
# STRATEGIES FOR ENHANCING SUPPLIER RELATIONSHIPS

A Thesis submitted by

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# ABSTRACT

Procurement is an essential part of any organisation due to the need to source items, resources to support delivery of services and products of an organisation. In a competitive sector such as the oil and gas, it may be challenging to develop and manage relationships that lead to successful procurement process. Whether suppliers exist for business purposes only or more, their importance cannot be undermined in the oil and gas sector. Enhancing supplier relationship is therefore important amidst market analysis and other internal and external factors that may hinder beneficial relationship to the buyer. This research aims to critically assess strategies for enhancing procurement buyer-supplier relationships, and to identify factors influencing current supplier relationship within UAE oil and gas sector.

Through literature review, theories of supplier relationship and different supplier relationships were reviewed to determine appropriate relationship pattern and tiers for the oil and gas sector. Kraljic's portfolio model (KPM) is applied to examine purchasing strategies and influencing factors. A total of 312 completed the online survey designed to examine purchasing strategies and factors influencing supplier relationship in UAE oil and gas organisation. The most effective purchase classification and supplier relationship were also identified, tested and evaluated to determine the current status of supplier relationship in ADNOC which is the case study organisation.

Reliability analysis and Cronbach alpha were applied for reliability and validity, using SPSS to show strong evidence of reliability and validity. Results indicate that supplier dominance and buyer dominance are the prominent supplier relationships in ADNOC for procurement of minor items and major equipment. Other results reveal that no supplier strategy is effective for major equipment procurement, supplier dominance is the identified as the most effective for procurement of consumables and minor items. Years of employee experiences in the organisation was detected as a major factor influencing purchase classification and supplier relationships in the organisation. This original contribution to knowledge informed recommendations for policy and practice as well as for future research.

# CERTIFICATION OF THESIS

This Thesis is entirely the work of Ali Hassan Alhammadi except where otherwise acknowledged. The work is original and has not previously been submitted for any other award, except where acknowledged.

Principal Supervisor: Prof. Jeffrey Soar

Associate Supervisor: Prof. Talal Yusaf

Student and supervisors signatures of endorsement are held at the University.

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Lastly, my overwhelming appreciation goes to my family for their support, advice, patience and love. To my wife, I'm indeed grateful for your support and understanding throughout this process. Without you, this research and the successful completion of my entire study would have been impossible.

# DEDICATION

I dedicate this research my family and my parents who enlighten me and brighten my path. Your care, prayers, love and support are my inspirations. You have motivated me to excel beyond my imaginations.

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# CHAPTER 1: INTRODUCTION

## 1.1 OVERVIEW OF CHAPTER

Procurement is an essential activity of any organisation which is not without its challenges. This research focuses on identifying strategies for improving supplier relationships for procurement within the oil and gas industry. To achieve this goal, this chapter introduces the study area, and provides context for the research problems which motivated this study that focuses on United Arab Emirates (UAE) oil and gas sector. Sections in this chapter describe the research contribution, scope and thesis structure; important and necessary information that are vital to conducting an objective study such as presented in this thesis. The aim of this chapter is to introduce the study topic, concepts and terminology that influence the inquiry process. It also introduces the next chapter which is the literature review of existing study in the study area.

## 1.2 RESEARCH BACKGROUND

Procurement entails actions, and decisions taken by organisations, or governments, actions that may invariably generate different impacts on the organisation or entity embarking on procurement (Carr and Kaynak, 2007). It can be implied that, further supported by Emiliani (2010) that costs of service and/or goods, available information and transparency of the process are important for successful procurement. The benefits of procurement transcend the immediate, as procurement is an important fabric of any society and organisation. Procurement plays a vital role in economic growth and development if well managed (Arhin, 2013). This is because many actions, decisions and processes undertaken by organisations, or government regarding procurement, often impact the immediate goal, and long-term benefits of procurement (Carr and Kaynak, 2007). There is a need for procurement to focus on quality and quantity of goods, services and information (Spekman, 1985), however Emiliani (2010) encourage better procurement supplier relationships. Unfortunately, the

historical study of procurement relationships indicate that supplier relationship management practices are under researched (Emiliani, 2010).

While interactions, development, practice and sustainability of quality are known to improve procurement, (Spekman, 1985), Sarang et al. (2016) identified in their work that strong relationship between buyer and supplier positively affects supplier performance, which is positively related to organisational performance. Arhin (2013) argues that poor performance of procurement process can be attributed to lack of compliance with policies, regulations and inability to identify strategies for improving the procurement process. These authors; Spekman, Sarang et al. and Arhin all appear to establish a link between procurement performance, organisational performance and buyer-supplier relationship. These and other reasons discussed in this chapter and subsequent chapters of this thesis indicate an increased need for buyers and suppliers to build stronger sustainable relationship (Joshi et al. 2016).

Background literature review conducted in this study therefore indicate that procurement is a well-researched area. It is generally accepted and understood as a process which requires stakeholders engaged in buying and selling of goods and services (Baily et al. 2005; Hines, 2004). The process involves creating relationship, process and strategies that can lead to successful development, planning and implementation of business transaction between supplier and buyer (Mak 2012; Jensen, 2011). The strategies for buyer supplier relationship improvement is yet to be fully understood nor have such strategies been well developed and utilised for better organisational performance (Joshi et al. 2018).

