency of supply was not always there. Consistency was considered to be difficult to achieve, particularly in performance when a reduction in profit was involved. Profit

emerged as an unexpected theme and was clearly a disrupter to the relationship, in particular if there were losses to income involved.

Consistency in performance was viewed as imperative to the success of the project as this is what schedules and budgets relied on (Tim, Neville). However when rates offered were unrealistically low, issues occurred, such as the ability to deliver the required or agreed outcome. This drew comments from Tim who remarked that *“we don’t tend to go for the lowest price because that means it has an effect, a great effect on productivity because we know that if it’s not achievable you are going to suffer”*. However for the point of view of supplier, the suggestion was that *“they tell us how good we are and how efficient we are, so if we meet the price expectation we will have the job”* (Albert). This type of comment was considered unfounded by clients as they expected that a provider would only price match or offer a rate that was viable and could be adhered to. The disconnect seemed to be that clients expected suppliers to be honest and submit sustainable prices, while the suppliers seemed to believe there was an expectation to meet the lowest submitted price in order to ensure being awarded the project. For this reason, not all actors believed that past behaviour was a good predictor for future behaviour, as several respondents pointed out almost word for word that *“you’re only as good as your last job”* (Trevor) implying that while trust based on past experience and continuity was a strong driver, if your last project was a failure it could weigh heavily on the selection, more so if there were losses.

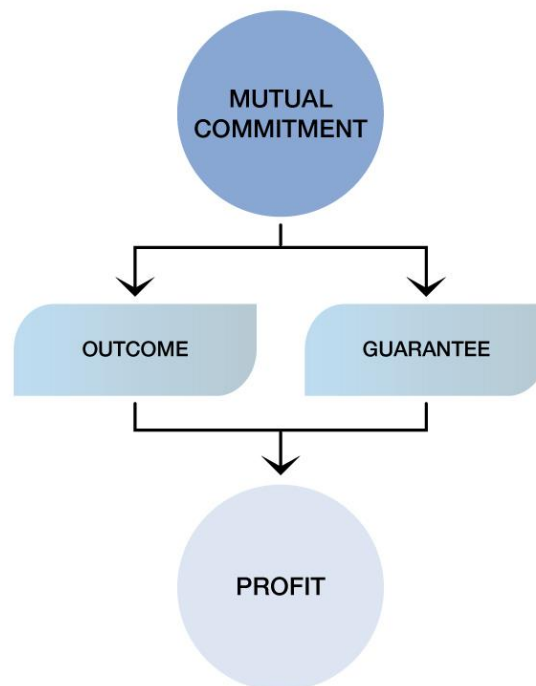
Comments relating to selection and profit were common from both ends of the supply chain, with Brian commenting that *“I’d prefer to put an operator out who I know can work to the level I require, rather than just the cheapest one available”* implying that a certain standard was important. While John who claims that *“I have worked previously with good trades who, you can say some people are good trades, but they’re not good business people and I think that’s critical”* and Paul commenting *“it first comes down to their ability to price a job at the start, if you get it wrong, you lose money”*. With both comments from clients suggesting that some suppliers lack business acumen. While at the upstream end comments where. Rhys *“we hope to pick up jobs based on a customer trusting us, on our ability to deliver, however price always comes into the equation as they affect profit margin”* and Alex *“your skill is what they need so if they know your reliable they will try to squeeze, past experience only tells them how much*

(money) they can squeeze out of you”. These two opposing views meant that the disconnection between the two sides was almost diametrically opposed as one was focused on price while the other on delivery.

5.3.2.2 Mutual Commitment

The interpretation of mutual commitment as defined in Table 19 implied that the organisation was willing to source internally or externally from its network to ensure it would meet its obligations and be able to cope with fluctuating supply and demand (Gann and Salter, 2000, Simatupang and Sridharan, 2002).

Figure 36: Themes and sub-themes of mutual commitment



The NVivo analysis of mutual commitment produces two sub-themes, outcome and guarantee while both were mutual distinct in what they represented both also had a sub-theme of profit that emerged during the data collection and analysis phase similar to the analysis of Past Experience in section 5.3.2.1. In the analysis in this section, it became evident that profit was an underlying construct to mutual commitment (Figure 36). Outcome was seen as an agreement to achieve a goal, in particular completing a project at the agreed price, this enhanced trust between the actors when both worked

towards a common goal. While guarantee related to trusting an actor's price that it was sustainable and that the actor would see the project through to completion without compromise to quality or service, the theme did contain some links to past experience (see 5.3.2.1) however it could not be considered as an on flow from the Past Experience theme as in some cases the mutual commitment was between actors who had not traded previously and actors reflected on mutual commitments as a project-by-project construct rather than an extension of their relationship.

There is a certain level of risk when establishing a budget or time schedule for a project so reliance on suppliers is critical in determining the cost, time factor. Input from suppliers is usually sought from a trusted or proven source to ensure that there is some level of accuracy. There are occasions when proven sources are unavailable and one needs to extend beyond their comfort zone to attain prices. In both cases there still needs to be some form of guarantee that both the supplier and client will meet their stated obligations, hold their rates and work together to deliver the desired outcome. The expectation is that *"when we take the job, we want to be able to trust our client that they're going to see it through with us that they will live up to their end of the agreement"* (Brian). Most of the sentiment surrounding guarantee stems from what seems to be cheap prices, which causes supplier to withdraw part of the way through the project or as stated by some suppliers that if the market places changes, suppliers are forced to lower their price in order to stay on the project.

The desired outcome for members of the supply chain was the successful bidding of the job, with the ability to complete the project successfully and of course make a profit. Tim commented that *"the ability for a subcontractor to supply the right price and be able to deliver on time and of an acceptable quality is important and that is what wins the work"*. This sentiment was shared by Richard *"you have to take people on face value and that they are open and honest and assume they want the job as much as you do and are willing to put in to get the right result"*. Suppliers also agreed that winning the job was important with the view that *"I know we talk about price but I like to think it's the delivery of an excellent job that will come through"* (Philip). While Robert suggested that it was *"an advantage to have the lowest price as they will talk to you first and maybe you can convince them not to bother looking"*. This strong focus on price to achieve the desired outcome was dominant in the theme and so was the realisation that

once successful you had to perform as mentioned. Frank suggested that *“once you’re in, you can negotiate. If you let a competitor in, you have to sit by the side line and watch”, “but if you get the job you have to make it work or you’re out”* and Simon who commented *“yes the lowest price gets you the job, but then you have to perform, you need to watch that bottom line, but you have to make it work”*.

Respondents acknowledged that while profit was important, there was a shift towards service agreements to ensure that agreed rates were locked in, and to some extent guaranteed supply (John, Paul, Greg and Robert). John commented that *“we do need to look at price, that’s obviously the bottom line that everyone looks at, and obviously the ability to deliver the job is also considered”, “that’s when we make sure they understand the complexity and sign on the dotted line”*. In the same vein, Paul comments that *“so a price is never the first item. It is in many cases the last item. We need a guarantee of quality, supply that’s how we make money”*. According to Greg *“anyone can price a job, but whether they can deliver it for the price is another story, we can’t afford to second guess, we need it on paper, our profit is reliant on those figures”*, while the supplier’s point of view was that a guarantee that they would secure the job for the quoted rate was important. As pointed out by Robert *“we like locking in the rate as long as they give it to us in writing that we will get the job”*. However the supplier felt that while they had to lock in their rate and guarantee delivery, clients in particular principal contractors or suppliers, would in some cases refuse to lock in the supplier until the last minute. Suppliers believed this tactic was to allow their clients to further probe the market and solicit a lower price, thus increasing their margins. This again highlighted a disconnected expectation where clients demanded guarantees while suppliers were looking for dependability from clients to reciprocate the commitment.

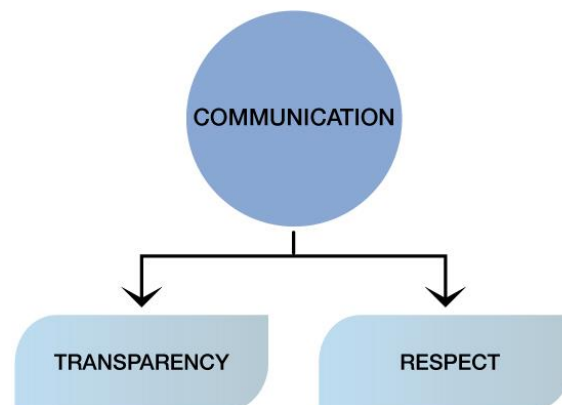
Robert commented *“we price and we wait, we are told we have the job then at the last minute they tell us we will not be getting it, someone has come in cheaper”, “they use our price to tender and win the work, however once they are awarded the job they go around again looking for a cheaper price”, “this improves their profit margin while we remain stagnant”* (Robert). This was also highlighted by Albert who suggested *“I don’t get a guarantee just a possible start date, anything can happen by then”* and Mick *“there is never any guarantee, it seems like you are working towards helping them win the job, but they don’t always come back to you”*. A guarantee that the work will be

offered if the price is right was seen as a positive by suppliers and an incentive to provide a cheaper rate, however knowing that the rates will be sought after the job is won, left suppliers providing only indicative rates (Philip and Alex). *“We know they are going to take it to the market so we leave a little in reserve”* (Alex) and *“we are pressured to guarantee a low rate and then they expect we can cut back more”* (Philip).

5.3.2.3 Communication

From the definition in Table 19 communication was seen as a willingness to exchange information. (Cheng et al., 2010). According to the literature communication is also a key enabler to trust (Magnan, Fawcett and Fawcett, 2011, Wood and Ellis, 2005) so it would be expected that communication in some form or at some level would be present when we are considering trust among actors in a supply chain.

Figure 37: Themes and sub-themes of communication



The third key theme to emerge under trust in the NVivo analysis was communication, with transparency and respect as the two major sub-themes (Figure 37). Transparency was defined as receiving clear and concise information about a project while respect was seen as a necessary attribute before any information was passed on particularly, when it was an actor from outside of the organisation. Transparency was considered important particularly in the early stages of negotiations as the information transfer enabled actors to price and schedule projects accurately. However the focus on what was required to be passed on was quite different at either end of the supply chain. With

clients focusing on project preamble and correct documentation (John and Neville) while suppliers felt they needed more information in order to ensure that they had sufficient time to prepare and deliver quotes and services (Alex). Client comments ranged from John who stated that *“if it’s not the right dialogue prior to a project commencing then we’ve got some issues”*, *“we need to let them know all the requirements before we ask if they can commit”*, while Neville suggests that *“because our documents are clear and by the large don’t create ambiguity or conflict, it’s easy to focus on getting the job done”*. Much of the remaining input from respondents, in particular clients following the above pattern of responses that covered pre-project preamble and facilitation of correct documentation. However upstream actors believed that clients focus on only providing basic information and documentation was insufficient and that there was more required. Alex noted that *“we have come across projects that have been in the pipeline for a year and we are sometimes asked to quote a month before they start”*. This late advice from clients, according to suppliers, limited their ability to source viable options so as to provide competitive prices. Suppliers were also concerned that a project that was in the pipeline for so long may have benefited if they had earlier input into the evolution and scope of the project.

In some cases when contractors were invited to tender for projects that were not specifically released for open bidding, contractors believed that passing on information about future projects could be detrimental to them as suppliers could inadvertently pass this information on to competitors. When *“we are invited to price on a closed or select tender we don’t want to advertise it”*. *“Why attract more competition then necessary”* (Richard). The view also extended to other projects where contractors may be in negotiation with their clients to extend current contracts. Contractors felt that there was no need to pass on information that may reveal their current standing and jeopardise their position, as suggested by Richard *“we may be able to offer a package to a client which may involve two or three jobs, if we reveal this to a supplier they may pass it on to a competitor who hasn’t thought of bundling the job and then we lose our competitive advantage”*. Paul further added that *“if we can move from job to job and hold our rates, then the client may feel there is no need to source other prices, if it gets out then some suppliers may want an opportunity to bid, we prefer to keep a closed shop”*.

With clients keeping pending project information on a need to know, suppliers felt that they were not given the opportunity to provide input into the projects evolution by offering expert advice on supply and demand as well possible alternate options that may reduce costs. Suppliers also felt that if there was more transparency in what was actually happening they could gauge the market and make a more astute offering in terms of price as well determine their availability based on up and coming works. However many suppliers felt that the information was not forthcoming, due to the client not having any respect for the supplier. Mick believes that *“if they trust us and invite us to sit with them we can help them put together a better deal, but it seems that all we get is a call and they ask us to quote, if the rates no good they go to the next one”*, and *“they don’t tell us what’s on the books then expect us to turn up at the drop of a hat to turn up and perform”*. The lack of respect was seen as a catalyst to clients not being fully transparent, as suppliers believed that clients didn’t value them enough to enlist them as part of the supply chain particularly in the early stages. Robert point of view was that *“suppliers want to offer a service, but it seems that when we call and say hey, we heard you are pricing a job can we offer you a quote?, your treated with contempt”*, *“it’s as if, don’t call me I’ll call you”*. This sentiment was confirmed by Rhys who commented that *“most times when we find out that one of our clients is pricing a non-advertised job and we call to offer a price, they question us about how we found out about the job, rather than wanting to know what we can do to add value, makes you feel like a spy not a supplier”*.

5.3.2.4 Summary on Trust

Actors would generally gravitate towards known suppliers or clients with whom they had previous dealings with. It was obvious that the previous performance of an actor provided some measurable assurance of what their performance would be and this gave other actors a level of comfort. They need to know that there was a mutual commitment between all actors in the supply chain to complete the project was essential in the selection. However if a favourable with a reduced price offer came in from an unknown or unreliable source there were always negotiations with a trusted source to endeavour to meet conditions of the favourable offer.

Negotiations to reduce prices while prevalent seemed to be tentative. Until the price negotiations were finalised information about future prospects for work and market availability of other resources, was withheld. The price negotiations were also considered an important aspect of offering future work and even the possibility of actually winning the current work that was in negotiations was withheld. This made suppliers uncertain of what was going to happen and left them pondering what was the best option or course of action.

5.4 Project Realisation

5.4.1 Introduction

In this section of the analysis the NVivo thematic coding looks at the realisation of the project and how actors relate and interact with each other once they have finalised the selection process and work on the project has commenced. Management of the supply chain now becomes an essential process as a project is realised. The way in which the contracts or agreements are now administered depends largely on the management style and the use of mediated or non-mediated power to drive outcomes (Figure 38). At this point of the analysis actors have made the decision to become part of the supply chain and have signed and agreed to terms and conditions, prices and timelines are engaged on the project. The focus at this point is to understand how actors work together to achieve a mutually desirable and acceptable outcome. The analysis looks at answering the question,

Use of non-mediated or mediated power leads to project performance rather than collaborative relationships

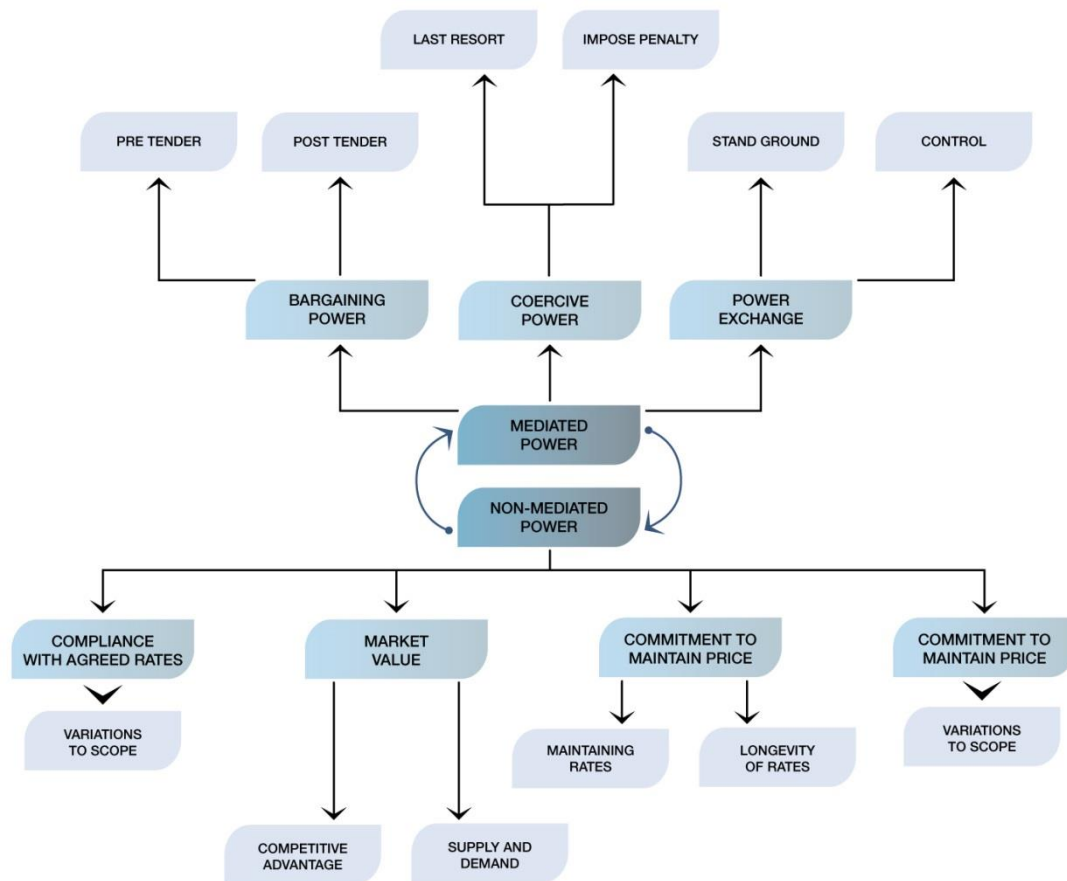
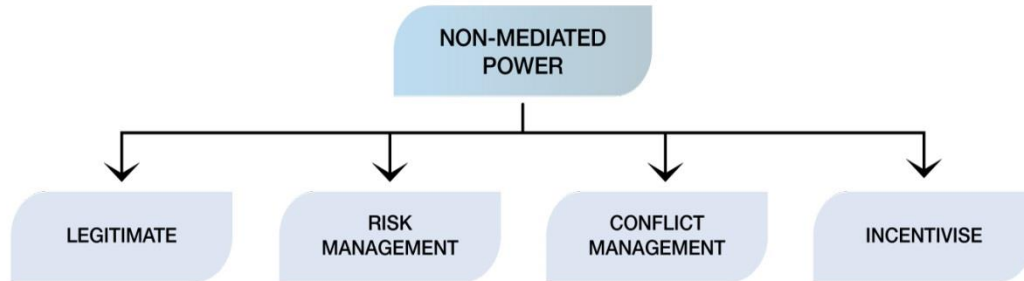


Figure 38 - Themes and sub- themes of phase 3 mediated and non-mediated power

Once engaged, it is expected that actors work together to complete the project in a timely manner, comply with their commitments as agreed to in the contract between them and any other supply chain partner. Delivery of the project both on time and on budget becomes important as does their commitment to completing their particular part of the works. At this point of the relationship, actors are thrown together in an environment that is bounded by their previous negotiation and agreements.

5.4.2 Non-Mediated Power

Figure 39: Non-mediated power theme and sub-theme model



From the project realisation, non-mediated power (Figure 39) emerged as a passive construct to ensure performance and minimise the disruption to the work flow. Four main sub-themes emerged; legitimate power, risk management, conflict management and incentivise (Table 27). Each of these will be further analysed and interpreted to show how actors believe that they can use their power to drive compliance.

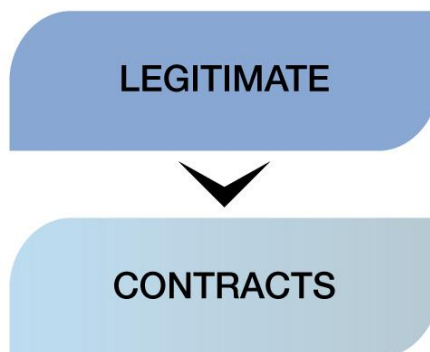
Table 27: Non-mediated power themes responses

	Sub themes of non-mediated power			
	Legitimate	Risk management	Conflict management	Incentivise
Respondents	14	10	7	7
Coding References	34	22	14	12

5.4.2.1 Legitimate Power

From the definition provided in Table 19 the target believes that the source retains a natural right to influence and this can come from the fact that they have the expertise or that they hold or have control of the principal contract (Parmigiani et al., 2011). Clients felt that they needed to ensure that commitments by suppliers were met and as such used agreements to bind the supplier to the job. However the complexity of some agreements makes it difficult for the smaller supplier to accept as they are not always clear on the interpretation of the documents and often seek legal advice.

Figure 40: Themes and sub-themes of legitimate power



The only predominant theme to emerge from legitimate power is legal documentation, typically contracts (Figure 40). Ownership is mentioned on two occasions, however this was by single operators in reference to working for home owners and the researcher felt that there was no significant data to make an impact to the findings. Of the respondents in this area, both supplier and clients felt that contractual agreements were the principle driver in which to ensure that there was a clear understanding of terms and conditions and a definition of responsibilities. Downstream actors felt that it was difficult to cover off all contingencies and had to continuously update terms and conditions to eliminate the possibility of loopholes, while upstream actors felt that some contracts were becoming too complex and as such made the documents more ambiguous. However both upstream and downstream actors agreed that some type of formal agreement was necessary in order to ensure there was some degree of understanding of the conditions and obligations of each party engaged on the project, with actors considering that perhaps the current state of complexity in instruments of agreement was getting too complex and misunderstanding or misinterpretation was a catalyst for disputes. With some actors even suggesting that the complexity of contracts has gone too far as pointed out by Frank *“we always get it looked over by legal, we make sure we cross our T’s and dot our I’s and we make sure that, that part’s right”*.

The administration of the contract or agreement was seen as a formal instrument of legitimate power, as point out by Trevor *“once an agreement has been signed and sent back to us with their fee proposal that is the mechanism of compliance”*. Richard went

further to say *“we have a project manager, a contracts administrator and a site manager, we pay them to ensure the work goes as planned”* and Neville also added that *“we prepare our documents carefully and they should spell out what is required for the supplier for the price that has been offered”*. Small suppliers however could not always afford to have documents checked by legal professionals and felt that they were being taken advantage of and were in most cases suspicious as pointed out by Robert *“sometimes you go through a contract and it just feels like they’re trying to rip you off, you ask a few questions but it’s not always enough”*, while the larger suppliers also acknowledge *“we deal with a lot of people who have highly trained legal departments and they can pick apart a contract very well, so if we are not diligent in going through our contracts, then they can bite us at the end of the job”* (Frank). On this point clients agreed that some contracts were assembled as quite adversarial (Richard, Neville) however they felt this was necessary to ensure that suppliers would comply. Neville suggested that *“contracts need to be watertight and suppliers should know that, neither part can afford to be left exposed so we make our documents as clear and concise as possible”*, while Richard commented *“when things are spelled out there is no confusion, but I can’t sit there in a pre-contract meeting and go through every point with the supplier that’s their issue”*.

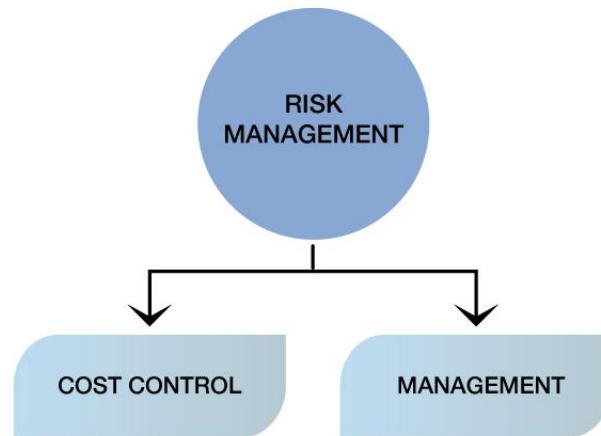
The two opposing views of, over complication and closing loopholes was a major issue as both upstream and downstream actors felt that either end of the supply chain was to blame for the current state of documentation. John claims that *“we have had many suppliers take advantage of our trust over the years so we don’t leave it to chance any more”*, while Neville suggests that contracts are written the way they are simply due to past experiences and the documentation is created as if *“it assumes that the builder is trying to rip off the client and it assumes the client’s expectations of quality is unrealistic”*.

5.4.2.2 Risk Management

Risk management as defined in Table 19 was seen as the point to which the organisation will go before it considers the arrangement untenable (Aloni 2012). This related to the issues surrounding the management of contracts and budgets and controlling variations in the contract that would attract additional charges. The major problem here was seen

as acceptance of a significantly low bid and then facing the challenge of staving off additional charges.

Figure 41: Themes and sub-themes of risk management



The NVivo analysis of risk management revealed two sub-themes; cost control and management (Figure 41) where cost control was seen as the need to maintain budgets, reduce variations to contract scope and ensure that waste was minimised and management was interpreted as the need to provide the appropriate controls through the management of the contract and in turn the project to ensure that work was carried out as required. In terms of a relationship, actors felt that trying to manage expenses by limiting variations or carrying out unnecessary tasks was essential so there was a reliance on having a strong project team to ensure that resources were properly managed. It was also considered important that the administration of the contract was also an essential driver to ensure compliance, quality and schedules were met. The interpretation of risk management by actors however was not as extensive or wide reaching as defined in current literature (Power, 2008; Zavadskas, Turskis and Tamošaitiene, 2010) with only two respondents (Richard and Greg) acknowledging that there was more to risk management than just controlling costs and managing the contract.

Cost control was predominant in the analyses with actors seeing this as their biggest challenge, both clients and suppliers highlighted concerns with variations or additional items and claims as the major source of additional costs. Both upstream and

downstream actors felt that managing expenditure would go a long way towards a successful outcome, where clients viewed this as avoiding having to make additional payments by avoiding variations and price increases, while suppliers viewed this as avoiding additional works that they would not be compensated for. Paul commented that *“basically they have given us a price and we pay them exactly what they asked for, if they can’t do it for the price it is their problem, not ours”*, while Greg added that *“we work off the scheduled rates that a supplier provides, we can’t accept and will not accept an increase midway through a project, they need to advise us in advance when increases will occur”*. In both cases clients felt reluctant to consider moving on rates, particularly during the course of the project. Suppliers however felt that while they wouldn’t normally change rates mid project in some cases it was warranted in particular when circumstances changed.

Mick commented that *“we price for a particular job and material, if they change the goal posts and expect us to absorb additional costs then that’s not right”*, *“we seem to get asked to always do a little more”*. In a similar context Albert mentioned that *“we tell them we can only hold the rate for 30 maybe 60 days, they then call us 3 months later and expect that we can just keep the rate”*, *“it’s not our issue if they can’t organise themselves”*. Therefore appropriate administration and management of the contract was considered as the most logical solution to manage any potential overspill, in particularly in terms of costs. Clients views were expressed in terms of management of the project as highlighted by Richard *“we still need to control the sub-contractors and manage the project”* and by Neville *“you know they will do the work if you manage them properly”*, *“we just need to be able to plan and keep the contract fluid so there is no confusion or hold ups”*. Suppliers agreed that if the administration was streamlined, the work process works better and minimises the cost of completing the project. Robert remarked that *“it’s about understanding what’s required and co-ordinating the work load so that we don’t have to keep coming back to do things over and over again”* and *“we try to work in, but we can’t do it effectively unless we are working together”* (Frank).

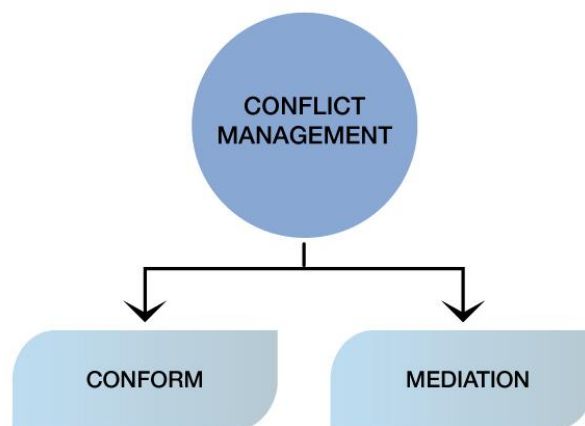
Good project managers were seen as the key to reducing risk and controlling budget overruns, however issues occurred when this was not the case. Expectations were that the relationship in the field was different to that in head office as suggested by Mick

“the relationship in the field is about knowing, are they doing the job correctly”, while “the top end is more about making sure we’ve got the commercial side of things basically correct, adhering to what the contract says”. The view that internal administration and external management had different responsibilities seemed to create a disconnection between actors in terms of expectations.

5.4.2.3 Conflict Management

According to (Rahim, 2002, p. 208) Conflict management is the process of limiting the negative aspects of conflict while increasing the positive aspects of conflict. The definition of conflict management as described in Table 19 is the ability to understand and deal with a situation without the need for litigation (Corbett, Blackburn and Van Wassenhove, 2012, Handley and Benton, 2012). This approach was quite dominant within the research as actors would prefer to resolve issues before they escalated.

Figure 42: Themes and sub-themes of conflict management



The analysis of conflict management in non-mediated power (Figure 42) demonstrated a different view of the adversarial nature of the construction supply chain suggested by current literature (Bankvall et al., 2010, Briscoe and Dainty, 2005, Cox and Ireland, 2002). Actor’s responses clearly demonstrated that they are considering their position before entering into a litigious environment with other actors in the supply chain. Conform and mediation emerged as sub-themes, where conforming was considered as following or complying with requests without compromising values, while meditation

was related to reaching an amicable solution. Once the project has been realised and actors engaged there is a tendency not to disrupt the flow or progress due to disagreements that can lead to litigation. Most of the responses were typified by the comments made by John, who pointed out that *“when there’s friction or there are disputes, your backs up against the wall and unless you resolve it quickly your project suffers”*. This was further confirmed by William who commented that *“once there is a supplier on site it may cost more to change suppliers, it’s a better option to try and fix the problem”*. A point of view was conveyed by suppliers as discussed with Albert *“you need to avoid conflict at all costs, otherwise it holds up the job and makes it difficult to progress”*, while Philip added *“if we are on site the clients always seems to work towards a resolution that suits us, as we can keep working”*.

In order to solve any issues and prevent an escalation in conflict, actors agreed that clients need to find solutions to resolve issues, while suppliers need to accept some limitations within the outcomes. The further upstream the supplier was situated the greater the expectation to comply with or adhere to requests of the client as commented by John *“there is a need for flexibility, not all solutions are win-win, sometimes we have to accept lose-lose, in particular when it comes to additional works or variations, if a supplier, can be flexible then we can reach agreement”*, while the suppliers agreed to some extent that there needed to be compromise however as suggested by Robert *“ok things go wrong, but when we are expected to cop all of the cost, that’s not right. There needs to be flexibility but the solution needs to be viable and justified.”* These comments suggested that both clients and suppliers were willing to mediate a solution. However there were limits as to how flexible they would be. Richard commenting *“depending on the issues that arise, we can go the other way and throw the book at them and terminate their contract, it’s not an attractive option but if it gets the job moving that’s where we will end up”* while the upstream view was *“that we talk about it all day but if their unreasonable about the variation or additional costs and it looks like we are going to be lumbered with them, then we may challenge them to throw us off the job and then they can work out what it actually costs”* (Alex).

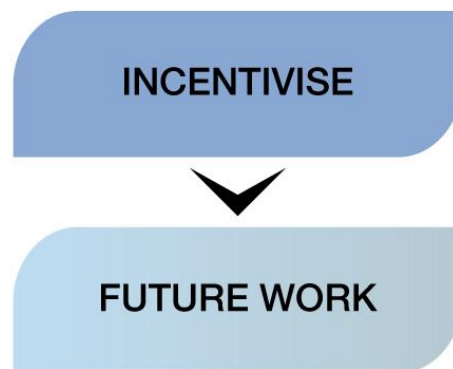
The choice to agree or disagree seemed to depend largely on how much each party felt that they were contributing to the solution. If both actors felt that they were sacrificing

an equal share then a solution was possible, however if either party felt that the solution was one sided then the issue would escalate.

5.4.2.4 Offering Incentivise

Having the power to provide an incentive as defined in Table 19 was derived from reward power (Table 4) and as noted by Meng, Sun and Jones (2011) is considered to be a relationship where the source has the ability to provide an incentive (rather than a monetary reward). Within this context, respondents found that being promised future works was enough of an incentive to maintain a relationship.

Figure 43: Themes and sub-themes of power to incentivise



Using incentives as a means to drive collaboration or performance had a small number of respondents in the NVivo analysis. However of the respondents who did postulate the question of incentives, responded decisively that the most favourable form of incentive was the prospect of future work (Figure 43). Both principal contractors and suppliers agreed that the prospect of future work was sometimes more appealing than additional compensation for work done or even prompt payments. Clients who responded also agreed that they would prefer to offer additional work on future projects rather than pay additional costs and charges or make payments in advance or before they are due. These sentiments were communicated by Trevor who commented *“the reward at times can be, we turn around as say, yeah, there’s ongoing work here for you guys. It’s never money incentive because no client wants to pay money, or even pay money up front, so the*

reward could be future work". The same sentiments came from the supplier side where James stated *"the incentive for me in my position is that I get regular work"* and Philip who said *"not being paid on time is not always punishment sometimes it a trade-off to secure the next project"*. Richard agreed that *"that it certainly happens from our side of things when we are working with clients, the reward is the opportunity to do the next job and we try to filter this through to our suppliers"*.

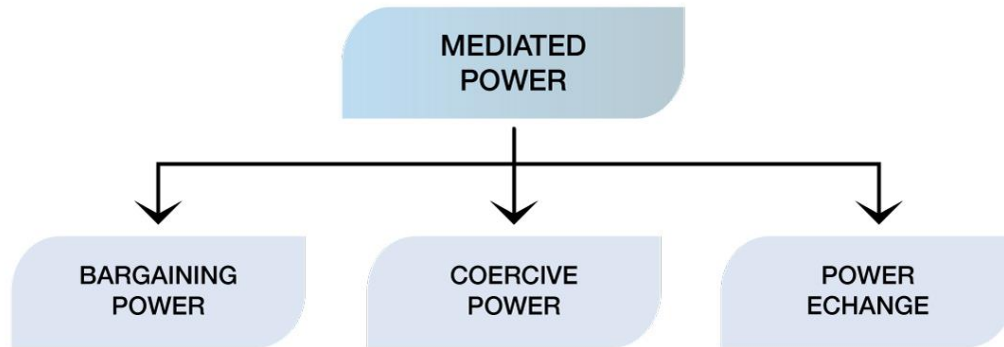
The prospect of future work is seemingly a common goal for both upstream and downstream actors, which presents itself as an enabler to the relationship more so than additional payments. Paul commented *"if we know we are going to get more work, we are more agreeable to the timelines and budgets that are proposed"*, Robert also suggested that *"You can only make a margin from a job once, multiple jobs hopefully means multiple margins"*. *"If the possibility of a continuity of work presents itself, then we have to take it"* (Robert). It is also apparent that having the ability to offer future work was a good motivator to achieve compliance

5.4.2.5 Summary on Non-Mediated Power

Actors are aware of the cost of disputes and will endeavour to avoid disputes if at all possible. The bargaining tool to avoid issues seems to be the prospect of doing future work together. With the industries competitive and uncertain nature, knowing that there is the potential to acquire further work seems to be a key driver in persisting to negotiate an amicable outcome.

5.4.3 Mediated Power

Figure 44: Mediated power theme and sub-theme model



The emergence of mediated power from the project realisation (Figure 44) was seen as the opposing side to non-mediated power and while the expectation was that that mediated power would be used to inflict punishment, this was not always the case. The subthemes that emerged demonstrated that while the respondents were cognisant of the implications of mediated power. Many used it as a tool to achieve a range of alternative goals. Three main themes emerged (Table 28) bargaining power, coercive power and power exchange which are discussed in the following section.

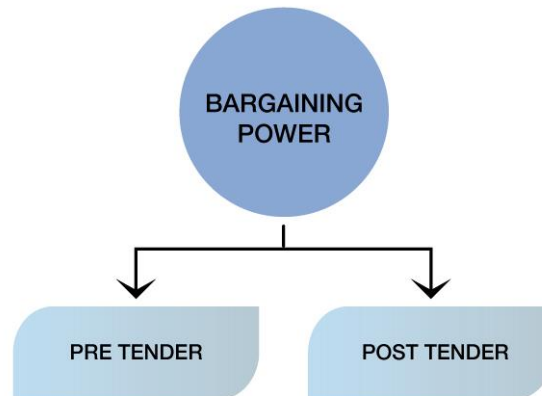
Table 28: Mediated power themes responses

	Sub themes of mediated power		
	Bargaining power	Coercive power	Power exchange
Respondents	14	10	8
Coding			
References	42	28	21

5.4.3.1 Bargaining Power

Bargaining power is seen as the ability of parties to exert influence over each other in a particular situation (Harsanyi, 1962). If both parties are on equal footing, then they are considered to have equal power. In Table 19 bargaining power is defined as the ability to manipulate the market value based on what it is offering. (Benton, and Maloni, 2005, Sridharan and Simatupang, 2013).

Figure 45: Themes and sub-themes of bargaining power



From the NVivo analysis it seemed that bargaining power or in particular having the ability to bargaining down prices was very much in the control of the client, irrespective of the size of the projects or the status of the market place. Market peaks and troughs didn't seem to influence the ability to be able to bargain down prices as suppliers were still keen to have multiple attempts at submitting prices for the same project. In several cases, respondents even expected to be asked to price a project several times even after the contract had been awarded. Two sub themes that did emerge were pre-tender bargaining and post-tender bargaining (Figure 45). Where pre-tender pricing was seen as a necessary preliminary exercise where most suppliers would submit an initial or what was considered a budget price and post-tender prices were seen as the opportunity to win the job, particularly once the project had been awarded to a principal contractor a supplier would need to submit the best available price, even if they had previously priced the work. In the latter theme suppliers were given an opportunity to review their initial budget price and resubmit what was considered a firm or final price. Even after the second round of submissions there was still an expectation that long term or trusted suppliers would be asked to beat or at the very least match the lowest quote that was submitted post tender.