In general, the effectiveness and underutilisation of procurement are traced to the impacts of factors such as time, location and trust among other factors (van Weele and van Raaij, 2014). These factors have also been identified as responsible for hindering the procurement process, despite attempts made by researchers to seek solution through the use of technology to facilitate procurement process and performance (Hsin Chang, Tsai and Hsu, 2013; Li and Shao, 2015). Though assumption can be made that these factors affect the status of procurement in the United Arab Emirates (UAE), limited empirical data on factors or strategies that may enhance procurement process have made this assumption unjustified, hence the need for this study. The UAE and nature of procurement in the country is further examined in this chapter for context.

### 1.2.1 UNITED ARAB EMIRATES CONTEXT

The United Arab Emirates (UAE) is a federation made up of seven states. These seven states are Dubai, Sharjah, Ajman, Ras al-Kahaimah, Umm Al-Quwain, Fujairah and Abu Dhabi which is the capital city for the UAE (McClenaghan 2009). The location of the United Arab Emirates positions the UAE for trade and other economic activities. The country is located between Saudi Arabia, Oman, Persian Gulf and Gulf of Oman (Sunil 2007). In recent years, the international monetary federation (IMF) ranked the UAE as the 17th wealthiest country in the world, which can be directly linked to the UAE's ability to engage with countries in the wider region to the ones in the Gulf region.

As illustrated in figure 1.1, it can be observed that the UAE and all the seven emirates in the country are all located close to one another in order to facilitate its economy and development.


*Figure.1.1: The Map of the UAE (World Atlas, 2018)*

The proximity of the UAE to the Arabian Gulf and Gulf or Oman positions the country as one of the countries prominent in oil and gas production (Kerr and England 2009). UAE is considered as one of the countries with the fastest growing economies in the world (Kerr and

England 2009). This information is significant because it provides context to area being researched and covered. It also shows the area in which oil and gas activities span through and why a good buyer-supplier relationship is important in the country as it can potentially impact oil and gas activities in neighbouring countries. The extant of procurement activities is reflected in the number and nature of oil and gas organisations in the country.

### 1.2.2 PROCUREMENT IN UAE OIL AND GAS

Though over the years, the UAE has become less dependent on natural resources and diversified its source of revenue, petroleum and natural gas exports in the country are still central to the economy (Forstenlechner, 2010). Thus, oil and gas continue to be one of the sources of revenue for the country and have attracted the focus of many national, regional and multinational oil and gas companies from across the world (The World Bank 2013). Some of the prominent oil and gas companies in the UAE include, but are not limited to; Emirates General petroleum corporation (EMARAT), Abu Dhabi National Oil Company (ADNOC), Atlantis holdings, Crescent petroleum company, Dragon Oil Plc, Margham Dubai Establishment, Occidental M E Development Co. and Zakum Development company (ZADCO).

Other organisations include, Abu Dhabi Company for Onshore Petroleum Operations Limited (ADCO), Abu Dhabi National energy company PJSC (TAQA), Abu Dhabi Gas Liquefaction Company Limited (ADGAS), to mention a few. This list shows that there are ample case studies to examine in the UAE in order to evaluate procurement process and variables that constitute to successful procurement in the oil and gas industry in the UAE. However, ADNOC is selected due to its extended activities in the sector supporting other organisations, having on onshore, liquefied gas and trading and producing other petrochemical products.

Therefore, the challenges with managing procurement supplier relationships and a difficulty in ensuring that buyer-supplier relationship is enhanced in the UAE has further informed this research. When procurement relationships are not properly managed, the procurement process could become less effective and unsatisfactory. While existing literature acknowledges that problems exists in procurement, none proffers strategies that can be utilised to improve procurement supplier relationships and the associated factors that may

influence the relationship in the UAE Oil and Gas sector. This gap makes this research significant in a fast-developing economy like the UAE.

## 1.3 RESEARCH RATIONALE AND JUSTIFICATION

The development of procurement and its ability to transform economy emphasises the importance and relevance of factors such as time, location, and trust (van Weele and van Raaij, 2014). Procurement is largely influenced by customer satisfaction (van Weele, 2010), and it is a process streamlined to ensure that prices and costs of materials are feasible in relation to the supply sources (Caplice and Sheffi, 2003). Procurement can be time consuming and expensive to monitor and trace (Hawking et al., 2004). This problem is not only a manufacturer issue, but one which is shared between the procurer and the supplier, hence the reason for effective relationship. For example, in ADNCO, manual handling and the bureaucratic process delays payment, which subsequently impact on supplier relationship (ADNOC group, 2018b). Continued delays increase the lack of confidence and trust in the procurement process, subsequently in suppliers (Lee and Drake, 2010). Such a state and continued problems may hinder subsequent transactions and procurement of oil and gas products.