Further analysis revealed that the tender or quoting process was more aligned with a negotiation rather than bidding or tender process by the principal contractor once the project was awarded. Whatever prices are submitted by suppliers in the initial stages seem to be disregarded as arbitrary and the client will use the lure of the job to attain a

reduction in price. Tim openly admitted by saying *“well what we will do then would be say, look we have a cheaper price, we’d give him the opportunity to try and drag him down to his next, or to the main competitor’s price”* and *“I think from our perspective as a company, where we sit and with the volume of work we have, we have the ability to do this and this isn’t being arrogant in anyway, but have the ability to say, take it or leave it.”* The same sentiments were expressed by Richard who commented *“we may give our preferred person or our person whom we trust a lot an opportunity. What we generally do is give them an opportunity to say well, commercially, I’ve got this other guy here at this price. Can you get near the price for us”?* It was considered a normal practice that preferred suppliers would be approached to beat or at the least, price match competitors prices if their quotes were not the lowest. Neville emphasised that *“being in a position to bargain, based on your size, this is quite relevant within the industry.”*

Suppliers also accepted the practice of multiple submissions and generally expected to resubmit several times as stated by Robert *“we usually give them a higher price the first time around, that way when they come back we have something to take off”*, while SC 3-3 added *“if you front up with the lowest price the first time around you’ll have nowhere to go when they come back to give you another bite”*. According to William once you have been *“awarded a contract, then you go through a procurement stage. Potentially depending on what sort of margin you’ve got on the job, if you’ve had to, because often, the clients do the same to the principal contractors. They manage to play one off on the other and if that’s the case you’ll go through the same phase with your suppliers as well.”* The expectations of actors moving upstream are that they can continue to approach suppliers until they achieve what they deem a reasonable price, while the moving downstream actors expect to reprice until they are successful and are awarded the contract. According to Frank, bargaining is necessary in order to maintain competitiveness in the market claiming that *“we are shopping around harder for prices to make sure that we can come in to be competitive because we know that our opposition are doing the same”*. With Alex adding *“I think a trusting customer will squeeze as much as they can because the dollar bill is the dollar bill but they also give you an opportunity to sharpen your pencil if required”*

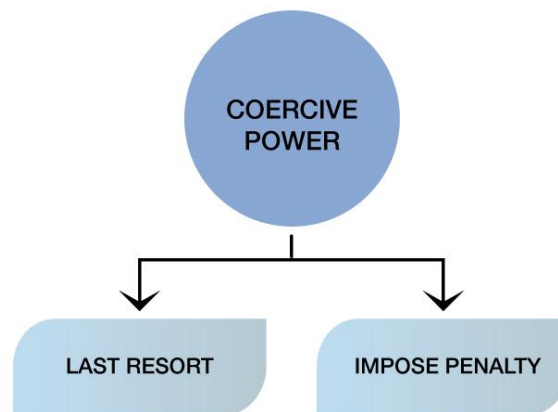
Not all suppliers are happy with the bargaining that occurs pre-project awarding. Suppliers that are trying to increase their business by moving into other areas find it

difficult as mentioned by Frank “*we look for opportunities to expand however it seems that they are basically checking us out for price, which can be used to leverage off other suppliers*” and Robert “*They use your competitors as their bargaining power to get you to reduce your rate*”. However what seemed the main cause of disagreements was, that while all actors were happy to bargain and negotiate, they really were adverse to the system if they were not successful in their endeavour to secure the work. This was summed up by Martin who commented that “*sometimes they just don’t stop, you have come up with the best prices and they still continue to push to drive, drive the margins low*”, “*so no matter where you sit sometimes it’s just not going to be enough and that hurts when you have been working for them for a number of years.*”

5.4.3.2 Coercive Power

From the definition in Table 19 coercive power has the traditional connotation, that the source holds the ability to punish, in terms of making work available or excluding from future opportunities. (Koçoğlu et al., 2011; Maloni and Benton, 2000).

Figure 46: Themes and sub-themes of coercive power



The NVivo analysis revealed that coercive power while always threatened between actors in the supply chain was always considered as something that should be used only as a last resort. Once the decision was made to use coercive power, the response was generally to impose a penalty, where penalties ranged from financial to discontinuance of the relationship. Clients expressed a general desire to resolve issues before they escalated with the main point of reference being the contract or terms and conditions

that were agreed to before the commencement of the project. Suppliers believed that most of the clients tried to avoid conflict by threatening punishment and actually enforcing compliance through the threat of punishment. Therefore the suppliers suggested they would avoid conflict by trying to finish their allocated tasks as soon as practical and leave. However there were times when an amicable solution could not be reached and the only course of action was litigation. The emergent themes of last resort and impose penalty (Figure 46) were not seen as common place in the supply chain but rather as mechanisms to be used when all other avenues were exhausted.

The client perspective as supported by Trevor saying *“we mainly work it through with support and that support needs to be exhausted completely before the only next step is legal”*, and adding *“I’m a great believer that punishment never helps. It may get the job done but obviously it leaves more damage than benefit”*. Agreeing with these sentiments was John who added *“the game is lost. You may, you will more than likely achieve what it is that you set to do, but the damage is done”*. However there was a point where clients would take action to resolve major issues as highlighted by Richard stating that *“if getting the job done means that have to resort to getting some else in to finish it that’s what you do, you can argue about it later”*. Therefore while clients considered that what they were proposing was to avoid conflict, suppliers felt that they were burned with the risk of losing work.

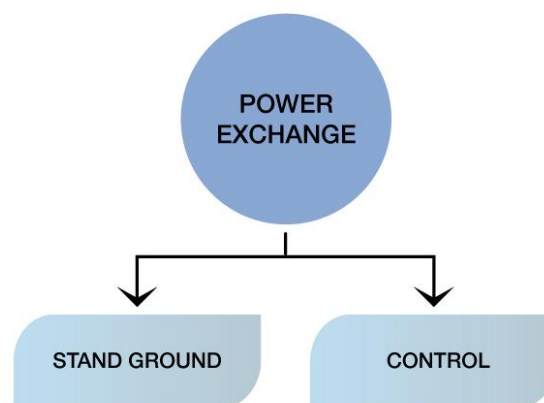
Suppliers tended to consider that clients where not always forthcoming with their intentions and wanted to pass on additional liabilities to the supplier whether or not they were responsible. Generally suppliers felt that it was a ploy to save on costs or recover losses and expected the supplier to wear the burden using the pending threat of legal action if the issue could not be amicably resolved. Frank reiterated that *“for as long as I can remember and however long I’ve been in the industry, there’s always been a battle with people not paying for various reasons”*, *“at the end of the day we end up paying for their poor management”*. According to Simon *“If it goes wrong, then we have to wear it. If they make the mistake, we are meant to be understanding. If we argue, then we are not invited to price the next job for them”*, *“either way, once the trust factor is gone, we don’t really want to come back and work for them again”*.

Not wanting to do further work or being excluded from pricing further work was, albeit even if it is short-term, seen as a common form of punishment when disagreements occurred. Exclusion was seen as a better option to legal litigation in particular if legal action may not prove conclusive and if no monies were withheld. Generally suppliers accepted that they were excluded and considered it part of the industry. With Philip pointing out that *“they try it on but if they know they can’t win or there is a chance that the cost will be too much then they tell them not to bother coming back”* while Rhys suggests that *“it’s transactional there is only risk or punishment in that they don’t give us an opportunity to quote on the next job”* while on the client side Richard recommended that *“we all take on some form of risk from our supplier they have to understand that if they don’t work in with us then we may not use them on future projects”*.

5.4.3.3 Power Exchange

Power exchange was seen as actors standing their ground and not being pushed around. It occurred in circumstances where either client or supplier felt that they were being taken advantage of. The definition in Table 19 is given as the extent an individual perceives he has the power to control a situation (Koçoğlu et al. 2011) in terms of not allowing himself to be taken advantage of.

Figure 47: Themes and sub-themes of power exchange



The NVivo analysis of power exchange revealed two main sub-themes; to stand one’s ground and to control the situation (Figure 47). Both sides demonstrated the actor’s

determination not to be pushed into a corner or be dictated to by other actors. To stand one's ground was interpreted as taking up a position or making a stand without wavering, while control was seen as taking responsibility for running the project. Suppliers wanted to be left to work alone and be allowed to remain independent, the indication being that as a service provider, they felt they knew their job and wanted to be allowed to perform the task in their own way. The client however was more concerned with schedules and the bigger picture and felt that in some cases direction was needed to ensure that the project was running as scheduled. This opposing view would on occasion lead to arguments on the project. This was due to the client directing or instructing the sub-contractor to perform the allocated task in a certain way and the sub-contractor refusing to comply and continuing carrying out the work as they saw fit.

Suppliers believed that they had terms and conditions to conform to and should be allowed to carry out their work in the manner that they were accustomed too. Philip commented that *"we have a certain criteria for quality and standards we need to meet and we have done this for a long time so let us do it the way we know best"* and Simon added *"they assume they are giving you a lot of work or they feel that they're helping you, but they just get in the way"*. Clients felt it was their responsibility to maintain control and push the works program along. Martin commented that *"when we engage a sub-contractor we expect them to work for us within our terms and time frames so we need to maintain some sort of supervision"*. Paul added *"we need to supervise, but some suppliers think they can do as they want, if they don't perform then we have to step in"*.

Downstream actors felt that they were responsible for the delivery of the project and would maintain some level of supervision on their upstream supplier, while at the same time giving up their independence to their downstream provider. This made it difficult to understand how actors could collaborate if they had one view looking upstream and a different view looking downstream.

5.4.3.4 Summary on Mediated power

Mediated power was used as a last resort. Even if there was tension on a project, actors would endeavour to complete their allocated tasks and move on to the next project. Issues arose when suppliers were to some degree forced to hold quote rates for extended

periods of time and if there were increases in costs, the supplier would have to bear the additional costs. However engagement of suppliers or subcontractors was not always straight forward as the suppliers or subcontractors considered only themselves. While the client or principal contractor still wanted autonomous control over the proceedings.

5.5 Summary

In this chapter the researcher has discussed the findings from the NVivo analysis, based on the responses from the participants. Testing the relationship model (Figure 13) at each stage of the procurement cycle (Figure 9) also enabled the testing of the relationship and its effects on the respondents. While relationships between actors varied there was a strong underlying need to remain independent and resist committing to long term agreements. There was also a significant difference in viewpoints between upstream and downstream actors where, these opposing views were generally created by conflicting goals and the strong desire to remain independent, making collaboration difficult as actor's tended to be more inward focused rather than outward focused being unaware that their objectives and expectations were in complete contrast to the remainder of the supply chain.

Findings also suggested that while relationships were at arm's length they were not necessarily adversarial or litigious. Actors would generally consider amicable means by working together in finding a solution or solving the problem before resorting to escalating the situation to a litigious level which was seen as a last resort. It was generally expressed that collaborative agreements work better as you travel downstream in the supply chain, while arm's length agreements suited upstream actors. Most of the actors felt that working together was the extent to which they would take collaboration and that any actual engagement beyond a project based relationship was not practical with upstream actors. As stated by Brian *"collaboration is only for the tier one contractors, what I do is just go from job to job"*, while Philip mentioned that *"I guess the more collaborative stuff seems to be on the bigger, for lack of better description, infrastructure projects your tier one contractors and all that sort of thing where they've got a lot more structure"*. Clients felt that collaboration with suppliers was not necessary as they only selected suppliers based on their past knowledge of the supplier, best price and the supplier's ability to supply (Greg). This reflected the sentiments of

downstream actors who suggested that *“we don’t want to be seen siding with one supplier as it will limit our options”* (Richard) and (William) *“we generally use who we know but will consider rates from any supplier who feels they have something to contribute”*. There was also the view that was expressed by Rhys who added that *“there are some relationships which we work together on things, so they’re probably a bit more strategic, but the majority of them would be just that they need a product, they’ve got the budget and that’s how we would move forward with them”*.

Suppliers also agreed that collaborative relationships served little purpose and the further upstream, the stronger the sentiment. Alex suggested that *“relationships serve only as a leverage to talk you down in price, it’s better to stay away”* and Rhys who added *“they develop a trust, or so you think, so then they leverage that to price bargaining”*. Both participants suggesting that arm’s length relationships were by choice rather than design. This was highlighted in the two themes from the NVivo analysis, where actors implied that on a project-by-project basis they had the option to continue the relationship or terminate it as they see fit. According to Rhys who stated *“There’s an inability for us, due to the competitiveness in our market to actually sign customers up to long term agreements”* the same message was conveyed by Richard *“you have contractors who are quite capable, who still have the skill set, able to provide the resources, but is only interested in your project and once he’s done, he will just prefer to move on”* and Albert commented that *“we don’t see it as arm’s length where it’s a project, you work on that and then you move on to the next”*.

Actors felt that building a relationship with a number of actors precluded them from testing the market place and would restrict their ability to be competitive. Robert was clear when saying *“I haven’t found the disadvantage as yet. I’ve found that it’s actually worked in my favour, although I am aware that if you do have a very close relationship, it can work as a disadvantage”* and Mick who suggested that *“relationships should be maintained at arm’s length because otherwise it will influence the market place and put you in an awkward position”*, implying that close relationships work against you if you are trying to price work for other actors. This was affirmed by Donald who also agreed by saying *“no we don’t want to commit ourselves to one supplier”, “well by committing to one, it also affects the market so the best model for your organisation is to maintain independence rather than collaboration”*.

CHAPTER 6

6.0 DISCUSSION

6.1 Introduction

The literature in construction supply chain establishes that there is a high reliance on resources from third party suppliers in the construction industry (Eriksson, Dickinson and Khalfan, 2007, Humphreys, Matthews and Kumaraswamy, 2003). The expectation to secure these resources and form partnerships or alliances that would enhance an organisations core business and have capable ties to secure longevity in its service offering would be high (Huxham and Vangen, 2013). However, while it is evident that dependencies between actors and their organisation do exist, the need to secure services beyond the framework of a single project is not foremost on anyone's agenda. Hence, this research proposes a conceptual model that states that there is a change in relationships during the three phases of the project cycle which postulates a proposition at each of these phases.

The purpose of this research is to test the validity of the conceptual model and the propositions, and to answer the research question

'How does dependency impact on collaboration between the client, contractor and supplier in the construction supply chain'?

The following sections of this chapter discuss the factors of dependency and its influence on the relationship between actors in the construction supply chain that have been identified in the analysis in chapter five and through the methodology used to arrive at the findings. Focusing on collaboration and resources in the construction supply chain, the findings will be compared to the literature review in chapter two to justify the research contribution.

6.2 Discussion on Collaboration and Dependency

Analysis of the interview data on collaboration and dependency answers the research question: *How is dependency exploited by all actors in the supply chain to influence other actors in both the upstream and downstream direction?*” and postulates the following proposition from upstream and downstream perspectives of construction supply chain.

Proposition 1:- *Within a project dependency and collaboration directly affect the relationship between actors and are inversely related to each other. Implying that the greater the focus on the dependency for the resource the less emphases is placed on the need to collaborate and develop a relationship* (Figure 10)

The concept of entering into a collaborative agreement seems far from the minds of actors in the construction supply chain. Many feel that they are venturing into a work agreement or arrangement rather than what literature considers the traditional partnership between supply chain actors (Eriksson, Atkin and Nilsson, 2009, Zhang, Henke and Griffith 2009). These work agreements are less than what is expected or required to create a coherent and fluid supply chain and are formed more along the lines of necessity rather than good business practices (Fawcett et al., 2012). Findings show that clients have poor relationship tendencies toward their sub-contractors, because they feel that sub-contractors have a poor work ethic that makes them habitually unreliable. While on the other side, sub-contractors feel that most clients are apathetic and indifferent to their cause therefore distancing themselves from forming any meaningful relationship.

According to Vargo and Lusch (2004) and Zacheria, Nix and Lusch (2011) collaboration is seen as an arrangement that provides positive results and delivers a competitive advantage. However actors within the supply chain define collaboration as a form of legal or binding agreement between two or more parties and interpret the concept of collaboration as restrictive and anti-productive. Many of the actors also believe that collaboration is not something that occurs on the work site but rather that it is an arrangement between upper management of larger firms (Neville; Philip). The

findings have shown that the actors who participated in this research are of the opinion that collaboration creates an environment of interdependency between the collaborators and in turn creating a loss of independence which actors believe needs to be avoided at all cost.

Interdependency was viewed as a liability by actors as they felt that they could not become reliant on a limited number of suppliers as this would restrict their ability to be competitive in the market place (5.3.2.2) and be detrimental to their business. Actors wanted the choice to move freely not only within their supply chain but also in the market space to ensure that prices were constantly checked against those offered by other providers to competitors. This seemed to be driven by the lack of trust amongst actors who felt that to close a relationship could mean that you may be held to ransom by a supplier or client (Neville; Robert) while at the same time they felt they would also be isolating themselves from the rest of the industry, limiting their ability to compete and perhaps even affect their ability to acquire the necessary resources from alternate suppliers.

Fluctuations created by inconsistencies in workloads also made it difficult for actors to commit to one provider as a consistency in work was regarded as important in maintaining a viable business and a consistent cash flow (John, Greg). Reliance on the supply of resources whether it was in terms of skill, labour or material was evident as principal contractors had limited internal resources to carry out any project on their own and relied on the use of sub-contractors as and when, required (Fearne and Fowler, 2006). Sub-contractors on piecework was considered a great advantage as it limited their exposure to overheads by paying sub-contractors only for the work that was carried out. While this arrangement gives clients greater flexibility, the findings show that Sub-contractors needed continuity of work and if clients were unable to supply a continuing work schedule sub-contractors would look to other providers for work. Actors were concerned more directly with their own workflow and the need to maintain this continuity was a primary driver and deterrent to forming partnership with a limited number of clients (Alex; Philip). Sub-contractors also felt that if they only supplied one client they would restrict their ability to source work from other clients.

6.2.1 Downstream Perspective of Collaboration and Dependency

Findings showed that there were two distinct points of view depending on where the actor was situated in the supply chain. It was evident from the research that in most of the cases actors viewed the supply chain in a different perspective. This was in line with Christopher, (2005) who surmised that actors will view the supply chain differently, depending on where they sit in the supply chain. The findings showed that actors tended to be slightly hypocritical and held opposing views depending on which way they faced in the supply chain. In other words when facing downstream, actors had an expectation that their client would embrace the opportunity to partner or collaborate with them. However when facing upstream they perceived that their supplier would be a liability and wanted to maintain their distance (Section 5.2.2.1) thus creating an oxymoron.

It was apparent that actors wanted to consolidate their relationship with their downstream counterparts so as to ensure a continuity of work. However the reason for not wanting to commit to their upstream suppliers was so they could maintain a level of flexibility to ensure that they would remain fluid and change with the needs of their workloads. The nature of the concept in itself was a strong inhibitor to any possible relationships as none of the actors realised or even wanted to consider that their downstream counterpart had the same opinion of them as they had of their upstream counterpart. This strong desire to want to belong by upstream suppliers left them seemingly vulnerable as it was evident in the interviews that downstream counterparts would use this desire of the upstream counterpart to belong, as a means to making them conform, leaving the way open for clients to take advantage of any perceived relationship and use the expectations of the supplier against them to secure cheaper prices or make unreasonable requests. This was evident through previous comments highlighted in section 5.2.1.4 *Commitment to a Relationship* where James pointed out that the actors will:

“Say or do anything to get on the job”

and Albert commented that

“they (clients) want to throw other work at you, but you have to help them out on this one, then when you go and ask for the other job it’s never there”.