Nature of buyer-supplier relationships can influence the bid process (Caplice and Sheffi, 2003), and effective procurement management (Virolainen, 1998). Laeequddin et al. (2012) emphasised that trust in procurement is key in procurement relationship, as the sum of risk-worthy characteristics may hinder partner relationship, and information sharing. Perhaps these explanations from literature helps to explain the causes of the problems experienced in the UAE observed by the researcher. In the UAE, the following problems have been identified in the oil and gas sector:

- Prolonged transaction process: this problem makes it challenging to manage and sustain supplier relationship, as well as smooth procurement of oil and gas products. According to Li and Shao (2015), factors such as time have also been identified as a problem in procurement especially when it leads to delays.

- Minimal use of support systems and platforms such as ICT: most stages and information regarding supply process are still managed and monitored manually which further prolong and complicate procurement process. This problem may be due to trust (van Weele and van Raaij, 2014) or other unknown factors. Therefore, the actual reasons or factors responsible for minimal use of support systems is worth investigating to determine how best to forge strong supplier relationships that may positively influence organisational performance in the oil and gas sector.
- Inconsistency with procured items. This problem is identified in literature as having the potential to influence supplier relationship, sales performance and future procurement (Laeequddin et al. 2012).

A lack of an appropriate model that may be employed to systematically manage supplier relationship, and information sharing in procurement may be considered as the overall motivation for undertaking this study. It is the goal of this research to investigate strategies that enhance buyer-supplier relationships in the UAE, factors that influence purchasing strategies in order to develop a comprehensive model that can improve, and help manage supplier relationships in oil and gas sector. The Abu Dhabi Company for onshore Oil operations (ADNCO) is used as a case study to investigate the problems outlined above and appropriateness of the supplier relationship model to be developed in this research. As a result, a key aim and objectives are developed and outlined in the next section.

## 1.4 RESEARCH AIM AND OBJECTIVES

The research aims to critically assess strategies for enhancing procurement buyer-supplier relationships, and to identify factors influencing current supplier relationship within UAE oil and gas sector, with the view to a model that enhances supplier relationship in the country. This aim is achieved through the following objectives:

1. To identify and review buyer-supplier relationships types and strategies.
2. To critically examine purchasing strategies and factors that influence supplier relationships.

3. To evaluate the effectiveness of current purchase classification, and supplier relationships in the UAE oil and gas organisation.
4. To develop a model that can be adopted to enhance procurement supplier relationships and purchasing strategy in UAE Oil and Gas organisation.

These objectives are key to identifying gap in knowledge that need to be addressed in the course of this research as well as guiding the inquiry process that leads to achieving the research aim.

## 1.5 RESEARCH SCOPE AND METHODS

The research investigates procurement buyer-supplier relationships and how the relationship can be enhanced in the UAE oil and gas sector despite existing problems explained earlier in this chapter. This makes procurement, buyer-supplier relationship and oil and gas the key words in this study and concepts that need to be explained to prevent confusion. In this study, procurement is referred to within specific context since several definition exists.

Procurement is considered as a process that involves deciding what to buy, from whom, or from what source, and when to purchase goods or services (Hsin Chang, Tsai and Hsu, 2013). It is also viewed as the acquisition of goods and services that is beneficial to the organisation, group or individual at the best cost and right time (DFID, 2011). Procurement entails all the activities performed to enable the transfer of a product from the vendor to its final destination (Nicoletti, 2013). Procurement may also be explained as the process of acquiring goods and or services from external sources to the location where the goods and services are needed (van Weele and van Raaij, 2014).

These definitions portray procurement as a process where relationship exist between organisations and suppliers for the purpose of procuring goods and services. Therefore, procurement in this study combines key themes from all the definitions. Procurement is considered as a process through which quality and cost-effective goods and services are acquired by an organisation from a supplier and delivered timely. A lot of factors in this

definition require good level of understanding of the nature and extent of the relationship that exist between the procurer and supplier to make procurement a success.

From this working definition, the 'procurer' otherwise known as the buyer, and the 'supplier' are both important. This is because buyer refers to the organisation, while the supplier is the service and goods / products provider to the organisation (Sarang et al. 2016). Thus, supplier relationship is an approach adopted for clarifying the nature of partnership that exist between the buyer and the supplier (Joshi et al. 2017). Supplier relationship reflects the status, priorities and need of organisation and how the means and from whom the organisation have decided to source the needs. Emiliani (2010) explained supplier relationship as a process that acknowledges that suppliers differ from each other and therefore all supplier relationships should be dealt with using different strategy. Whilst emphasis is sometimes placed on role and situation that influences the interactions between customer and supplier (Sarang et al. 2016), the procured products and services are equally influential in how organisations view and interact with each supplier (Joshi et al. 2018).

Therefore, supplier relationship in this study means the way in which the buyer and supplier are connected through procurement activities, the coordination of transactions and the functions employed to facilitate the purchase of products and services requested by the buyer (Sarang et al. 2016). This clarification is important to better understand the triangulation involved in supplier relationship (Emiliani, 2010). By so doing, it becomes clearer that the holistic nature of the relationship requires the consent and involvement of the whole organisation, one that cannot be achieved through procurement function alone. The definition of procurement and supplier relationship informed the literature consulted in this study to those on procurement, supplier relationship, supply chain and related field to those concepts.