With the industry having low barriers to entry (Cox, 1999, Cox and Ireland, 2002) downstream actors generally held the view that there was sufficient upstream supplier to cover their workloads. However even though options such as alternate suppliers were available, clients still preferred to work with suppliers with which they were already familiar with, switching only if they were faced with no other alternative or if the price option was such that it should not be overlooked. Suggesting to suppliers that there may be an alternate source was also a key driver to keep the prices down and maintain some form of control over the supplier (Trevor). However when the market was buoyant, suppliers found it difficult to entice suppliers to reduce rates as they had little leverage against the high demands of the market place. This didn't discourage clients from trying to maintain the upper hand using the lure of continuous work to maintain control (Albert). As suggested by John keeping suppliers at arm's length leads suppliers to believe you are not reliant on them and as such they will tend to be more flexible.

6.2.2 Upstream Perspective of Collaboration and Dependency

The main focus of suppliers was on the continuity of work and where their next project would be coming from. This was sometimes a struggle as clients didn't often discuss up and coming work with suppliers for fear that information would be leaked to competitors. Clients only discussed current work with suppliers, leaving them to guess what was on the horizon. This would often mean that suppliers would need to price a number of projects to ensure some continuity in work, which was of no consequence unless they were successful in winning work that was to commence on or around the same time. However it would only present itself as a problem if they were successful in winning more work than they could handle (as discussed in section 5.2.2.3). Suppliers felt that while they needed to be flexible with their clients they also needed to ensure their own viability, therefore when markets were buoyant and suppliers had a choice of work, they found it justified to either bargain with the client for a better rate (Simon) or if unsuccessful in their bargaining endeavours, they could possibly move onto another project (Alex). Clients interpreted this attitude as lack of integrity and poor work ethic (see section 5.2.2.4). However suppliers found it was necessary to make choices based on the information they had at hand, generally basing their decision on either the longest running or best paying project (Alex).

The findings also reiterate that most of the supplier's negative attitude towards supply chain partnering stems from the perception that as a supplier, they are not always treated fairly (Dainty, Briscoe and Millett, 2001) and are discriminated against simply for trying to make a living. As suggested by Rhys, the attitude of the client changes once the sub-contractor is locked into the project irrespective of the price or commitment, leaving the sub-contractor to ponder the value of their next engagement with that particular client. While Greg commented that sub-contractors will say or do anything to get onto a job, the sub-contractor believes the same in respect to the client's attitude (Simon). Sub-contractors felt that, while it was considered reasonable for clients to push prices down when work was slow, they were entitled to push rates up when work was buoyant.

6.2.3 Summary of Discussion of Collaboration and Dependency

Over the last 10 years researchers have identified that there is a significant reliance of up to 90% on external resources to complete a construction project (Hartman et al 2010) however fluctuations in the market on supply and demand create uncertainty among actors (Segerstedt and Olofsson, 2010). The larger firms still have an influence over the supply chain (Pala et al., 2014) and that an imbalance of power determines the outcomes (Cox, 2007). There has also been recognition that studies have focused on the demand side with limited effort going into understanding suppliers who are downstream (Pala et al., 2014). This highlights the issue that the supply chain has not been studied as a whole, therefore the need to consider an upstream and downstream perspective. Recent studies have focused on the construction industries perspective and interpretation of collaboration (Hughes, 2012) examining factors that may impede collaboration, such as trust and commitment (Fulford and Standing 2014) or using technology to enhance collaborative relations (Hardin, 2015) and the introduction of collaborative project delivery systems (Abdirad, 2014) all driving towards the conclusion that more collaboration is required in order to improve the industry.

However the focus of all these studies seems based on the ideal that collaborative values or ideals must be instilled into the actors in the construction supply chain, without any consideration being given to why they work together in the first instance. Current

literature shows very little research has gone into the dynamics between the two constructs of collaboration and dependency and from the findings in this research, it highlights that there is a relevant and significant connection which has been missed by previous research. The industries high reliance on external resources in itself implies that working alone to complete a project is untenable so there is a reliance on external sources. In addition Hofer et al (2012) suggested that firms survive or succeed if they can exploit their dependence on other firms or other firms' dependence on them to attain necessary resources. This has proven to be a key point in this research as many of the respondents have considered the exploitation of dependency on resources as a benefit rather than the focus on collaboration as a benefit. This research has shown that the relationship between dependency on resources and its influence on collaboration has revealed that poor relationship tendencies exist due to the principle enabler being resources rather than the normal constructs of trust and commitment as suggested by Fulford and Standing (2014) and Hofer et al (2014). This find changes the nature and the perspective and the direction of research that must be taken in order to commence the formulation of a viable solution to breaking down the barrier of resistance to collaborative relationships.

The current trend of study has a leaning towards such areas as the alignment of objectives and processes (Fawcet 2012) the benefits of collaboration (Cao 2011) using technologies (Cao 2013) and the importance of coordination and integration activities (Mackelprang 2014). This needs to change direction and consider the effect of resources if there is to viable solution to collaborative issues.

6.3 Discussion on Price and Trust

Analysis of the findings on price and trust answer the research question: *“How do price and trust correlate within the supply chain and how does it impact on the relationship?”*, and postulates the following proposition from upstream and downstream perspectives of construction supply chains.

Proposition 2:- *Trust and price are a dichotomy used by the contractor to influence sub-contractors and suppliers to maintain low prices, which directly*

influences or has an influence on the relationship between two actors (Figure 11)

According to Hartmann and Caerteling (2010) both price and trust have a significant input into the procurement process. Their research suggests that through continued interaction principal contractors are able to judge the ability and capabilities of the sub-contractor influencing the selections process. Therefore while trust is an important predictor of positive performance within a relationship (Currall and Inkpen, 2002, Koka and Prescott, 2002) building that trust takes time and effort by all actors who need to work together in an amicable environment in order to nurture that relationship allowing to evolve into one of mutual trust (Hartmann and Caerteling, 2010). Morgan and Hunt (1994) argued that both commitment and trust must be present in order for the relationship to be effective, which would imply that if actors shared both of these qualities then a durable relationship would be possible.

The findings in this thesis however have shown that participants are aware of the need to have a commitment to the relationship (Section 5.2.2.4) in order for the arrangement to work, however the participant view on trust resonated towards familiarity rather than trust itself. Comments made in section 5.3.1 by participants related closer to knowing and understanding your counterpart's traits rather than developing a relative closeness through trust. This would indicate that the level of trust between actors was based on their ability, rather than their integrity. In other words actors considered that ability to deliver was far more important than integrity to follow through.

Arend and Wisner, (2005) suggested that low commitment to managing the supply chain can lead to a fear of opportunism and the possibility of struggling to attain much needed resources. The findings show that there is limited commitment amongst the participants in this research as there tendency to recognise the need to control rather than manage the supply chain and it also seems evident from the project focused view that has been expressed, in this thesis by the participants (Trevor) and confirmed as detrimental by the literature (Ireland, 2004; Khalfan et al. 2010). It also confirms that using the supplier's insecurities to manipulate price outcomes is also foremost in the minds of the participants. Respondents considered that the main focus was on price with many of the inputs from participants indicating that while there was an awareness of

working as a collaborative unit, much of the industry was price driven (see section 5.3.2.1) and as such it was price that actually determined the final outcome of selection. Clients tendencies to maintaining a distance from suppliers also aligns with Lo, Lin and Yan (2007) suggestion that in a competitive system participants are driven to maintain lower bids. Findings have also shown that through the complexity of the contracting and formal agreements that are put in place, trust is significantly low and contractual arrangements are kept under close scrutiny within the terms that are laid out in the contract.

6.3.1 Downstream Perspective of Price and Trust

The findings suggest that clients based their assessment on a supplier's capability, rather than actually mutual trusting. Through previous engagements, a client would establish or define the supplier's capabilities and traits and, based on these assessments, would decide if they would be suited to the project. Most of the selection process in sections 5.2 and 5.3 tends to originate from suppliers having previously provided a service to their client and past experience seems to be the dominant factor in supplier selection. These finding are in line with those of Lewicki and Bunker (1996) that suggested that the relationship may be elevated to one of identification-based trust rather than the degree to which an organisation believes that its exchange partners are honest (Geyskens, Steenkamp and Kumar, 1998). Significant reference was made to the need to maintain set price (Brian; Paul; Greg) to ensure that the organisation was competitive. Suggestion that the competitive nature of the industry demanded that clients keep prices comparably low (Akintoye and Skitmore, 1990) were also evident in the findings, pointing to clients seeing their supplier as the biggest potential for cost savings (Humphreys, Matthews and Kumaraswamy, 2003) thus placing pressures on a prospective supplier to consistently review and revise their prices.

With trust being a major construct in the establishment of collaborative relationships (Chow, Cheung and Chan, 2012) the failure to establish any form of trust that is based on honesty (Geyskens, Steenkamp and Kumar 1998) implies that actors would then struggle to form a cohesive and meaningful relationship. With the typical procurement process currently employed in the industry, the transaction process facilitates a strong focus on price through the varying control methods that are engaged (Eriksson and

Laan, 2007). These current transactions are based on complex and customised agreements that have very little focus on honesty based trust (Appendix 9 Tender Document, Appendix 10 Tender selection, Appendix 11 Formal Agreement) focusing more on price and authority (Eriksson and Laan, 2007) creating no real benefit in terms of collaborative supply chain management. This competence based trust (Heffernan, 2004) that is generally established early in the relationship (Paul and McDaniel, 2004) does not seem to change or develop beyond the impressions gained in the origins of the initial meeting, leaving suppliers nothing to rely on except price. Clients are therefore using the patterns of past behaviour (Komiak and Benbasat, 2004) of their suppliers to manage their supply process. The findings in this research indicate that the clients still base their selection criteria on competence based trust (Heffernan, 2004) and their perception of the suppliers past behaviours (Komiak and Benbasat, 2004). When this method fails to separate suppliers, the construct of price becomes the selection criteria.

Price basis relationships are based on the traditional view of leverage of the supply chain to achieve the lowest initial purchase prices while assuring supply (Spekman, Kamauff and Myhr, 1998). The findings indicate that the industry still uses traditional views and methods of procurement and is still reliant on price as a key attribute to selection process. Respondents Mick and Alex have commented on how the industry constantly price checks suppliers to ensure prices are kept to a minimum, verifying that the industry has not advanced or evolved since the 1990's with suppliers easily replaced (Mick; Robert). This could be due to the fact that supply chain partners are easily interchangeable and have little input in the future success of the client's organisation (Spekman, Kamauff and Myhr 1998) leaving very little incentive for the client to create a collaborative arrangement with their current suppliers that continues on beyond the project.

6.3.2 Upstream Perspective of Price and Trust

The findings demonstrated that suppliers also struggled with trusting their clients, and in much the same way tended to base their judgment on familiarity rather than the traditional concept of trust (section 5.3.1). Suppliers tended to want to work only with clients that they had already worked for and were familiar with their traits (Simon; Brian; Alex) implying that while they may seek work from various sources, they would

generally confine their trade to a known number of clients. However even though they limited the number of clients they would supply, there was no indication that there was any loyalty to any particular client. Findings indicated that the continual change between clients occurred due to the limited amount of communication between client and supplier leaving the supplier to second guess workloads and in turn foster a lack of trust in the client's ability to supply continual work. Therefore suppliers felt that pursuing multiple projects at any one time was appropriate to ensure a continuity of work and reduced their reliance on a single client (Robert; Albert; Mick).

Findings also indicated that suppliers seemed disgruntled about the continual price checks that client's engaged in as well as what they considered as double standards when it came to price fluctuations. Price checking was seen as a standard that influences Dutch auction type trading (Humphreys, Matthews and Kumaraswamy, 2003) forcing sub-contractors to reduce their rate continually to ensure that they could hold on to the job, with none of the benefits passed onto the sub-contractor (Watson 1999). Continual price haggling meant that some of the suppliers would not often find out until the last minute if they were awarded contracts (Robert). This added to the sub-contractors insecurity as there was never any guarantee that lowering the price would win them the job (Mick). Clients didn't see these Dutch auction arrangements as manipulation, but rather as a necessity to leverage the best price (Paul) however from an external point of view it seemed like clients were taking advantage of the supplier insecurity in relation to work and using it to bargain the price down. These insecurities stemmed from not being able to determine where their next job would come from or how long it would be between projects.

The issue of double standards came through as an important finding as further cementing the researchers view, that clients in most cases took advantage of supplier's insecurities. In this case it was a number of suppliers who were asked to review prices in order to make their bid more competitive. Failure to do so could result in a lost opportunity, however reducing the price was no guarantee of success either (Donald). The other finding where there was a view of double standards also revealed that during fluctuations clients focus turned to using the trend to their advantage. In other words, when the market is buoyant and prices are seemingly on the increase due to demand or inflation, clients will insist that the supplier must hold their rates, presenting the

argument to justify the request along the lines that the project was priced and in some cases commenced previous to the increases and that the supplier needs to maintain the rates retrospectively even if they were not engaged or asked to price the project earlier. While during a downward trend, clients would expect suppliers to lower their rates to meet the market rates price even if the project was midstream and the supplier was part of the way through the project (Simon; James). This is a similar pattern that we as consumers experience with fluctuations in bank interest rates, increasing soon after Reserve Bank rate increases, while on the other hand there is a lag in passing on a reduction to consumers when Reserve Bank rates fall (Lowe and Ellis, 1997). This lag in change is designed to maximise profits, with little or no benefit being passed on. In the construction supply chain, it also enhances the view of imbalance between actors (Watson, 2001) and reduces trust which in turn affects their long term relationship.

6.3.3 Summary of Discussion on Price and Trust

Trust has been considered a powerful enabler in strengthening a collaborative relationship (Ambrose, Marshall and Lynch, 2010), while price is considered a key driver in determining supplier selection (Wuyts, Verhoef and Prins, 2009). However there has been limited research on the interplay of price and trust and its effect on the relationship between actors in a supply chain relationship (Donato et al., 2015). In this research, investigations into the actor's relationship based on trust have revealed that trust in the construction supply chain does not exist in terms of what might be the accepted definition of the meaning of trust. While there are a number of definitions, we could safely conclude that trust can be defined as 'an actor's ethical conduct to behave in a manner that delivers positive outcomes' (Kramer, Roderick and Lewicki, 2010). However respondents in this research have viewed trust as 'the reliance on an actor's ability to deliver a service or perform an activity or task'. This interpretation of trust has no enabling qualities to ensure that collaborative efforts are realised, but rather underlines the motive for selection in terms of having confidence that the supplier has the capability to carry out the desired task.

In essence this adds a new context to the meaning of trust and its definition within the context of the construction supply chain that will require further investigation to contextualise what the definition is. This changes the perception of the trust-price

relationship that was first presented where the comparison was between trust as an enabling quality for collaboration and price as a selection criterion. The comparison drawn tends towards two selection criterion, where both price and trust are in fact selection criteria. By the very nature of the redefinition of trust, respondents have defined the construct as part of the selection processes whereby actors are selected based on their capabilities rather than their ethical standing. This does not alter the findings that trust is used as a mechanism to engender price pressure, however it does affect the context of what is actually accruing.

Without trust as an enabler (Ambrose, Marshall and Lynch, 2010) the task of collaboration within the supply chain becomes a difficult prospect and price will ultimately drive selection. The degree of pressure to reduce price comes from the need to obtain work, the higher the need the greater the price. The opposite is also true that the higher the need for the resource, the greater the price paid. However when price pressures are placed on supplier or client based on supply and demand, it is the relationship that is affected and not the degree of trust.

6.4 Discussion on Mediated and Non-Mediated power

In the following we answer the research question: “*How does the use of mediated and non-mediated power enforce/ensure compliance within the supply chain?*”, and propose the following proposition in terms of upstream and downstream views of a supply chain. From analysis, it is apparent from that supplier selection depends on mediated and non-mediated power and postulates the following proposition.

Proposition 3: *The decision to use non-mediated or mediated power to determine supplier selection is dependent on the closeness of the relationship and the need for the resources (Figure 12)*

The project realisation is the final stage of the process where at this point suppliers have been selected and contracts awarded (Figure 9). The findings have shown that even though engagements may have commenced, sub-contractors are still likely to be asked to reduce prices, carry out additional works at no extra cost or accept changes to the scope of the works while being restricted from claiming any additional expense (Albert,

Mick; Alex). The findings have also demonstrated that many sub-contractors accept these conditions based on the lure of being promised future work or continuing work on a project. This also aligns with previous findings in section 6.4 that clients will tend to take advantage of sub-contractors insecurity and using it to reduce costs and maintain control over their providers. This was evident from the comments made by Albert, Mick and Robert who all highlighted concerns about the integrity and intention of the client when it came to securing future work, leading to the suppliers mistrust and scepticism towards the clients intentions. Similar findings were highlighted by Dainty, Briscoe, and Millett, (2001) who identified that sub-contractors received no tangible benefits from any supply chain windfalls, however they were often expected to contribute to any losses that may have been incurred.

Hacker, Israel and Couturier (1999) postulated that historically the customers would maintain relations with multiple suppliers relying on their power to either give or deny work to them as they saw fit. This mind set of customers maintains multiple supplier relations was simply to foster a culture of competition, where they could be challenged in regards to their efficiencies based on the performance of their competitors (Sahay 2003). This pattern is still evident in particular in section 5.4.3.1 Bargaining power where respondents have through their comments demonstrated that clients will continue to peruse and persuade suppliers to review and amend their offering to match that of their competitors. Once suppliers have agreed to terms of the offering the client enforces these terms via contractual documentation (Section 5.4.2.1). The complexity of these documents according to respondents is continually growing as both client and supplier seem to be misaligned with the intent or interpretation of the contract. Clients are continually adding clauses and expanding the content in their contracts with a view of removing ambiguity and to ensure compliance (Neville). However the bigger these documents get, the greater and the more confusing they are becoming, creating confusion as the interruptions will tend to vary from one actor to the next (Solan, 2004). This has created a culture of suppliers in some cases having to seek legal advice to ensure that they have not missed any information and understood the terms and conditions (Frank).

While the complexity of documentation would seem to create a major point of contention between actors, none of the respondents highlighted this as an issue. It was

acknowledged that documentation was becoming complicated and that all actors needed to understand what was required. However it was the administration of the contract that seemed to cause confusion for sub-contractors and findings show that during the course of the project the actual terms and conditions are not always enforced but rather the client would prefer to negotiate with the sub-contractor to solicit additional work outside the scope of the contract without having to forgo additional costs. This point was of greater concern to respondents, in particular sub-contractors, as they felt that the client was receiving additional benefits without passing on any gains further up the supply chain (Richard, Mick and Greg). The trade-off was always the promise of future work which did not necessarily materialise, thus creating an inhibitor to strengthening relationships by created mistrust towards the client and apprehension towards accepting the additional works (Mick).

Respondents did confirm that they were aware of the negative effects that are related to inflicting a punishment or threatening to exclude a sub-contractor from further work in order to gain an advantage (Molm, 1997). There was also an understanding amongst actors that any retaliation to pressure being applied by coercive means could diminish the value of benefits to all parties involved in the supply chain (Ireland and Webb, 2007, Molm, 1997, Rokkan and Haugland, 2002). The findings here showed that actors tried to avoid conflict at all cost (Section 5.4.2.3) in order to avoid any disruption to the project (John; Albert) that will in turn cause delays or inflict a monetary burden. The concept of bargaining with future work is in line with findings by Lane and Bachmann (1997) who suggested that reward was a more effective substitute for trust than coercive power (Ireland and Webb, 2007). However the concern is that when the reward does not eventuate, it creates animosity between actors rather than conflict. The findings show that this trend contributes to the 'arm's length' relationships in the industry as the uncertainty creates further insecurity for sub-contractors.

The respondents also demonstrated an awareness of the benefits of non-mediated power as it improved the decision making process and the stability of the supply chain (Ireland and Webb, 2007). This indicated that while actors maintained an arm's length relationship, their interactions are not necessarily always adversarial, however with little in common in terms of objectives, it is expected that these opposing goals will create friction between actors. Comments from Trevor, Richard, Philip and a number of other

respondents specifically noted in section 5.4.3.2 stated that they all preferred to avoid conflict in order to allow the flow of works and disrupting the project as little as possible, even if actors knew that their counterparts were not being totally honest.

6.4.1 Downstream Perspective of Power

The arm's length approach is perceived as essential by clients in the supply chain, as this enables them to maintain a choice between suppliers, selecting on what they consider to be the varying selection criterion rather than emotion. Arm's length is maintained to dispel any fear of familiarity and this detachment is a vital ingredient when applying pressure on a supplier to reduce price making the negotiation more effective for the client. Documents and contracts enable the enforcement of conditions and requirements. However it is the withholding of information that provides the advantage to the client as the leveraging of uncertainty enables the client to use information on future projects as a tool to motivate or punish the supplier.

With relationships in construction being project based (Vennström and Eriksson, 2010) the focal point is the project itself, however with the need to maintain continuity of work also a key criterion as pointed out by respondents in this research. There is a need to gauge where the next potential source of work is going to come from. Not being able to attain that information from the client, makes the supplier susceptible to requests or demands in particular when the trade-off for meeting those demands is the location or availability of the next work site. It is this point that creates the mediated, non-mediated power struggle as a foremost characteristic of the supply chain and not the threat of litigation.

6.4.2 Upstream Perspective of Power

Suppliers/sub-contractors, consider that maintaining a relationship to ensure continuity of work is of high importance. However this does not engender collaboration but rather allows the client to use it as a tool to control the supplier/sub-contractors. With a large number of suppliers/sub-contractors being small to mediums size, many do not have the resources to litigate if they feel aggrieved and as such tend to comply with client demands, if the demand is sustainable. In other words a supplier will discount their

price or provide a service for a minimal charge if they believe that this will earn them future work with the client rather than argue their position. This however doesn't imply that suppliers/sub-contractors, are easily manipulated as they will reverse the trend if the market is buoyant or they have a number of options available.

6.4.3 Summary of Discussion on Power

Clients continue to maintain an arm's length approach to their relationship with suppliers. The expectation is that maintaining distance promotes uncertainty rather than creates a litigious environment. Early suggestions by Cox and Thompson (1997) and Dubois and Gadde (2000) that the arm's length approach creates a conflict is still being supported today (Manu et al., 2015) with much of the literature suggesting that this distancing between actors needs to be eliminated if there is to be cohesion. However the arm's length approach is considered as a necessity amongst actors in the supply chain, in order to maintain control over their project and their business interests. The distance between actors is mainly on the transfer of information rather than their working relationship. This finding shows that uncertainty enables the client to control the environment.

The withholding of information that may enable a supplier or sub-contractor to make an informed decision seems to be a strong enabler to controlling prices and maintaining control of the supply chain. With construction being heavily project focused, suppliers and sub-contractors rely heavily on being informed on what and where they will be working on in the future. Clients will limit the information, by withholding the amount of work that will be available in the future. This withholding of information creates the mediated-non-mediated power struggle which is a foremost characteristic of the supply chain and not the threat of litigation. The fine balance between actors comes from the need to protect their business and ensure maximisation of profit and maintain distance is what is considered a necessity. Keeping actors at arm's length is seen as a key driver to maintaining profits and a healthy business.

Therefore as suggested in the literature that the arm's length relationships are causing the industry issues (Fulford and Standing, 2014) is not necessarily the case as the arm's length approach is considered as a necessity. The cause of litigation would seem to

evolve from a different source and would require further investigation. It would also indicate that keeping suppliers at arm's length doesn't necessarily affect the performance of the supply chain as claimed in the literature (Manu et al., 2015) but rather has a direct link to price.

6.5 Relationship model and project stages a new proposition

In this section we explain the relationship model with respect to project stages and answer the research question: "How is the relationship between actors affected by dependency, trust/price, (Non) mediated power beyond the project?" From previously discussed propositions in response to research question 4, a fourth proposition is emerging, and in the following it is explained how the following proposition has merged.

Proposition 4: *The relationship between actors does not change irrespective of the project or desire to acquire resources*

The relationship model (Figure 13) shows that each stage of the project cycle is linked by the relationship that actors have had at each stage of the previous stages of the cycle. The objective was to see if the relationship changed between actors during any of the stages or interactions along the way. Findings show very little changes between actors as they continue on their journey through the project cycle and even beyond to the next project. While externally the industry has been identified as having a great reliance on third party supply (Eriksson, Dickinson and Khalfan, 2007; Humphreys, Matthews and Kumaraswamy, 2003; Matthews et al., 2000) internally, the actors seem determined to maintain their independence and do so by limiting their exposures within the supply chain, preferring to switch from one to the other maintaining a broad network of providers. The specific focus on the relationship and their preference to maintaining counterparts at arm's length showed that it was mainly due to opposing goals and mistrust between the actors in the supply chain. The perception was also that this distant relationship also gave the flexibility and enabled them to move freely between projects and supply chains.

Actors still preferred to work with other actors who they were familiar with and with who they had a previous association with, however they didn't consider this continual interaction as a relationship but rather a mutual arrangement that suited a purpose. Sub-contractors did however express an interest in considering a more tangible and fixed relationships with their clients (Section 5.2.2.1 Joint Working Environment Joint Working Environment) this view was not shared by the client and as such made it difficult to enable any type of feasible offer or approach that may engender commitment to relationship building. In the analysis in CHAPTER 5 it is evident that the upstream and downstream views are often in conflict with each other and that each actor has a different expectation or goal than their upstream or downstream counterpart. The gap in forming any type of sound relationships also stemmed from the belief that a close relationship would disadvantage the organisations ability to compete in the market place, simply because other actors would consider that there may be a bias towards a third provider. In other words a dyadic relation meant that there was some form of exclusivity and that would preclude any other competitor from providing its services. This would limit or restrain the company from attaining competitive prices, from an alternate supplier due to the lack of interest from other suppliers as they would perceive the request for a price as a means to price checking.

The strong view of maintaining independence also acted as an inhibitor to the relationship building, yet while both clients and contractors are cognisant that they need each other, there was little if any acknowledgement that there would be any value in stronger relationships in the supply chain. In each case examined, actors seemed content with delivering a service and moving on. This was more typical of a service supply chain rather than the manufacturing supply chain that the industry has been compared to (Bankvall et al., 2010). Like the service industry that is heavily reliant on its labour component (Ellram, Tate and Billington, 2004) the similarity between service supply chains and construction supply chains seem closely linked and will warrant further investigation.

6.5 Summary of Findings

The summary of the findings listed in Table 29 represent the key focus of this chapter which was to provide an understanding of the drivers or inhibitors to building

relationships in the construction supply chain. By examining the findings, analyses and reviews in previous chapters, this section provided insight into how the information was collated to substantiate the findings. From the conclusion drawn in Table 29, the findings demonstrate that actors in the supply chain have no incentive or inclination to form collaborative relationships and much prefer to maintain their distance and independence. This would indicate that attitudes and perception have a major input as inhibitors to engendering relationships which are prevalent through the research. Actors have a different interpretation of the meaning of collaboration and trust when compared to the definitions as defined in the literature. There is also a disconnection between the literature, which concludes that arm's length relationships are a problem as compared to the perceived reality of construction supply chain actors who believe that arm's length relationships are an essential part of doing business.

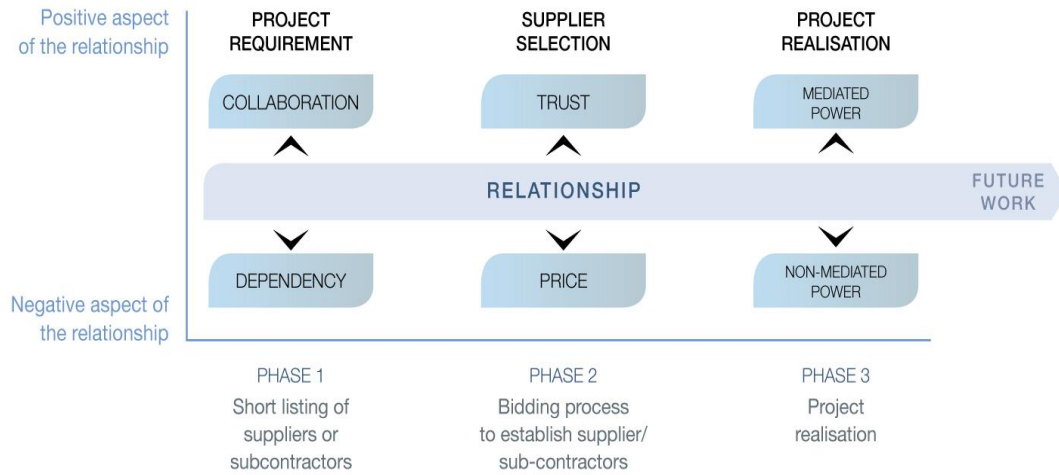
The findings relating to the four propositions also demonstrate that there is a difference in view from both the upstream and downstream actors, with specific key drivers that create inhibitors to supply chain integration. There is a defined project perspective and a relationship perspective of the procurement process that is evident in the findings (Table 29) and driven by the actors needs to acquire a resource or to improve the relationship.

Table 29: Procurement view

Project driven Procurement	Resource Dependency	Price	Mediated power
Relationship driven Procurement	Collaboration	Trust	Non-mediated power

However these seem to be more lineal and can't be defined as strictly one or the other, neither are they alternating between the two but have a degree of positive and negative aspects that blend with each other at each of the phases, continually changing based on the situation (Figure 48) with each having a different effect on the relationship.

Figure 48: Revised conceptual model



6.5.1 Summary of key findings

While actors are cognisant of their need for resources, they are still of the belief that there is no need for collaboration. Relationships are not driven by the normal enablers of trust and mutual benefits but rather by necessity. While there seems to be a gap between the industries best practices and supply chain best management practices, the lack of undertaking comes from the literature which has failed to identify that the academic definitions of collaboration and trust do not align with those of the construction industry. Dependency may drive the need to create an exchange in resources. It doesn't drive the need to collaborate so actors believe that arm's length relationships provide independence.

With many sub-contractors and suppliers being too small to survive on their own, they continually negotiate and renegotiate with clients, creating a price driven culture. Without the need for partnerships, this provides clients with a greater level of buying power enabling them to maintain a level of control over prices.

Proposition 1:- Within a project, dependency and collaboration directly affect the relationship between actors and are inversely related to each other. Implying that the

greater the focus on the dependency for the resource the less emphases is placed on the need to collaboration and develop a relationship (Figure 10)

From the interviews, the findings indicate that there is very little focus on collaboration and that most transactions are resource based. Collaboration is restrictive and creates a non-competitive environment.

From the client's perspective: Dependency on resources drives the relationship. The project focus and high reliance on external suppliers make the concept of collaboration appear restrictive to the needs of the organisation and suppliers can be exploited by limiting the transfer of information.

From the supplier's perspective: Believes that the client will always limit the amount of work it provides or stalls for time, until the client can achieve its own objectives, particularly when the market is buoyant. The supplier feels that collaborative agreements will take away their independence.

Concluding remark: The need to have a continuous workload and the need to remain independent are key drivers to both clients and suppliers. This need is enhanced by the actor's definition and understating of collaboration, where the meaning of collaboration according to the actors has a different connotation in the construction supply chain as compared to the literature.

Proposition 2:- *Trust and price are a dichotomy used by the contractor to influence sub-contractors and suppliers to maintain low prices, which directly influences or has an influence on the relationship between two actors (Figure 11)*

From the interviews, the findings indicate that there is a strong tendency to lean toward price when it comes to supplier selection. Clients have admitted to using familiarity with supplier to solicit cheaper prices and use cheaper quotes for other suppliers to drive down costs. The greater the familiarity with their suppliers and sub-contractors, the greater is the push to reduce the cost of supply.

From the client's perspective: The competitive nature of the industry drives the nature of the relationship. Therefore clients have no qualms about pressuring suppliers to lower their rates. Once they're familiar with a supplier's capabilities and needs, they will exploit it if they can achieve better rates for services.

From the supplier's perspective: There is a lack of trust due to the continual price checking from their clients and this diminishes the supplier loyalty and make them continually look for better offers from other clients. Suppliers will chase the best 'paying' job at the best rate and therefore has no alliance to any one client.

Concluding remark: Actors in the construction supply chain have a differing definition of trust which does not align with that of the literature. Where trust exists as an enabler to collaboration, it is in the form of having confidence that other actors will do the right thing. However actors only consider trust in terms of ability and capability of supplier so there is common base to establish longevity in a relationship.

Proposition 3: *The decision to use non-mediated or mediated power to determine supplier selection is dependent on the closeness of the relationship and the need for the resources (Figure 12)*

From the interviews, the findings indicate that even though relationships are at arm's length they are not necessarily adversarial. Actors tend to want to resolve issues as amicably as possible and move on to the next project. In some cases they are prepared to accept losses then proceed to litigation.

From the client's perspective: Clients are cognisant of the pressure they apply to suppliers to reduce rates so to ensure that they do not incur unexpected charges they continually review documentation to ensure that loopholes are closed. They also tend to bargain with future work or arbitrary incentives to avoid incurring additional charges for any changes or variations. Clients also believe that by restricting information from their supplier, it protects their business as well as

creates a level of insecurity for the supplier giving them a bigger bargaining advantage.

From the supplier's perspective: Price cutting affects the overall margin on a project so suppliers continually look for opportunities to add or make additional charges in order to cover shortfalls in revenues. Variations to their contract are seen as the only means to recover lost revenue. They are continually insecure in relationships and will try to maintain a steady work flow by whatever means possible. They diligently explore opportunities for work when they are close to completing a project and will succumb to price pressures if they have no other work in hand. They also remain compliant so as not to damage their reputation with the client and hope that this will enhance their prospect of future work.

Concluding remark: Withholding information regarding future work creates an air of insecurity, particularly in an industry that is often unpredictable. This enables clients to maintain a culture of low rates and enables the client to withhold tangible benefits such as early or additional payments using non-tangible benefits such as the promise or prospect of future work as a substitute.

Proposition 4: *The relationship between actors does not change irrespective of the project or desire to acquire resources.*

From the interviews, the findings indicate that the relationship between actors does not change irrespective of the number of times that they work together. The arm's length relationships are seen as necessary to maintain the organisations independence and their competitive advantage. Close relationships are regarded as an unviable commercial option.

From the client's perspective: Clients believe that by maintaining an arm's length relationship they have the flexibility to negotiate with multiple suppliers without providing any commitment. They also consider the distant relationship as a valuable tool to maintain control over suppliers as they can restrict what information they pass on.

From the supplier's perspective: Would rather have a more defined relationship with their client if it secures more work. However they also prefer to maintain an arm's length relationship so that they can float between clients and maintain a level of independence.

Concluding remark: Actors believe that a close working relationship, with counterparts, reduces the competitive advantage and impedes on their independence. This seems to derive from the perception that a collaborative arrangement is a closed circle and entry by other providers could be perceived as difficult.

CHAPTER 7

7.0 CONCLUSION

The final chapter of this thesis provides a summary of findings in order to shed clarity on the nature of relationships in the construction supply chain. It will also discuss the contribution to the supply chain/procurement body of knowledge and recommendations that will add value and usefulness to the application of the research for the construction industry, supply chain professionals and academics that have an interest in supply chain management and the implementation of continuous improvement practices. Consideration will also be given to the research limitations and provide recommendations for potential opportunities for future research.

7.1 Introduction

In the construction industry both upstream and downstream actors have become reliant on each other to provide goods or services that cover various aspects of the construction process (Eriksson, 2015). However while relationships between the actors can be either amicable or adversarial, they are always maintained at arm's length (Cox and Ireland, 2002, Manu et al., 2015). There has been a tendency to use manufacturing supply chain management principles in the construction industry in an effort to overcome its inability to integrate into a sustainable and manageable system (Bankvall et al., 2010). However according to Cheng et al., (2010) the reality of the construction supply chain, is that it has a strong service orientation rather than a manufacturing one. This is due to the construction industry's higher labour content and therefore there is need to look at deeper how construction supply chain actors interact with each other.

The assumption of the resemblance, between the services supply chain and the construction supply chain is that organisations that manage a service oriented supply chain have a significant element of human labour (Ellram et al., 2004). This aligns closely to the construction supply chain which, in the majority of cases, is heavily reliant on input from human labour (Ng and Tang, 2010). It is considered that within the

service supply chain, the human element makes the procurement process difficult (Ellram et al., 2004). Hence it is therefore reasonable to consider that the construction industry suffers from the same issues.

7.2 Research review

To answer the research questions, a post-positivist approach is adopted to emphasise meaning and the creation of new knowledge (Ryan, 2006). The post-positivist approach is the appropriate methodology for this research as the characteristics of the research aligned with the motivational factors of the researcher (Table 30). This methodology enabled a case study approach examining multiple supply chains and the key drivers that bring both client and supplier together. While positivists believe that the researcher and the researched person are independent of each other, post-positivists accept that theories, background, knowledge and values of the researcher can influence what is observed (Robson, 2002, Ryan, 2006). This methodology has been used due to the researcher time in the industry and his familiarity with the construction supply chain.

Table 30: Motivational Factors

Research characteristics (Ryan, 2006)	Researchers motivational factors
Research is broad rather than specialised – lots of different things qualify as research.	The researcher needed to be flexible and understand that information would be derived from different sources and in different forms
Theory and practice cannot be kept separate. We cannot afford to ignore theory for the sake of ‘just the facts’	The construction supply chain still remains a mystery therefore, research requires some guidance as a benchmark
The researcher’s motivations for and commitment to research are central and crucial to the enterprise	The researcher has worked for thirty (30) years in the industry and aspired to delve into industries workings
The idea that research is concerned only with correct techniques for collecting and categorising information is now inadequate	Enabled the researcher to employ alternate strategies to the research if required

The interaction between actors in the supply chain was examined at three key stages in the procurements cycle. These are the identification of suppliers, the call for prices and the realisation of the project (Figure 9). The interactions that occur at each of these three stages are important as they identify the key drivers that determine what influences the choices made by supply chain actors in selecting, acquiring and using one resource over another.

7.2.1 Stage one of the procurement process

The initial stage of identifying potential suppliers examined the actor's primary objectives or motivations to open negotiations in becoming part of a particular supply chain. These negotiations between suppliers, sub-contractors and clients would establish if they met the preliminary prerequisites, where the prerequisites would entail that supplier or sub-contractors had the necessary resources or capability that was required by the client or other actors in the supply chain. This would occur before the suppliers or sub-contractors were asked to price any part of the project.

The findings show that the relationship between the actors does not actually manifest, but rather the actors build a familiarity of each other's traits and abilities, which ultimately provides guidance as to whether they want to continue to trade beyond a single project scenario. The prospect of engendering better relationships in the construction industry through communications, trust and other traditional values outlined in the literature (Wood and Ellis, 2005, Magnan et al., 2011) is an elusive prospect. Motivation to maintain arm's length relationships in the supply chain by actors are driven by their underlying need to maintain a level of independence. The motivation to remain independent has emerged to be a major factor in inhibiting any real prospect of aligning values and goals that could facilitate stronger relationships. The context of familiarity also distances the actor from forming a trusting relationship and this seems to create a level of insecurity for the supplier or sub-contractor, as there seems to be a disconnect between expectations and perceived expectations due to limited communications within an already existing arm's length approach to the relationship.