Investigation is conducted in longitudinal timeframe in the UAE, where the concepts are applied and further examined to achieve the research objectives. An online survey is distributed to the employees of ADNOC who are the sample population through the human resource unit of the organisation. The outcome informed the model developed to enhance supplier relationship in ADNOC and other UAE oil and gas companies with similar structure as ADNOC. The research scope enables the researcher to conduct all research activities

within a reasonable timeframe scheduled for this research by benchmarking the current supplier relationships in ADNOC assessing against supplier relationship strategies identified in literature.

## 1.6 THEORETICAL LENS

A framework is important in a research because it enables the reader to conceptualise what is being studied from a broader context (May, 2011). As done in this study, the framework selected incorporates the components that permit critique of strategies and supplier relationship and their relationship to procurement process. The Kraljic model is selected as most appropriate theoretical lens for examining this field of knowledge. Peter Kraljic developed the Kraljic Purchasing Model in 1983 which is still very useful in organisations globally (Caniels and Gelderman, 2005). In literature, Kraljic model also known as the Kraljic Portfolio Matrix (KPM) is considered the most established portfolio model (Caniels and Gelderman, 2005). KPM employs a 2 × 2 matrix which comprises of four portfolio quadrants used to categorize purchases based on a range of internal and external parameters such as product, profit and operational factors (internal factors), and the external factor such as supply market conditions (Hesping, and Schiele, 2016).

The general concept of the KPM is to minimize supply vulnerability and maximize buying power while at the same time ensuring that external resources provided by suppliers correspond with the internal needs of the buyer (Montgomery et al. 2017). It has been adopted as a model for building purchasing capability (Knight et al. 2014) and one suitable for selecting and empowering supplier portfolios in oil and gas (Sepehri, 2013). Widely adopted to recommend generic strategies and tactics for different categories of purchases (Hesping and Schiele, 2016), Kraljic model have also been critiqued as insufficient for explaining all types of relationships that may exist in industrial networks (Dubios and Pederen, 2002). Despite this critique, its generic relevance to supplier relationship makes it appropriate for this study given the focus is on supplier relationship and not industrial networks that may not be related to procurement.

A key objective of the model is to enable procurement personnel make the most of their procurement or purchasing power, by reducing costs and maximizing supply security

(Knight et al. 2014). Adhering to the process transforms procurement to a strategic activity instead of remaining a transactional activity (Montgomery et al. 2018). Purchasing must become supply management (Kraljic, 1983; Gelderman and Semeijn, 2006). Like Kraljic, several authors such as Sepehri (2013), Hesping and Schiele (2016), Knight et al. (2014) have argued that sustainable competitive advantage can be obtained in an organisation, by the transition of purchasing from a tactical role to a strategic role.

Furthermore, from literature there is persuasive evidence that supports the relationship between supplier integration and strategic purchasing, power, total cost ownership, performance, etc. (Montgomery et al., 2017). Therefore, there is broad agreement that establishing a strategic purchasing approach is critical for organisations (Talluri, Decampos and Hult, 2013). Kraljic's model comprises of four phases which are explained by Kraljic (1983); Lee and Drake (2010), Gelderman and Van Weele (2005) and Hesping and Schiele (2016). These phases are critically explained in Chapter Two.

## 1.7 RESEARCH CONTRIBUTIONS

The significance of this research is both immediate and long-term, with contributions to knowledge and practice at the same time. This research has a goal of contributing to knowledge by linking strategies for improving procurement supplier relationships within oil and gas. As mentioned in this proposal, this research area does not exist, as such positions this research to contribute to academic and practice area of procurement. In the immediate, the expected outcome is the intention to develop a model that is comprehensive enough to improve current status of procurement supplier relationships in the UAE oil and gas sector.

The Kraljic' procurement matric (Marjolein and Gelderman, 2007) is used to benchmark the current procurement in oil and gas organisations. The model developed as a result of this research may also be adopted for enhancing procurement supplier relationships in other industry in the UAE, thus transcending the immediate benefits. The contribution to knowledge will therefore see to increased understanding of strategies, supplier relationship management and specific strategies required to enhance supplier relationship in the Oil and Gas company.

The research also has potential to contribute in the long-term to other industries in the UAE and globally, where applicable. Cross-border collaboration between countries for procurement is feasible in the event of successful procurement (Al-Hakim, Morgan and Chau, 2014). Thus, suggesting that successful model on procurement may attract more quality and potential partners in the same sector. This research will directly contribute to the UAE oil and gas sector and to knowledge in the field of procurement. Indirectly and in the long-term, the research may motivate further research in this study area, application in other countries and further investigation on sustainability of strategies for enhancing procurement supplier relationships and procurement within oil and gas.

## 1.8 THESIS STRUCTURE

This thesis consists of five chapters with each chapter devoted to addressing the research background, problem, aim and objectives explained in this chapter.

Chapter One which is this chapter has outlined the rationale for this study, the aim, problem and the method adopted to conduct the research inquiry.