This disconnection between the objectives of upstream and downstream actors is evident throughout the findings where the actors clearly demonstrate that the upstream views and expectations are different in comparison to the downstream view. If we consider the section 5.2 on partner selection and their views as conveyed by the actor, based on where they are located in the supply chain, then it becomes evident that their expectations or goals can act as inhibitors or facilitators to collaboration depending on how they align. Examining the relationship value of these differences as shown in Figure 20, upstream actors have a strong tendency to want to develop the relationship while downstream actors have the view that relationships are not necessary. This aligns with Watson's (2001) findings of power in supply chains, where it can be interpreted here, that suppliers have a stronger need to collaborate with clients, than clients have with suppliers. This leads to the next set of key findings within the first part of the supply chain model (Figure 10) that while suppliers are willing to collaborate they believe that their clients are unreliable and have a poor work ethic (Figure 26). The latter of the two findings has a great significance on the relationship building process as it relates directly to trust which is considered an essential ingredient to collaborative relationships (Benton and Maloni, 2005, Rogers, 2005).

On the dependency perspective the general view is the work, resource dichotomy (Figure 29) where it is evident that there needs to be an exchange (Emerson, 1962) therefore actors are compelled to negotiate irrespective of their feelings towards each other. The findings clearly demonstrated that actors need to sustain their organisations through a continuity of work and an ability to maintain a numbers of resources to enable a work flow. Suggestions like those made by Vargo and Lusch (2004) and Zacharia et al., (2011) argue that collaboration between actors can enhance or improve the quality, performance, viability and competitiveness of supply chains are not a priority, as actors are content to be in a nonexclusive arrangement. This is likely to be due to the facts as suggested by Dainty et al., (2001a) and Saad et al., (2002) that actors may not be aware of, or understand the requirements of a supply chain relationship.

7.2.2 Stage two of the procurement process

During the second stage of the procurement process clients will approach the suppliers that have made it to their short list and request they provide prices to complete required

tasks. Findings have shown that both upstream and downstream actors have a strong market focus particularly when it comes to relationships and are concerned how they are perceived by other actors in the supply chain as well as in the market place. Close relationships between clients and suppliers are seen as having a negative effect when seeking competitive pricing as actors perceive that the relationship between the two parties as a closed arrangement precluding them from submitting a price or that their price would be considered as a viable option. This also acts as an inhibitor and encourages actors to maintain an arm's length approach leaving little scope to consolidate anything beyond the single project. The view that partnering or aligning with other actors or competitors can only be achieved or considered by tier one organisations also contributed to the negative aspects of collaboration (Brian).

Maintaining a distance between actors also seems to limit the amount of information that is shared as actors seem to be restricted by their project only focus implying that the limited information they shared would contribute to the inadequate fulfilling of unrealistic expectations (Sampson, 2000). This seems to have contributed to the complexity of agreements and charges for variations that occur on site, whereby actors are not adequately exchanging information leads to ambiguous agreements that expose both the client and the supplier to litigation due to the expectations of the client, the performance of the supplier against the quoted price. This has left actors to ponder why there are inconsistencies in pricing and variations, continual price checking and price bargaining and a resistance from suppliers and sub-contractors to maintain any form of flexibility (Section 5.3). This has provided a strong basis for mistrust amongst actors leaving actors to be cautious and often suspicious of their counterpart's intentions.

It was also evident that trusting an actor's capability was more important than having trust in the actor's ability to be ethical. In this respect, when actors were questioned in regards to trusting other actors, their responses were based on an actor's capability rather than their ethical approach.

7.2.3 Stage three of the procurement process

While there are a number of trust issues that occur between the actors, there is an awareness of dependency between them, even if the actors themselves do not openly

acknowledge it. This is evident in the project realisation stage (Section 5.4) where actors seemingly have an underlying awareness that makes actors cognisant of the negative impacts of litigation and the use of mediated power, which drives actors to seek amical solutions rather than initiate litigation proceedings. The need to maintain the relationship at an amicable level is not sufficient to drive any changes in options as actors tend to want to resolve any issues and move on rather than learn from their interactions (Richard). These findings also indicated that actors are content to remain at arm's length preferring to maintain a level of familiarity rather than develop a relationship. Actors feel that a limited or distant relationship allows flexibility to continually source alternative suppliers without the need to commit to more than one project at a time.

The use of power is only really exerted when clients or suppliers are looking to manipulate prices or gain a commercial advantage. Power can be exerted in a number of ways, by either withholding information creating a level of insecurity or by punishing or rewarding suppliers or sub-contractors by offering or denying them future work. Market awareness of what future work is available is an important enabler that determines market price and market value. Insecurity evolves from supplier and sub-contractors not knowing what the future work prospects are available. Therefore if a supplier or sub-contractor does not have access to this information then clients are able to portray a fictitious market environment that will enable them to manipulate prices or gain a financial advantage.

Punishment or reward is also facilitated by using what information the supplier or sub-contractor may already know. In other words if the supplier or sub-contractor is aware of future work prospects that are in the control of the client, the client can use these future work prospects as incentives to ensure compliance from the supplier or sub-contractor. However suppliers and sub-contractors are also cognisant of the fact that clients do not always live up to expectations and do on occasion go back on their word to pass on the work even if it has been promised. The withholding of information and bargaining using potential work further strains the relationship and promotes the arm's length relationships.

7.3 Theoretical Contribution to the body of Knowledge

7.3.1 Theoretical contribution

This research contributes to the construction supply chain management theory in a number of ways. Firstly, it identifies that relationships within the construction supply chain are purely transactional only. However while the transactional aspect of the relationship has been identified, solutions to moving towards a more collaborative approach have been limited to existing research such as relationship marketing (RM) techniques (Davis 2008) manufacturing supply chain relationships (Segerstedt, and Olofsson, 2010). While other research has considered using generic supply chain modes such as Contractual Relationship Step-ladder proposed by Cox (1996) and the Relationship Transition Model developed by Spekman et al. (1998). Further research then led to Cox and Thompson (1997) who introduced into the construction industry the Contractual Relationship Step-ladder. Following on from this early research the Relationship Development Model by Humphreys et al. (2003) was later introduced and the Inter-organisational Relationship Range by Jones and Saad (2003). However, there are some obvious deficiencies within these models as none have seemed to offer a sustainable solution. This research has identified that that actors prefer to work on a project-by-project arrangement rather than commit to a long term relationship so a new approach to collaborative thinking is necessary.

Secondly actors have a strong desire to remain independent and as such prefer an arm's length approach. This makes the traditional view of collaboration difficult to realise in construction. This is in complete contrast to current research area which offers a solution to collaboration, based without considering if there is an interest. Hartmann and Caerteling (2010) considered price and trust, Bankvall et al., (2010) considered interdependencies and Cheung and Rowlinson, (2011) who considered mechanisms by which relationships can be managed in a supply chain.

Thirdly, most of the goals of the actors are self-serving and leave little regard for the needs of the supply chain and the project. This seems to stem from the lack of knowledge or perhaps interest in understanding of supply chain management concepts. This lack of understanding of supply chain management principles was also identified

by Segerstedt et al., (2010b). Segerstedt et al., (2010b) considered this an important aspect of collaboration in the supply chain particularly when supplier and sub-contractors are frequently changed from project to project. The findings are further discussed in the subsequent sections.

7.3.2 Construction supply chains are purely transactional

The findings of this research show that while supply chain actors are willing to work together, they are fiercely independent and prefer to maintain a distance. This stance of unwillingness to collaborate was suggested by Benton and Maloni in 2005, however there is no evidence to show that it has been considered in any research as a serious inhibitor to collaborating. Benton and Maloni (2005) identified literature of day assumed that the constituents of the supplier-buyer dyad are willing and able to cultivate mutually beneficial relationships. The current literature acknowledges that there are still issues in the construction supply chain, however it is still making the same ambitious assumption as a decade ago. This can be seen in a significant number of research articles, such as Abdirad and Pishdad-Bozorgi, (2014) Fulford and Standing, (2014) and Zhang and Huo, (2013) to point out a few. Each offer solutions to reducing the construction industries inefficiencies by improving supply chain collaboration while still maintaining those same assumptions.

The research has also found that many of the relationships within the construction supply chain are purely transactional and interaction is only on a project-by-project basis. This means that relationships are temporary and like a project agreement it can be terminated at the end of each project. The project based relationship was discussed by Bankvall et al., (2010) Cox and Ireland, (2002) and Love et al., (2004) and seems to be still predominant today. The one aspect that seems to have been overlooked is that in construction the provider has to work with the client on site, while in the manufacturing and business supply chains provider/supplier works for the client off site. This distinction of working 'with', rather than 'for', has a significant impact on the relationship development. Therefore there is direct contact between client and supplier which forces the two to work together in close proximity. This close proximity forces actors to work together in order to complete a project, however due to the independent nature of each of the actors. Having to work in close proximity seems to add pressure to

the relationship and seems to create a barrier that acts more like an inhibitor than an enabler.

7.3.3 Construction supply chain actors prefer an arm's length relationship

It has been identified in this research that construction supply chain actors are driven by a desire to maintain a level of independence. This may in part explains why there are issues when working on a site in close proximity of each other. However it is clear that their need for independence contributes to their acceptance of maintaining an arm's length relationship with other actors. Hence there is no immediate desire to form a relationship with other actors in the supply chain. Therefore it seems impractical for actors to want to consider the traditional view of collaboration which is based on sharing information, trusting each other and working together to deliver mutual benefits (Cao and Zhang, 2011, Benton and Maloni, 2005). Instead they use what are considered as old and familiar methods of procurement. Which are is seen as price based procurement, as they believe that these are the most effective means of acquiring resources (Cheung et al., 2011a, Cheung and Rowlinson, 2011).

The project-by-project nature of the construction industry has also been viewed as a key contributor to arm's length approach (Bankvall et al., 2010, Cox and Ireland, 2002, Love et al., 2004). However the project based approach seems to contribute to the actors need for independence and the ability to move from one client to the next. Actors prefer to build their relationships based on the familiarities of each other's capabilities and characteristics preferring to maintain a work based relationship only. This may imply that there is some level of collaboration at an operational level rather than a strategic level. These two levels of collaboration have been discussed by Mentzer et al., (2000); Frohlich and Westbrook, (2001); Zailani and Rajagopal, (2005). Hence it could be practical to conceive that there may be collaboration at an operational level that focuses on project delivery, rather than a strategic level that focuses on long term benefits.

Therefore if the aim of supply chain collaboration is to gain a competitive advantage (Mentzer et al., 2000) it seems that this is occurring on a project-by-project bases in the construction industry rather than through long term arrangements. However it seems that current literature continues to drive the need for a longer term relationship between

actors (Bankvall et al., 2010) without any real empirical evidence that a strategical long view approach would improve the current supply chain situation (Näslund, 2012).

7.3.3 Expectations, Goals and Objectives of Actors

Expectations and goals of actors are also an issue as in many cases they are diametrically opposed (Briscoe and Dainty 2005) and create mistrust and tension between all parties involved. This is fostered by the lack of communication between actors leading to a miscomprehension of what the desired or expected outcomes of the project are (Kim et al., 2010). These opposing goals and objectives do create tension within the supply chain which also has a negative effect on the relationship (Eriksson and Westerberg, 2011). Clients and suppliers are looking for financial benefits as an outcome to a successful project, however the view of how this is achieved is different based on where an actor is situated in the supply chain (Christopher, 2005). Both clients and suppliers seem to take advantage of each other if there is a financial gain in doing so, therefor it is not just the client that looks to gain a financial advantage through there procuring processes (Cheng et al., 2002).

This research has identified that clarity of expectations is obscure by the opposing objectives as actors tend not to share information and this creates a significant gap when it comes to understanding what is required or expected. This relates back to the importance of communication between actors in the supply chain as suggested by Wood and Ellis, (2005) and Magnan et al., (2011) who both agree that it not only improves the relationship but also engenders a common aim. From the interviews clients confirmed that most information is communicated on a need to know basis and it is based on the perception that, any information of value that is divulged may inadvertently be passed onto competitors. This prohibits the free flow of information and therefore actors only share project relevant information, once contracts have been awarded or works have commenced.

The combination of the key findings has revealed that while construction supply chain actors have resorted to using old or traditional procurement practices of price based selection processes (Cheung et al., 2011a, Cheung and Rowlinson, 2011) the disconnection between supplier and client objectives has led to the price based

relationships. With price being the dominant factor in the selection process, there is little else that is considered to differentiate between suppliers. Therefore when a supplier is in need of work to maintain continuity, there is a tendency for the supplier to accept a lower rate of pay in order to maintain that consistency (Mick, Robert and Alex). This has created a level of insecurity for the supplier and sub-contractor which inhibit the possibility of building trusting relationships. From the research clients seem to believe that they can control prices by maintaining their distance and in this seems to contribute to both clients and clients exploiting each other through their arm's length relationships. This exploitation and control of prices occurs due to the need for suppliers and sub-contractors to maintain a consistent flow of work to sustain their business. However there is also a tendency for avoiding the long-term and close relationships as there is the perception that this will prevent firms from taking advantage of favourable offers (Bresnen and Marshall, 2000; Wong et al., 2005).

7.3.4 Limited understanding of supply chain management

It has been suggested by Bankvall et al., (2010) that actors in the construction supply chain have a limited understanding of supply chain principles and concepts and that this lack of knowledge acts as an inhibitor to improving relationships. However it is evident from this research that due to the actor's tenacity to remain independent, suppliers and sub-contractors may struggle to acknowledge the tangible benefits of a well-managed and maintained supply chain (Bankvall et al., 2010). Much of the literature has suggested that implementing management principles from other industries such as manufacturing may solve some of the industry's problems (Khalfan et al., 2010, Bankvall et al., 2010). However these management principles that have been recommended focus mainly on principles that are more in line with the manufacturing supply chain (Winch, 2003). These principles are based on the delivery of components that are manufactured off site ready for the end user. Hence in principle the supplier is working for the client to provide goods. This is not an exact fit for the construction supply chain as there are only a number of items where the supplier works for the client manufacturing products off site and supplies to the client. Hence the manufacturing supply chain does not capture the work that is done on site by sub-contractors or suppliers, requiring supplier or sub-contractor to work with the client rather than for the client.

The findings suggest that the construction supply chain is a mix of manufacturing and services. As some components are produced and delivered to site for installation, by staff or sub-contractors, while other parts are produced or assembled on site by the sub-contractor who then installs them. Therefore comparing the construction supply chain to a manufacturing supply chain such as suggested by Vrijhoef and Koskela, (2000) or a services orientated supply chain as suggested by Cheng et al., (2010) will not provide the required solutions to improve collaboration. This leads to the conclusion that two types of relationships exist within the construction supply chain. These are passive, where there is the delivery only of a product and the client then makes arrangement to install and the other is active where the supplier or sub-contractor interacts directly with the client on site during the fabrication or installation of the product. Therefore while there seems to be a strong tendency to compare construction supply chains to supply chains in other industries. Many have missed the point that the need to complete a task or activity in a construction project requires the input of a high labour component. This high labour component is seen as a principle aspect of services supply chains (Ellram et al., 2004).

7.4 Practical contribution

The outcomes of this study have identified some implications for industry, by providing a better understanding of the human interaction issues in the construction supply chain, specifically the role of the actors and their view on collaborative relationships. Specifically their unwillingness to consider that collaborative arrangement can have a mutually beneficial effect on performance and financial return (Segerstedt et al., 2010d, Fawcett et al., 2012, Fulford and Standing, 2014). However it should be noted that the outcome of these studies do not provide a solution to the construction supply chain issues, but rather to recognise that the importance of relationships and the influence of resources on collaboration. Therefore while it can be argued that collaboration can provide strategic long term benefits, this research has considered that there may be tangible short term operational benefits, through a project-by-project commitment.

While previous research has focused on influencing the culture of the industry to change the manner or nature in which it operates (Kent and Becerik-Gerber, 2010, Fulford and Standing, 2014, Segerstedt and Olofsson, 2010). This research has identified that the

nature of the industry or the manner in which it operates, is fixed and will always remain a project-by-project based interaction between supply chain actors. Therefore the project-by-project nature of the industry can't be altered. Hence consideration must be given to the culture of the actors within the supply chain as a main construct for change. This thesis has also identifying that actors are not willing to invest in long term strategical relationships. The need to remain competitive while maintaining longevity of workloads is still important. Hence there is an opportunity to revisit the current body of knowledge and consider what benefits can be derived in an operational environment based on short term project-by-project commitments.

Researches have accepted that the industry is lagging behind in supply chain management principles (Dainty et al., 2001b, Saad et al., 2002) and collaborative processes (Meng, 2012). This research suggests that project manager and company leaders should consider a new approach, by considering how short term relationships that are project specific can provide either tangible or intangible benefits. Practitioners should not try to adjust their thinking or methodology to fit into current supply chain thinking, but should contribute to new ideas that directly relate to the construction industries unique nature. Therefore practitioners should not be restricted by the formality of current supply chain models that may be recommend or implemented. They need to be made aware of the inherent nature of the industry and should to a greater degree embrace and modify various applicable process models to their current situation. Different projects should not require different models or methodologies only different resources.

Eriksson et al., (2009) identified that there is a resistance to change and that a change in the industries mind set would be required in order for the construction supply chain to show improvement. However from this research perhaps this resistance has developed due to what seem to be flawed recommendations that have been suggested. Changing approach may allow practitioners to consider that benefits can be attained based on short term operational goals rather than being forced to consider long term strategic benefits.

7.5 Methodological contribution

Research within supply chains relationships has tended to focus on dyadic relationships that are already in a buyer supplier relationship (Kähkönen, 2011) and do not consider the relationship of key drivers that lead up to the exchange before the project realisation. The proposed/developed relationship model (Figure 13) examines the evolution of the relationship between actors within the construction supply chain. It is designed to consider the exchanges between both upstream and downstream actors during the project realisation. It also takes into account the relationship which is a dynamic exchange that is fluid across the various interactions between actors and changes on a continuous cycle. The three phases of the project relationship are identified as having an impact on the relationship between supply chain actors (Donato et al., 2015). However as construction companies using significant numbers of third party suppliers (Eriksson et al., 2007, Humphreys et al., 2003) resource dependency among supply chain actors plays a significant role in determining prospective relationships between client and supplier/sub-contractor. Understanding of how each actor's interaction affects the relationship not only in the short term relationship and single project context, but also in a more long-term-based project-to-project context is important. The need to understanding the actor interactions are critical in identifying solutions that will assist in addressing the dilemmas faced by an industry that is considered litigious and deficient (Ireland, 2004, Khalfan et al., 2010).

The main methodological contribution of this thesis is the identification of the relationship model using case study environment. The model has enabled the discovery of various traits unique to the construction supply chain by providing a deeper and richer understanding of how actors interact through the project procurement cycle. Four supply chains in the various segments of the construction industry contributed significant data that was gathered through interviews and documentation specific to the research. Using a post-positivist approach the research explores the meaning of relationships between actors discovering significant gaps in the literature that have led to the creation of new knowledge (Ryan, 2006) through the thoughts and ideas of the supply chain actors.