Chapter Two is the literature review which examines academic and practice context of procurement and procurement supplier relationships. This chapter examines theoretical explanations for supplier relationships, as well as supplier relationships. Limitations of different supplier relationships, and influencing factors are reviewed to determine the minimum requirements for favourable, low risk supplier relationship for the oil and gas sector.

Chapter Three critically evaluates the limitations and good practice that aligns with the procurement supplier relationship model identified in literature and in the UAE oil and gas sector. It also assesses the likely scenario in the case study organisation.

Chapter Four discusses and justifies the research design, approach, strategies, case study context and data collection techniques used for conducting the study. This chapter also explains the data analysis and demographic information of respondents who participated in this study.

Data analysis is presented in the fifth chapter. This chapter also contains overview of the primary data collected in the UAE, interpretation of findings and discussion of results. The discussion section compares the results and explains them in relation to the literature review.

Chapter Six comprises of summary of findings, implication of research outcomes, recommendations for practice especially for the case study organisation used for this study, result conclusions, areas of future research and reflection. Reflection covers the limitation of study and recommendations for future research in this subject area, the conclusion and recommendations.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1 INTRODUCTION

This chapter critically examines literature on the study area. Sections in this chapter particularly focus on examining the background to the procurement process by providing the historical perspective of the procurement process. The importance of the procurement process is explored in section 2.2 where the concept of procurement is discussed. Other sections focus on theories in the procurement process, procurement in different industries especially in the oil and gas sector, and critical discussion on supplier relationship in the procurement process. The latter part of the chapter reviews strategies in the procurement process, and a section that summarizes the deduction made from literature examined in this chapter. This chapter aims to explain the procurement process, as well as identify and critically assess strategies used for improving supplier relationships in procurement. An aim that is crucial to achieving the first research objectives, thereby providing information that gives explanations for other research objectives.

## 2.2 BACKGROUND TO PROCUREMENT

This section explains the historical context of procurement including the definitions of procurement, and views of other authors in this field. There are varying definitions of procurement; however, overall these definitions convey similar messages about procurement being a process. The working definition of procurement in Chapter One shows that procurement requires planning (Laeequddin et al., 2012). Planning as mentioned here covers the activities conducted during the process, which leads to the fulfilment of procurement expectations (Gardenal, 2013). Similarly, stakeholders involved in the procurement process and decision makers also contribute to ensuring that the procurement process is effectively and promptly carried out (van Weele, 2010). It is important that the goods, services and items being procured are suitable for the purpose for which they are being procured and acquired (Al-Hakim, Morgan and Chau, 2014).

In this research, procurement refers to acquisition of high-quality goods and/or services at the best possible cost, from an appropriate and legal provider, for the purpose of satisfying a need or demand. This definition takes cue from authors like van Weele and van Raaij, who used the word acquiring (van Weele and van Raaij, 2014); Jensen A, made reference to quality and quantity in the explanation of procurement (Anker Jensen, 2011). Combining these phrases indicate that procurement is more than just buying and selling of goods and services, but a process that involves the interactions of varying factors, in addition to the goal of satisfaction for the procurer and the supplier.

If not managed effectively, the procurement process could be complex and not as straightforward as the definitions provided above. The process of procurement can be impacted by several limitations or barriers including: insufficient communication, lack of information sharing, lack of trust and poor relationship management (Rajkumar, 2001). It is an emerging trend that procurement process can be made more effective, less demanding and even faster through the use of technology or other non-technical mechanism or strategy (Edquist and Zabala-Iturriagagoitia, 2012). This observation is further examined in relation to improving procurement supplier relationships for procurement and sale within oil and gas.

Procurement provides context for key strategies that may enhance the procurement process and ensure successful outcome (Eriksson, 2008). The strategies for improving procurement process may be classified into two; technology and non-technology strategies (Edquist and Zabala-Iturriagagoitia, 2012). Technology strategies include the use of technology to improve procurement process and all associated activities in procurement. Tassabehji and Moorhouse in their 2008 article, referred to these technological strategies as those that require technical skills (Tassabehji and Moorhouse, 2008). Carr and Smeltzer (2000) further explained technical skills as an essential function for enhancing procurement (Carr and Smeltzer, 2000).

Recent work in procurement supports the argument that the stability of supply chain to assure demands corresponds with needs, and that ability to prevent delays is a key strategy (Guido, 2012). Prevention of delays relate to time management as emphasised by Weele and Raaij (2014); however, Hsin Chang et al., (2013) argue that the use of technology for information sharing, improves supply chain integration and performance during procurement (Hsin

Chang, Tsai and Hsu, 2013; van Weele and van Raaij, 2014). Rajkumar reviewed technology in procurement, indicating that the life cycle for procurement implementation and specific steps are improved through technology (Rajkumar, 2001). The research mentioned earlier in this section and others like Wang et al. (2006), Aboelmaged (2010) and Al-Hakim et al. (Al-Hakim, Morgan and Chau, 2014) all explained and justified the use of technology or technology strategies to improve procurement performance and process. The use of technology in procurement is not denied in literature, nor is it without its challenges which influence the search for research on the use of non-technology strategies in procurement.

As indicated previously, in this research, procurement refers to the acquisition of high-quality goods and/or services at the best possible cost, from an appropriate and legal provider for the purpose of satisfying a need or demand. It is a process that involves deciding what to buy, from whom, or from what source, and when to purchase a service or product (Hsin Chang, Tsai and Hsu, 2013). This infer that the procurement process requires planning (Laeequddin et al., 2012). Planning within this context entails activities conducted during the process leading to the fulfilment of procurement expectations (Gardenal, 2013). Similarly, stakeholders and decision makers involved in the procurement process also contribute to ensuring that the procurement process is effective and promptly carried out (Weele 2010). This means that, it is important that the goods, services and items being procured are suitable for the purpose for which they are being procured and acquired (Al-Hakim, Morgan and Chau, 2014).

### 2.2.1 PROCUREMENT CONCEPT

Procurement entails all the activities performed to enable the transfer of a product from the vendor to its final destination (Nicoletti, 2013). It has been estimated that approximately 60% of an organisation's expenditure is on procurement or supply chain management (SCM) expenses. This signifies a significant expenditure on the part of the organisation; therefore, it is important that efforts are made continuously to ensure procurement units of organisations are strengthened, especially in more competitive sectors like the oil and gas industry (Brandmeier and Rupp, 2010).

Procurement is a fundamental part of organisations, and has a key role within the management teams of organisations, as the teams will be responsible for the procurement of specific resources needed for internal operations from external vendors (Roberta Pereira, Christopher and Lago Da Silva, 2014). Procurement comprises resource and supplier management; the procurement process coordinates an organisation's internal requirement to external resources, enabling the organisation to meet its aims and objectives. It is important that there is cross-functional collaboration between the procurement department and other functions of the organisation – this will facilitate effective decision making in the organisation (Roberta Pereira, Christopher and Lago Da Silva, 2014).

The process of procurement involves a number of key phases that ensures a successful outcome. These key phases are shown in the procurement cycle (Figure 2.1). Furthermore, there are some key factors that impact the outcome of the procurement process, including selection of the appropriate supplier and evaluation of the supplier's performance during the delivery of the service or implementation of the contract (de Araújo, Alencar and de Miranda Mota, 2017). It is critical for managers to give particular attention to two critical phases of the procurement process – selection of supplier and evaluation of supplier (de Araújo, Alencar and de Miranda Mota, 2017); this is important as performance of suppliers are important to the success of the procurement process.

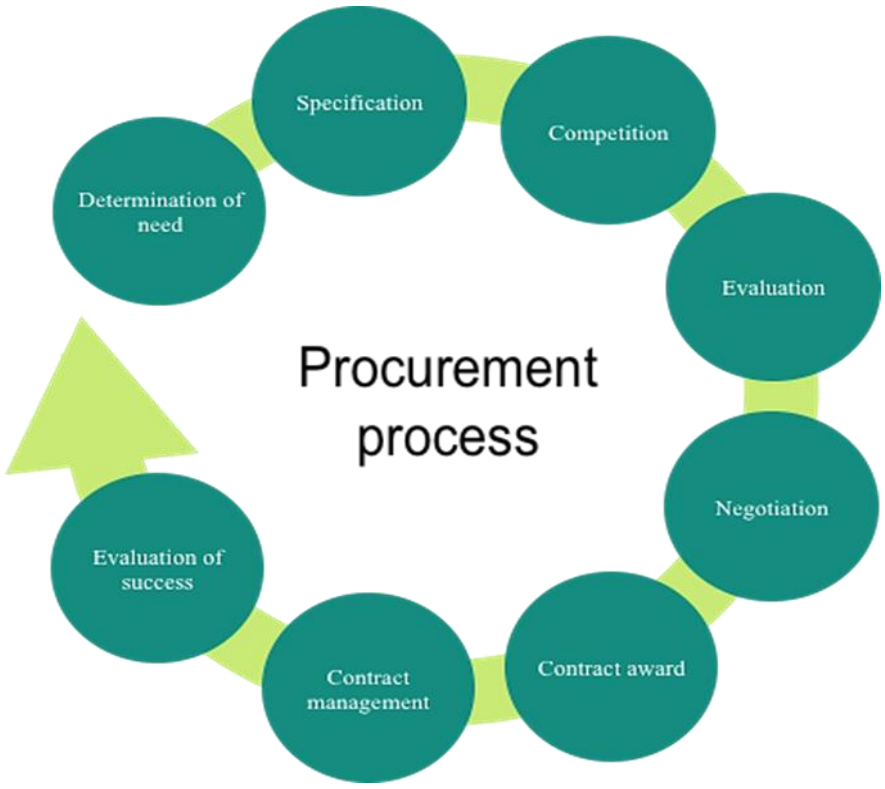


*Figure 2.1: Procurement process stages (Raymond, 2008)*

For procurement in public sector organisations, value for money is a core governing principle. It is enabled by supporting principles of effectiveness and efficiency, accountability, competition, industry development, ethics and accountability. It is important that procurement personnel are satisfied that they are achieving the best outcome in the process, taking into consideration all relevant costs and benefits during the procurement process (Raymond, 2008).