Using the case study approach allowed the research to use the model to address interactions between actors at various stages of the procurement process. This approach enabled the collection of data to support findings while encouraging greater interaction with participants, providing the researcher with a greater understanding of the nature of the problem, which engendered greater clarity to enable justification of the findings (Bouma and Ling, 2004). The meaning and understanding of construction supply chain relationships was achieved through words using the participant's interpretations and point of view (Leedy and Ormrod, 2013). This was made possible through a semi-structured interview process ensuring flexibility for the participant (Minichiello et al., 2008) to convey the message in the participants own words.

A multi-case study methodology was adopted for this thesis to investigate the 'why', rather than the 'how' of a phenomena or event (Gravetter and Forzano, 2012, Rubin and Babbie, 2008, Yin, 2009). This provided a richer and deeper understanding of the factors that influence how resources are acquired, partner selected and relationships formed in the construction supply chain. By using a multi-case study approach the phenomenon was explored through a number of cases within a bounded system (Creswell et al., 2007). This provided an in-depth exploration from multiple perspectives of the complexity and uniqueness of the phenomenon with the primary purpose of engendering understanding of the phenomenon (Simons, 2009). It was adopted due to the investigation of a contemporary phenomenon in an environment where the researcher has little control and the context was important (Yin, 2009).

The uniqueness of this thesis is due to the amount of data collected from four different supply chains across a number of different disciplines which included commercial building and the civil infrastructure arena. Input from both upstream sole trader and downstream principle client provided an in-depth understanding of how views and opinions changed at different levels of the supply chain. The data used was gathered from face to face interviews, documentation and a limited number of observations. Triangulation of the findings from the various cases enabled the researcher to explain and justify the several phenomena that emerged throughout the supply chain. These inputs from the various actors provided a more holistic and accurate picture of the environment that they work in.

There were also two reasons for selecting a post-positive paradigm for this research. Firstly the post-positive paradigm was considered as a more effective method due to the nature of the post-positive view which takes a scientific approach that follows a series of logical steps while taking into account multiple perspectives from participants rather than a single reality (Creswell, 2007). It is instigated by a theory or conceptual framework that is tested by multiple levels of data analysis (Creswell, 2013). Secondly due to the researcher having a long standing relationship with the construction industry and a number of actors within that industry the post-positive paradigm takes into account that the researches own bias can influence findings (Grubs and Piantanida, 2010). However other researchers who do not have the same attachment to the industry may prefer a different paradigm to compare results.

Adopting NVivo software to analyse the data enhanced the ability of the researcher to be more creative and methodical to ensure the rigour of the thesis. Using transcripts of the interviews and field notes the researcher could check that consistency of the data analysed from both techniques correlated. This provided an opportunity to review the data multiple times in order to establish the patterns and themes that will become categories for analysis to be used in the NVivo software.

7.6 Limitations

This research was conducted by examining the input from participants various construction supply chains located in the State of Victoria in Australia and as such it would be expected that there would be limitations related to location and culture (Marshall and Rossman, 2014). Therefore availability of resources, relationships or cultural differences that may occur in other areas has not been taken into account. However the influences of economic pressure and the need to maintain a suitable business model could be considered as a unilateral driver to maintain a constant work flow. Findings presented in this thesis are based solely on the responses provided by the participants, based on their experiences within their particular supply chains. Any bias that may have occurred either through the participants responses or the researchers own ability to interpret the findings was minimised by triangulation with other supply chains, the inclusion of documentation, observations and field notes as outlined in Chapter 3.

The aim of the thesis is to determine the effects of resource dependency on the relationship between the actors. The use of the NVivo software for analysis provided a significant advantage in identifying common themes that emerged from the data. The findings cannot measure the strength of the factors that revolve around the dependency of resources through a qualitative case study, however it can explain specific phenomenon that is occurring with the cases. Many of the feelings examined have been evolving over a long period of time and it would be expected that views and opinions of the participants reflect the views and opinions of the organisation they represent and how they deal with the challenges of the industry and their commitment to build a sustainable business.

7.7 Future research

The prospect of future research rests solely in the desire to resolve the challenges faced by the construction industry supply chain and to further understand their motivations and inhibitors to creating long term viable relationships. The findings in this thesis can be tested in other construction supply chains, located in other continents or other countries. It is expected that similar results would be derived from further research as the need for resources exists globally in all construction supply chains. The only variation would be the human interaction between actors that would be influenced by culture, economic climate that influences supply and demand and any supply chain imbalances.

This study explored the role of dependency within the construction supply chain and the implications it had on the relationship. This could be extended to other supply chains that rely on third party suppliers to providers, using the relationship model to identify how the relationship is affected at the various stages of the project cycle. Generally literature has tried to adapt existing models into various supply chains from a range of industries, endeavouring to create a universal fit based on traits that are regarded as prerequisites for collaboration and competitive advantage. Utilising a relationship verses resource perspective would enable the enhancement of the current perceptions on supply chains and the actors that drive them, by considering other traits as well as practices that drive the supply chain. While the model was tested using qualitative methods, a quantitative approach could also be employed enabling the research to cover

a greater number of participants increasing validity of findings and compare responses for various supply chains from a range of industries.

One other area of research would be to examine the construction supply chain further, considering the implication of the mixed services it provides and the fluctuations in supply and demand. With the services provided in the construction supply chain ranging from manufactured products to labour intensive tasks that are or require to be delivered either days in advance or 'just in time', the supply chain needs fluctuate considerably.

Understanding these newly realised traits, expectation and key drivers of actors that work within the industry, would make it possible to review previous studies and create models and concepts that relate specifically to the industry and its broad range of services, to enable a better understating of the ebbs and flows of the industry and the constraints that the industry faces. Looking at the supply chain from the selection process, rather than the project-by-project focus will also expand the current knowledge on relationships that affect supply chain performance within the construction industry, providing a further avenue to solving its continuing problems in performance. By developing additional data that emphasises the importance of services to project and how the procurement functions can be better utilised to improve the delivery and control of the service process.

7.8 Summary

It is evident that the construction supply chain has been perceived as litigious and distant in its process from the modern day changes employed by other industries. This would seem to relate more to the fact that academics have tried to fit a multifaceted industry into a simple two dimensional manufacturing model and have declared it as inefficient simply because the industry does not conform to perceived standards of supply chain principles. Perhaps the root cause may well be that actors in the supply chain have a limited knowledge of supply chain management principles, however trying to drive an industry to change without understanding its dynamics would also create separation between client-supplier relationships, simply due to the lack of understanding and added confusion of conforming to a process that doesn't fit.

Supply chains in the construction industry are unique and so are the relationships between the actors within those supply chains. The point of this thesis however is not to criticise and determine what is acceptable and what is not, but rather to point out that the uniqueness of the supply chain and its resource dependency based collaboration requires a different approach to the current mainstream focus. Providing a fresh approach to the nature of the supply chain is required if the industry is to be presented with real viable options that will enhance sustainability.

8.0 APPENDICES

Appendix 1 Interview Questions

Case Study Questions		
Proposition	Research Question	Interview Questions
Phase 1- (Sub) Contractor-Supplier selection		
<i>Dependency and collaboration are inversely correlated to each other. That means non-mediated power dominates when collaboration is high and mediated power dominants when collaboration is low (if there are significant imbalances in interdependencies).</i>	<i>How is dependency exploited by all actors in the supply chain to influence other actors in both the upstream and downstream direction?</i>	<p>What are considered the most important or most valued attributes when selecting a supplier/partner</p> <ol style="list-style-type: none"> 1. A supplier/partner who is willing to enter a collaborative agreement 2. A supplier/ partner who prefers arm's length relationships 3. A supplier/partner who has the right skill set irrespective of the relationship type
<i>“What do you consider the most important attributes in a supplier of partner, the potential of a partnership arrangement or the resources and skill they possess?”</i>		<p>How does the project priority, could be cost, scope, or schedule (on time – over time) affect the relationship between client and contractor in a:,</p> <ol style="list-style-type: none"> 1. collaborative relationship 2. arm's length supplier relationship
		How does the project priority,

		could be cost, scope, or schedule (on time – over time) affect the relationship when required resources are low or not available.
		How is compliance /conformity//fulfilment enforced (not in terms of contractual agreements, but in terms of reward or punishment) 1. In a supplier agreement 2. In a collaborative agreement
		What relationships do you consider more advantageous collaborative or arm's length suppliers? And are there exceptions you would consider to reverse your answer?
		What do you find a more effective means of achieving compliance from a supplier/partner within a project context?

Phase – 2 Trust and Price		
<i>Trust and price are a dichotomy used by the contractor to influence</i>	<i>How do price and trust correlate within the supply chain and how</i>	What criteria do you use to select a partner or supplier at the tender stage? i.e.

<i>sub-contractors and suppliers to maintain low prices.</i>	<i>does it impact on the relationship?</i>	<ol style="list-style-type: none"> 1. Past association 2. Reputation 3. Quality of work 4. Price 5. Trust
		How important is price when making a supplier or partner selection?
		How important is trust when making a supplier or partner selection?
		How does price/trust affect the selection process when price is below/above perceived market value?
		How much value do you place on trust when there is a significant price variation on quotation?
		How much weight does the lowest price carry during supplier or partner selection?
		How much value do you place on trust when there is a significant price variation on project implementation?

Phase – 3 Mediated and Non-mediated power		
<i>Use of non-mediated or mediated power leads to project performance rather than collaborative</i>	<i>How does the use of mediated and non-mediated power enforce/ensure compliance within the</i>	How is compliance achieved?

<i>relationships.</i>	<i>supply chain?</i>	
		How do you ensure that contractors/suppliers provide their service on time?
		What measures are used to ensure that contractors/suppliers adhere to their agreement?
		<p>What methods are employed when a project is not running according to plan (cost, schedule, scope or performance)? i.e.</p> <ol style="list-style-type: none"> 1. Reward 2. Punishment 3. support <p>What methods are employed when a project is running according to plan? i.e.</p> <ol style="list-style-type: none"> 1. Reward 2. Punishment 3. support
		<p>How does the outcome of a project affect the decisions to re-engage a contractor or supplier? i.e.</p> <ol style="list-style-type: none"> 1. When the project was successful <ol style="list-style-type: none"> a. Had a previous bad experience with contractor supplier. b. Had a good experience with contractor/supplier 2. When the project experience difficulties <ol style="list-style-type: none"> a. Had a previous bad

		<p>experience with contractor supplier.</p> <p>b. Had a good experience with contractor/supplier</p>
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Phase – 4 Future Relationships		
	<i>How is the relationship between actors affected by dependency, trust/price, (Non) mediated power beyond the project.</i>	When considering maintaining a long term relationship that extends beyond a single project, how important is trust compared to price
		<p>What factors would you consider important when deciding to use or not to use a contractor/supplier again? i.e.</p> <ol style="list-style-type: none"> 1. Skills 2. Ability 3. Resources 4. Availability (of product/labour) 5. Location (close to project) 6. Price 7. Trust 8. Past association 9. Reputation 10. Quality of work
		What would you consider to be the most important factors when deciding to use or not to use a contractor/supplier again.

Table 15: Case study research questions

Appendix 2 Copy of Field Notes

DATE 04/06/2014
 PARTICIPANT [REDACTED]
 COMPANY [REDACTED]

- Builder Developer — Multi Business
 - Various Contracts
 - 25 Employees
- Engages Sub-contract — CABWA
 - Plant & Equipment (operated)

Melbourne Area only (One Job Mildura 2007)

- Industry Experience
 - 22 yrs from Estimator to developer.

No Interest in Relationships little trust for Suppliers

Probes Price?? (why)

Variable (WHAT IS?)
 CAUSE
 PRO

Contracts to ensure Compliance

- limits scope
- Limits supplier ability to change product
- Not interested in supply issues

Ensure Understanding -

Will change Supplier if needed

No Time for Excuses

Limits on selection process three or 4 quotes
 Consider options

Needs to work in with me

Bases on price must be able to do Job

Two Rounds of prices

PRO

Appendix 3 List of participants

Participant	Age	Gender	Type of business	Years in Industry	No of Employees
SC1-1	54	M	Residential Land Developer, works mainly in outer suburbs, developing new housing estates for the domestic market	28	5
SC1-2	42	M	Construction Manager, principal contractor provides civil construction equipment and labour	10	18
SC1-3	51	M	Manager, logistics and transport services, provides bulk earthmoving and excavation services to principal contractors	17	11
SC1-4	48	M	Owner operator, owns one piece of equipment and will work for either principal contractor or logistics services	23	0
SC1-5	37	M	State manager for material (Quarry product) delivers to broad cross-section of clients that range from principal contractor to owner operator	8	26
SC2-1	45	M	Commercial Medium Rise Builder, develops property for commercial use, generally mediums side mixed office, light industrial factories	22	25
SC2-2	38	M	Project Manager for principal contractor, builder generally medium rise commercial, will undertake residential if necessary	16	35

SC2-3	35	M	Project Manager, small to medium trade provider, skilled workers, plumbing and other related services to commercial building industry	9	7
SC2-4	42	M	Owner operator, small business provides trade services to building trade (acts as an agent for other sub-contractors). Will engage additional labour or equipment if required to meet client needs	18	3
SC2-5	42	M	Sole trader, provides trade services to building industry, will work commercial or residential. Has equipment that is for his own use and will as a rule not hire it out for others to use	24	0
SC3-1	58	M	Principal Architect representing small to medium rise, residential builder, major refurbishment and renovations (Acts on behalf of government agency)	35	4
SC3-2	33	M	Principal contractor working in residential, medium rise buildings provides management services as well as some trades	12	42
SC3-3	28	F	Operations manager providing specialist construction service to building industry in particular renovations and refurbishment, core business is contaminated material and asbestos removal services.	5	17

SC3-4	31	M	Transport Manager, delivering building products such as precast panels, equipment and fixed crane components. Specific logistics business tailored to service the construction industry will deliver to other construction organisations in different segments	8	7
SC3-5	36	M	General Manager building products, specific to building, engages owner operators within the transport industry to deliver products. Produces own product.	11	85
SC4-1	42	M	Civil contractor undertaking major civil works throughout Victoria. Works generally on infrastructure projects such as highways, freeways, major pipeline and wetlands. Will develop land for residential or commercial use but must be a larger development	19	115
SC4-2	39	M	Principal contractor who undertakes major works on significant projects. Generally carries out earthworks for major freeways or highways as a sub-contractor to the principal contractor or developer. Has own equipment however does engage sub-contract operators to run own plant.	21	15
SC4-3	52	M	Construction manager who provides services such as concrete works, asphalt and drainage works to major projects. Uses	35	9

			own labour, not resourced enough to take on more than two projects at a time, as a rule will not use sub-contract labour, however will hire operator equipment if required.		
SC4-4	27	M	Sole trader with one machine hires out his services to concreters and drainers who require earthworks for concrete pads, pipes or working in confined areas. Generally works on civil sites, however has been engaged on buildings where he carries out similar duties. Does not hire out his machine only, goes out as driver machine combination	5	0
SC4-5	59	M	Director and principal partner supplying pipes and other construction products to the civil construction industry. Has factory workshop and produces standard pipe fixtures and fittings to the building industry.	32	43

Appendix 4 Letter of Invitation



INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH

You are invited to participate

You are invited to participate in a research project entitled [Click here and provide project title].

This project is being conducted by a student researcher [provide student's name] as part of a [provide course details, for example Honours/Masters/PhD study] at Victoria University under the supervision of [provide supervisor's title and name] from [provide details of faculty].

OR

This project is being conducted by [enter title and name of VU staff] from [enter details of faculty] at Victoria University.

Project explanation

[Click here and provide a short summary of the project]

What will I be asked to do?

[Click here and list down details of what participants will be requested to do and how much time will be involved]

What will I gain from participating?

[Click here and explain potential benefits including payment/reimbursement to participants]

How will the information I give be used?

[Click here and list how the information is to be used by the researcher]

What are the potential risks of participating in this project?

[Click here and provide a clear indication of any potential risks associated with participating in the project]

How will this project be conducted?

[Click here and provide a brief explanation of methodology in simple language]

Who is conducting the study?

[Click here and list details of organisation/s involved in the project]

[Click here and list details of the Chief Investigator including contact details]

[Click here and list details of the Student Researcher (if applicable) including contact details]

Any queries about your participation in this project may be directed to the Chief Investigator listed above. If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001 or phone (03) 9919 4781.

Appendix 5 Consent Form



CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH

INFORMATION TO PARTICIPANTS:

We would like to invite you to be a part of a study into the Construction Supply Chain. The research is entitled

'The Influence of Power (Dependency) in the Construction Supply Chain'

The aim of the project is to research relationships within the Construction Supply Chain. The object of the study is to explore how relationships within the construction industry are influenced by their dependency on resources, trust, price and supply chain management process. So as to understand why is it that in an industry that is highly dependent on subcontractors and suppliers, that the majority of relationships become adversarial and lead to conflict.

Information will be gathered from various stakeholders in the supply chain via a series of face to face interviews to determine how each member views the supply chain, what they see as their role within it. The main focus will be on three distinct parts:-

1. The selection of contractors or suppliers, to understand how a short list or pre-qualification is evaluated
2. The bid or tender process, with particular attention being given to Trust versus Price
3. How the relationship is managed during the life of the project

There will no questions asked that are of a personal or operational nature.

CERTIFICATION BY SUBJECT

I, of (suburb only)

certify that I am at least 18 years old* and that I am voluntarily giving my consent to participate in the study:

A case study to determine: - **'The Influence of Power (Dependency) in the Construction Supply Chain'** being conducted at Victoria University by: **Dr. Kamrul Ahsan PhD**

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the research, have been fully explained to me by:

Matteo (Matthew) Donato and that I freely consent to participation involving the below mentioned procedures:

- Face to Face interview that will be recorded and transcribed into text
- A review of the transcripts for my approval before they form part of the research

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way.

I have been informed that the information I provide will be kept confidential.

Signed:.....

Date:.....

Any queries about your participation in this project may be directed to the researcher

Kamrul Ahsan
College of Business, Victoria University, City Flinders Campus
Victoria University, City Flinders Campus
Phone: 03 9919 1174, Email: Kamrul.Ahsan@vu.edu.au

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary,
Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428,
Melbourne, VIC, 8001 or phone (03) 9919 4781.

Appendix 6 Sample Documents from Participants

OPERATOR'S TERMS OF HIRE

1. The Operator will provide the plant and a person to operate the plant in accordance with your request ("the Services"). The Operator will have no liability for failing to comply with your directions to the extent that such directions may pose a risk to any person or thing, including the plant.
2. You will pay the Operator in full and without deduction within 30 days of the date of invoice the aggregate sum of:
 - (a) Unless otherwise agreed, the hourly rates for hire as quoted by the [REDACTED], for the first 8 hours worked on days other than public holidays, Saturdays or Sundays ("Normal Operating Hours");
 - (b) An additional hourly charge as reasonably set by the Operator for the hours worked outside normal operating hours;
 - (c) The costs of delivery of the plant to the site location and the costs of returning the plant to the Operator's address, [including a charge for the time taken for such delivery];
 - (d) Any amounts the Operator is entitled to, or is required to pay to any of its employees, sub-contractors, servant and/or agents, by way of allowances, charges or salaries under any award, statute, rule, regulation or order;
 - (e) Such other charges and costs arising out of any special or additional instructions or requirements given by you, any bogging or breaking down of the plant resulting from any instructions given by you and any delays caused by any instructions given by you;
 - (f) The amount of any damage sustained by the Operator as a result of any failure by you to correctly and accurately declare the weight, dimensions and/or description of the goods or material to be handled, lifted, transported, moved or otherwise worked on with or by the plant and any additional costs or charges incurred by the Operator which arise out of any such failure.
3. If you fail to pay the Operator in full within 30 days of the date of invoice, you will pay:
 - (a) interest calculated on the portion of the invoiced amount overdue at the rate of [1.5%] per month from the 30th day after the date of the invoice; and
 - (b) all collection costs, including legal costs (calculated on a solicitor and client basis), arising from your failure to pay when payment is due.