These principles described below can also be applied to privately owned organisations to improve the efficiency of the procurement process.

- Value for money: This is the most important procurement principle particularly for public organisations. It is defined as "simultaneous optimisation of both outcome effectiveness and resource use efficiency". Value for money entails the most effective combination of quality, quantity, costs and features over the lifecycle of a project (Kumar et al, 2015). The concept of Value for Money (VfM) in public procurement,

while not having a commonly accepted definition, typically involves considerations of "what a government judges to be an optimal combination of quantity, quality, features and cost, expected over the whole of the project's lifetime"

- Ethics: this is particularly important for procurement in a government setting. Procurement professionals need to be aware of the laws around their practice, especially in public organisations (Hunsaker, 2009).
- Transparency: Plays an important role in procurement and entails openness during the process. Transparency ensures accountability and has an impact in the reducing corrupt practices. In a government organisation, transparency enables governments to abide by very high standards of conduct, thus ensuring the procurement process is open to scrutiny (Raymond, 2008).
- Accountability: this is very important for both private and public organisations. The Boards of privately held organisations are accountable to their stakeholders, while public organisations have to be accountable to the public, ensuring better services (Raymond, 2008).
- Competition: this is the most common means of procuring majority of goods and services (Raymond, 2008). The selection of the most efficient and appropriate suppliers in many instances depend on an open procurement process (Albano et al. 2017). In the public sector, public resources are more efficiently utilised when procurement is supported by a well-managed tender process which leads to tender prices that are competitive (Hanák and Muchová, 2015). This can also be applied to privately owned organisations when deciding on suppliers for goods and services to an organisation.

During the process of procurement, organisations need to ensure that they have put in place a procurement strategy that is effective. This procurement strategy needs to be clearly defined and show the difference between procurement processes that support the procurement of goods and services for administrative purposes i.e. office supplies, support staff; and the procurement process that support the procurement of goods and services for achieving the overall objectives and aims of the organisation i.e. payments for suppliers' delivery of key services, operation staff, etc. The procurement strategy for any organisation apart from being

clearly defined, needs to provide detailed descriptions of how procurement when done effectively will contribute to the organisation achieving its aims and objectives.

The procurement strategy needs to clearly outline the process that needs to be followed for the procurement of different categories of goods and services, and highlight the fair market value for purchasing these goods and services from the organisation's perspective (DFID, 2011). Simplification of contracts, global trading, closer relations and strategic partnerships are four strategies that can improve the formulation and management of procurement (Virolainen, 1998). Two key strategies that have been identified for the improvement of procurement are relationship and planning (Caplice and Sheffi, 2003). Other non-technology strategies identified include relationships, quality control and operational performance (Sánchez- Rodríguez and Martínez- Lorente, 2004), supply-chain collaboration and supplier responsiveness (Wang et al., 2006), general policy (Sporrong and Bröchner, 2009).

Relationship management, performance improvement, integration management and improved collaboration appear to be most recurring non-technical strategies identified in many articles mentioned in this section. Networking and partnership sourcing have been used in similar context as relationship and integration in certain literature. This is because procurement includes long-term stakeholder relationships (Cousins et al., 2009), trust building concepts (Laeequddin et al., 2012), innovation and policy (Lember et al., 2013), collaboration (Allal- Chérif and Maira, 2011) and sustainable practice (Lindgreen et al., 2009). Literature indicate that research abounds on procurement, and that strategies that may be used for improving procurement process exist though varied in focus.

## 2.3 PROCUREMENT IN INDUSTRIES

From the brief literature review in this section, it is evident that procurement research in the service industry exceed that conducted in manufacturing and the oil and gas industry. For example, Al-Hakim et al. (2014) investigated procurement process in the service industry in Australia and Singapore, Tassabehji and Moorhouse (2008) in the UK and Ireland, Cousins et al. (2009) in the UK, Sánchez- Rodríguez and Martínez- Lorente (2004) in Spain, Tai et al. (2009) in Taiwan, and by Dahwa et al. (2013) in Zimbabwe. Search on procurement

within the oil and gas industry show limited research exists. Though certain literature in the oil and gas sector are focused on retailers, supply-chain agility, development in oil and gas, finance and market issues in oil and gas; however, there is a paucity of literature on strategies for improving procurement supplier relationship in the oil and gas sector, highlighting the gap in this study area.

Research by Cox (1996), Gardenal (2013) and Edquist and Zabala-Iturriagagoitia (2012) all indicated that strategies identified in their investigation may be applicable to different industries (Cox, 1996; Edquist and Zabala-Iturriagagoitia, 2012; Gardenal, 2013); however, other research were industry specific. Despite this, gaps exist in the oil and gas industry as illustrated in Table 2.1.