4. You grant the Operator an irrevocable licence to enter the site at any time and remove the plant.
5. To the maximum extent permitted by law:
 - (a) The Operator makes no representations or warranties as to the Services;
 - (b) the Operator's liability (including liability for negligence) to you for any loss or damage, consequential or otherwise, suffered or incurred by you, arising from any:
 - i. advice, recommendations(s), information regarding the Services, or the Services; and
 - ii. failure, defect, act or omission of any kind connected with or arising out of the provision or attempted provision of the Services, is excluded; and
 - (c) the Operator's liability for breach of any duty, obligation, warranty or representation, act or omission which cannot be excluded by these terms and conditions, including any duty, obligation, warranty or representation which cannot be excluded by law, is limited to providing the Services again.
6. You warrant that:
 - (a) you will satisfy yourself as to the suitability of the plant and the safety of the site, the services to be performed and the plant.
 - (b) the services to be performed by the Operator will not include the handling of Prescribed Industrial Waste within the meaning of the Environment Protection (Prescribed Waste) Regulations 1998.
7. You indemnify the Operator, its subcontractors, servants, agents and helpers and hold them harmless from and against:
 - (a) any loss arising out of a breach of these terms and conditions by you;
 - (b) all claims which may be made against one or more of them in respect of any loss, damage (consequential or otherwise), injury or death caused by, or in the course of, or arising out of or connected with, the provision or the attempted provision of the Services, or whilst the plant is on site;
 - (c) any loss of or damage to the plant whilst the plant is hired by you or is at the site location;
 - (d) any loss, costs, damages or otherwise caused to you or any other person due to any accident, breakdown or defect in the plant or any part thereof or from any other cause whatsoever.

8. It is your responsibility to contact the appropriate authorities and verify the existence and location of any underground cables, pipes or other services. You hereby indemnify the Operator, its subcontractors, servants, helpers and agents against any claim for loss or damage (consequential or otherwise) to any person or property arising out of or connected with damage to or interference with underground cables, pipes or other services.

Appendix 7 Ethics Approval

Ethics Application - Approvedhttps://outlook.office365.com/owa/projection.aspx

Ethics Application - Approved

Delete

Reply

Reply all

Forward

...

QU

Quest.Noreply@vu.edu.au

Mon 6/05/2013 1:13 PM

Inbox

Mark as unread

To: Kamrul.Ahsan@vu.edu.au;

Cc: himanshu.shee@vu.edu.au; matteo.donato@live.vu.edu.au;

Dear DR KAMRUL AHSAN,

Your ethics application has been formally reviewed.

Application ID: HRE13-082
Application Title: The Influence of Power (Dependency) in the Construction Supply Chain

The application has been accepted and deemed to meet the requirements of the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007)' by the Victoria University Human Research Ethics Committee. Approval has been granted for two (2) years from the approval date; 06/05/2013.

Continued approval of this research project by the Victoria University Human Research Ethics Committee (VUHREC) is conditional upon the provision of a report within 12 months of the above approval date or upon the completion of the project (if earlier). A report proforma may be downloaded from the Office for Research website at: <http://research.vu.edu.au/hrec.php>.

Please note that the Human Research Ethics Committee must be informed of the following: any changes to the approved research protocol, project timelines, any serious events or adverse and/or unforeseen events that may affect continued ethical acceptability of the project. In these unlikely events, researchers must immediately cease all data collection until the Committee has approved the changes. Researchers are also reminded of the need to notify the approving HREC of changes to personnel in research projects via a request for a minor amendment. It should also be noted that it is the Chief Investigators' responsibility to ensure the research project is conducted in line with the recommendations outlined in the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007).'

On behalf of the Committee, I wish you all the best for the conduct of the project.

Secretary, Human Research Ethics Committee
Office for Research
Email: researchethics@vu.edu.au

This is an automated email from an unattended email address. Do not reply to this address.

1 of 126/07/2015 2:34 PM

Appendix 8 Sub-Contract Agreement

Contractor Compliance Information and Terms and Conditions

Contractor Information

Business Name:			
Trading Name:			
ABN		GST Registered?	YES / NO
Business Address			
Contact Name:			
Telephone No.		Facsimile No.	
Mobile No.		Email Address	

Insurances

Workers Compensation

Insurer's Name			
Policy No.		Renewal Date:	

(Please attach a Certificate of Currency)

Public Liability

Insurer's Name			
Policy No.		Renewal Date:	
Insured Amount	\$		

(Please attach a Certificate of Currency)

Plant and Equipment Insurance

Insurer's Name			
Policy No.		Renewal Date:	
Insured Amount	\$		

(Please attach a Certificate of Currency)

Next of Kin

Name:		Relationship:	
Telephone No.		Facsimile No.	
Mobile No.		Email Address	

OHS

List licences, certificates, etc (List on separate sheet if insufficient room)

Red Card No. (general OHS induction)		Date of Issue:	
		Date of Expiry	
		Date of Expiry	
		Date of Expiry	
		Date of Expiry	

Terms and Conditions

MUST READ

It is a condition of this Agreement that the Sub-Contractor provide the Contractor Safety Induction Manual to each employee or agent of the Sub-Contractor to read prior to the commencement of works with [REDACTED].

The Sub-Contractor must ensure that their Employee/s or Agent/s have appropriate licences/qualifications for the tasks to be performed and have read and understood the Terms & Conditions of Engagement set out below. Failure of the Sub-Contractor to ensure that their Employee/s or Agent/s comply with the Terms & Conditions of Engagement may result in [REDACTED] terminating this Agreement.

Terms & Conditions of Engagement

1. Variations

- 1.1 No variations will be made to this Agreement or the Terms and Conditions of Engagement unless instructed in writing by [REDACTED].
- 1.2 No variations will be considered until the basis of payment for the works has been agreed.

2. Acceptance of Base Work

- 2.1 The Sub-Contractor will not carry out additional work if they are of the opinion the base work is unsuitable or unsatisfactory.
- 2.2 The commencement of works will imply the Sub-Contractor's deemed acceptance of the base work and no extra payment or special recompense shall be payable.
- 2.3 The Sub-Contractor's liability does not extend to latent or hidden defects which are not detectable by reasonably "competent" workmen or in the event of

- issuing written instructions overriding the objections of the Sub-Contractor.
- 2.4 may consent to an extension of the Completion Date if justifiable in the circumstances.
- 3. Contractor Safety Induction Manual**
- 3.1 It is a requirement of this Agreement that the Sub-Contractor has read and understood the Contractor Induction Safety Manual.
- 3.2 The Sub-Contractor must comply with policies, procedures, rules, and occupational health and safety instructions and procedures outlined in the Contractor Induction Safety Manual.
- 3.3 The Sub-Contractor must ensure that Safe Work Method Statement (SWMS) and Safe Operating Procedures are met and complied with and must also ensure their Employee/s or Agent/s comply with these requirements
- 3.3 The Sub-Contractor must also ensure their Employee/s or Agent/s read and comply with the Contractor Induction Safety Manual.
- 3.4 If the Sub-Contractor or their Employee/s or Agent/s fail to comply with any of the contents of Contractor Induction Safety Manual, SWMS and/or safe operating procedures or policies and/or OHS legislative or code of practice requirements may terminate this Agreement.
- 4. Schedule of Rates / Payment**
- 4.1 The schedule of rates, retention, payment and or special payment conditions will be as agreed in the Tender documentation entered into between the Sub-Contractor and .
- 5. Progress Claims**
- 5.1 Progress claims shall be submitted by the end of each month or as otherwise agreed by .
- 6. Payment Claims**
- 6.1 Payment claims shall be submitted by the end of each week or as otherwise agreed by .
- 7. Damage and Site Cleaning.**
- 7.1 The Sub-Contractor shall be responsible for:
- a) Any damage caused by the Sub-Contractor or Agents in carrying out the works;
 - b) All costs in rectifying any damage the Sub-Contractor and or Agents occasion to other work;
 - c) The removal of all tools, implements, plant and equipment belonging to the Sub-Contractor used at the work site in conjunction with carrying out the works.
- 8. Default by Sub-Contractor**
- 8.1 If the Sub-Contractor commits one or more of the following they will be in default of this Agreement:
- a) commit any serious or persistent breach of any of the provisions herein contained;
 - (b) be guilty of any grave misconduct or wilful neglect in the discharge of its duties hereunder;

- (c) become bankrupt insolvent or make any arrangement or composition with its creditors;
 - (d) be convicted of any criminal offence other than an offence which in the reasonable opinion of ~~Contractor~~ does not affect its performance under this agreement;
 - (e) become permanently incapacitated by accident or illness from performing its duties under this agreement and for the purposes of this sub-clause incapacity for four consecutive weeks.
 - (f) fails to obey any reasonable instruction of ~~Contractor~~ in respect of the manner and performance of works;
 - (g) without due cause wholly suspends the works before the Completion;
 - (h) fails to complete the works within the specified time set out in this Agreement.
- 8.2 ~~Contractor~~ will, within 7 days of default, deliver a notice in writing to the Sub-Contractor outlining the default and requesting immediate rectification. The Sub-Contractor will have 7 days to rectify the said default.
- 8.3 ~~Contractor~~ may at its discretion withhold some or all of the monies due pursuant to this Agreement until the default has been rectified. In the event that the default is not rectified ~~Contractor~~ reserves its rights to sue for specific performance.
- 8.4 In addition to the rights of ~~Contractor~~ referred to in clause 8.3 ~~Contractor~~ may retain from the monies due pursuant to this Agreement all reasonable costs and expenses incurred as a result of the default.

9 Default by ~~Contractor~~:

- 9.1 If any of the following events occur ~~Contractor~~ will be in default of this Agreement:
- a) Enters into voluntary or compulsory liquidation.
 - b) Fails to make payment of the monies due under this Agreement to the Sub-Contractor within the time specified in this Agreement subject to the Sub-Contractors' default provisions contained in clause 8.

10. Defects Liability Period

- 10.1 The Sub-Contractor will be liable for all defects arising from the fault or negligence of the Sub-Contractor of any works carried out which are inconsistent with the terms of this Agreement for a period of three (3) months from the Completion date of the works.
- 10.2 ~~Contractor~~ will immediately provide to the Sub-Contractor a notice in writing setting out details of the defect and requirements to remedy the defect.
- 10.3 The Sub-Contractor must remedy the defect within 24 hours or within a reasonable time specified in the defect notice and bear all costs associated with remedying the defect.

11. Confidentiality

- 11.1 During the term of this Agreement and thereafter the Sub-Contractor: -
- a) will not at any time knowingly disclose to any unauthorised person confidential information of ~~Contractor~~, which comes to their knowledge during the course of their engagement, whether before or after the operative date of this Agreement;

- b) maintain proper and secure custody of all confidential information in accordance with ~~Section 4.11~~ confidentiality policy in force from time to time; and
 - c) use their best endeavours to prevent the use or disclosure of the confidential information by third parties.
- 11.2 Confidential Information shall include all information which has been specifically designated as confidential by ~~Section 4.11~~ and any information which relates to the commercial and financial activities of ~~Section 4.11~~ and/or its clients. It does not extend to information already in the public domain unless such information arrived there by unauthorised means.
- 12. Access to ~~Section 4.11~~ customers and suppliers**
- 12.1 During the period of engagement and for the period of one (1) year from the date of any termination of this Agreement, the Sub-Contractor or Agents will not solicit excavation work from ~~Section 4.11~~ customers for personal or commercial gain without the written approval of ~~Section 4.11~~.
- 13. Assignment of Works**
- 13.1 The Sub-Contractor may not assign any of the work the subject of this Agreement without the written authorisation of ~~Section 4.11~~.
- 14. Working Hours**
- 14.1 ~~Section 4.11~~ will ensure that the works carried out by the Sub-Contractor are supervised at all times and ~~Section 4.11~~ reserves the right to define the Sub-Contractor's hours of work.
- 14.2 Any supervision costs incurred outside the defined times may be borne by the Sub-Contractor.
- 15. Regulations.**
- 15.1 All work carried out pursuant to this Agreement will be carried out in compliance with all relevant laws and regulations including taxation.
- 16. Dispute**
- 16.1 Where a dispute arises between ~~Section 4.11~~ and the Sub-Contractor, then either party shall provide a notice in writing to the other party of such dispute or difference and act in accordance with the "Settlement of Disputes" procedure set out in Clause 49 of "Australian Standards 2545-1987 Sub-Contract Conditions".
- 17. Confidentiality of this Document**
- 17.1 This Agreement is a confidential arrangement between ~~Section 4.11~~ and the Sub-Contractor or Agents.
- 18. Severance**
- 18.1 If a provision in this Agreement is held to be illegal, invalid, void or unenforceable, that provision must be read down to the extent necessary to ensure that it is not illegal, invalid, void or unenforceable.
- 18.2 If it is not possible to read down a provision as required in this clause, that provision is severable without affecting the validity or enforceability of the remaining part of that provision or the other provisions in this Agreement.

Acknowledgement

I, undersigned agent of, _____ have
(name or company/business name)

read and understood and agree to abide, and ensure my Employee/s abide, by Earthlift's rules, policies and procedures stated in the:

- Terms and Conditions of Engagement; and
- Contractor Induction Safety Manual.

I understand that it is my responsibility to comply and ensure my Agents/Employees comply with all OHS legislation, relevant Codes of Practice and guidance material issued by WorkSafe.

I also agree for myself and my Agents/Employee/s to attend any training sessions or toolbox meetings arranged by Earthlift.

I declare the information I have supplied is true and correct.

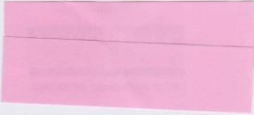
Contractor/Sub-Contractor

Name: _____

Signature: _____

Date...../...../.....

Appendix 9 Tender Document

	MAJOR SUPPLY AGREEMENT	<small>Document # 500-J003-100</small>
---	-------------------------------	--

OPERATIVE PROVISIONS

1. Documentation

The Supplier hereby undertakes to supply the Goods in accordance with and subject to the following documents which comprise the Agreement (the "Documents"):

- a) This Instrument of Agreement;
- b) Major Supply Agreement Terms and Conditions;
- c) The Schedule to the Major Supply Agreement Terms and Conditions;
- d) Appendix 'A': Delivery Schedule
- e) Appendix 'B' – Goods to be provided
- f) Appendix 'C' – Price, Payment Schedule and Variation Rates
- g) Appendix 'D' – Specifications, Standards Drawings, Vendor Data (including Supplier Data Requirements List (SDRL)) and Codes
- h) Appendix 'E' – Form of Performance Security
- i) Appendix 'F' – Inspection Release Form
- j) Appendix 'G' - Release and Discharge Form
- k) Appendix 'H' - Others – (Specify)

2. Precedence

The Documents shall be read together in their entirety. In the event of discrepancies the following order of precedence shall apply:

- a. Instrument of Agreement;
- b. Schedule to the Major Supply Agreement Terms and Conditions;
- c. Major Supply Agreement Terms and Conditions
- d. Appendices

Based on Template 500-J003-100 Rev7

Page 3 of 37

Appendix 10 Tender Selection Process

IMS-124.2

TENDER INTERVIEW

Project: _____

Subcontract Package: _____

Tenderer: _____

Present: _____

Project No: _____

Date: _____

ABN: _____

Tenderer: _____

1. _____

2. _____

3. _____

1. _____

2. _____

3. _____

Tenderer is to confirm the following:

Previous Experience

1. List previous ~~2007-2010~~ Pty Ltd projects undertaken or references provided from recent projects

Submitted Tender

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 1. The tenderer is fully familiar with and understands the scope of the contract works. Tender complies with documents. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Tenderer to confirm their tender complies with the conditions set out in QConstrukt Pty Ltd's Letter of Invitation dated _____ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Tenderer withdraws qualifications from its tender and acknowledges that their tender does not form part of the subcontract. (refer item 63 for any Agreed Conditions) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. State any difficulties or queries in relation to the tender documents:

_____ | | | |
| 5. The Tenderer has inspected the site prior to the submission of the Tender. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. The Tenderer confirms it shall at its own cost comply with all Legislative Requirements including in respect of industrial matters all State and Federal Legislation and codes of conduct which apply or may apply to the works, and the tenderer shall ensure all employees and persons it retains are paid at the rates and on the conditions prescribed by any Federal or state Legislation or any registered or industrial agreement and has made due allowance in his submission. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. The Tenderer is to note that claims for additional works or variations will not be considered unless they result from an instruction issued by the clients agent or a written instruction from QConstrukt Pty Ltd. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. The tenderer acknowledges that the subcontract is subject to the Head Contract Conditions and that Head Contract and Builders Liquidated Damages may apply | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Tenderer confirms that it will bear all own costs in relation to safety and industrial delays. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Appendix 11 Formal Agreement

IMS-124.4

CONTRACT

CONTRACT made the <<date>>

BETWEEN

20080808 PTY LTD (ABN **2008080808**)
of level **20080808** Street **20080808** VIC **2008**
(referred to as the "**Builder**")

and

<<SUBCONTRACTOR>> (ABN <<Subcontractor ABN>>) (ACN<<Subcontractor ACN>>)
of <<Subcontractor Address>>
(referred to as the "**Subcontractor**")

WHEREAS the Builder desires to have executed and completed the <<Trade>> for the Project as set out in the Contract Documents (referred to as the "**Works**") for the construction project known as

<<Project >> ("**Project**")
which is located at: <<Project address>>

all in accordance with this Contract, the attached General Conditions of Contract and the following Drawings and/or Specification and/or Documents. (referred to as the "**Contract Documents**")

DRAWINGS:	As set out in the Scope of Works
SPECIFICATION:	As set out in the Scope of Works
SCOPE OF WORKS:	As set out in Appendix 1
GENERAL CONDITIONS OF CONTRACT:	As attached

NOW IT IS HEREBY AGREED

1. For the consideration hereinafter referred to the Subcontractor will upon and subject to the General Condition of Contracts attached hereto execute and complete the whole of the Works in every respect to the satisfaction of the Builder and in conformity with what is shown and/or described in the Contract Documents, and each of the provisions of this Contract shall be read and constructed as subject to this primary responsibility.
2. The Builder will pay the Subcontractor the total fixed lump sum price of <<DollarsWords>> DOLLARS (\$<<DollarAmount>>) (excluding GST) ("**Contract Sum**") or such other sum/s as shall become payable hereunder at the times and in the manner specified in the General Conditions of Contract.

.....
SIGNED for and on behalf of the Builder:

.....
SIGNED for and on behalf of the Subcontractor:

.....
Name:

9.0 REFERENCES

- Aaltonen, K. and Kujala, J. (2010), "A project lifecycle perspective on stakeholder influence strategies in global projects", *Scandinavian Journal of Management*, Vol. 26 No. 4, pp. 381-397.
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