*Table 2.1: Comparison of procurement research in different industries*

| **Authors** | **Manufacturing industry** | **Service industry** | **Oil & Gas industry** |
|---|---|---|---|
| **Al-Hakim *et al*. (2014)** | | ✓ | |
| **Caplice and Sheffi (2003)** | | ✓ | |
| **Virolainen (1998)** | | ✓ | |
| **Tassabehji and Moorhouse (2008)** | | ✓ | |
| **Carr and Smeltzer (2000)** | ✓ | ✓ | |
| **Aboelmaged (2010)** | | ✓ | |
| **Cousins et al. (2009)** | | ✓ | |
| **Hsin Chang et al. (2013)** | | ✓ | |
| **Laeequddin et al. (2012)** | | ✓ | |
| **Lember et al. (2013)** | | ✓ | |
| **Sánchez- Rodríguez & Martínez-Lorente (2004)** | | ✓ | |
| **Rajkumar (2001)** | | ✓ | |
| **Wang et al. (2006)** | ✓ | | |
| **Tai et al. (2009)** | | ✓ | |
| **Dahwa et al. (2013)** | | ✓ | |

| Authors | Manufacturing industry | Service industry | Oil & Gas industry |
|---|---|---|---|
| **Sporrong and Bröchner, (2009)** | | ✓ | |
| **Lindgreen et al. (2009)** | | ✓ | |
| **Caldwell et al. (2005)** | | ✓ | |
| **Kumar and Markeset, (2007)** | | | ✓ |
| **Allal- Chérif and Maira, (2011)** | | ✓ | |
| **Aschhoff and Sofka, (2009)** | | ✓ | |
| **Olsen et al. (2005)** | | | ✓ |

Table 2.1 shows that procurement in the service industry is more and well-researched than the oil and gas industry, which is under-researched, thus justifying the need for this research. This gap emphasizes the need for this research focus and relevant questions to be answered to ensure that gaps in literature are addressed, and the research aim are achieved.

### 2.3.1 PROCUREMENT WITHIN MANUFACTURING INDUSTRY

A key characteristic of the manufacturing industry is the large number of marketing exchanges that takes place before goods or services reach the final customers (Leonidou, 2005). Suppliers have a key role in the procurement process and have the capacity of making critical contributions to a manufacturing organisation's performance, particularly relating to cost, quality, containment, delivery and new product development (Szwejczewski, Lemke and Goffin, 2005). Industrial organisations have lengthier procurement processes and involve more complex dealings amongst other attributes.

Procurement plays a key role in the manufacturing industry, where it has been estimated that organisations spend between 50% and 70% of their revenue on the procurement of goods and services (Lindgreen et al., 2013). In the late 1990s, procurement and supply management were identified as important for manufacturing organisations to strategically manage risks, value and costs, leading to an increased drive to reduce cost and improve quality; thus, enabling effective competition (Lindgreen et al., 2013). It is important that suppliers have an

understanding of the organisation's buying behaviour, as this has an impact on the corporate performance of the buying organisation and suppliers (Sinčić Ćorić et al., 2017).

The procurement process in manufacturing organisations may include alternative procurement patterns due to the different types of situations that the organisations may encounter. There are three classes of procurement situations that have been identified, each class entails varying processes for making decisions and actions – these have important implications for the buying organisation and suppliers. The three classes are described below:

- Straight rebuy: this entails the procurement of familiar products from the same suppliers on a routine and automatic basis. This procurement process involves a limited number of individuals, no consideration of alternative suppliers, and limited information requirements (Leonidou, 2005).
- Modified re-buy: this procurement process entails more time, effort, personnel, and a potential search for new competitive suppliers as a result of dissatisfaction with the current suppliers or an issue with goods and services procured (Leonidou, 2005).
- New task re-buy: this is a more complex and difficult procurement process. This involves the procurement of goods and services that have not been previously purchased by the organisation. It requires a lot of information, more personnel, additional time, as well as the evaluation of varying alternative suppliers (Leonidou, 2005).

There are several factors that influence decision making during procurement in manufacturing organisations, these include: reliability of supplier, flexibility of supplier, interdepartmental communication, senior management support, buyer price sensitivity and routine procurement (Sinčić Ćorić et al., 2017). Furthermore, when deciding on suppliers for goods and services, four key variables come into play, including: characteristics of the supplier (reliability and flexibility); characteristics of products (low prices); characteristics of individual (senior management support and honesty of communication); and characteristics of the purchase situation (routine purchases) (Sinčić Ćorić et al., 2017).

### 2.3.2 PROCUREMENT WITHIN SERVICE INDUSTRY

In the 1990s, procurement of services became increasingly common as the services industry was emerging and there was an increasing trend towards outsourcing services in both the public and private sector. The increasing level of services procurement was on a global scale, creating more awareness about global sourcing of services in the service industry (Kotabe and Murray, 2004; Roodhooft and Van den Abbeele, 2006). The services industry which encompasses consulting, is very broad, and includes the services provided by: lawyers, management consultants, information technology (IT) consultants, advertising agencies, architects and healthcare consultancies (Edvardsson, 1990; Roodhooft and Van den Abbeele, 2006).

The services procured in the services industry are mainly activities which are abstract and could be difficult for the supplier to clearly communicate and the procuring organisation or buyer to test before procurement. It is important to highlight that due to the dispersed nature of services, control could potentially be challenging; additionally, the traditional procurement models which are based on the procurement of goods are not directly applicable to the procurement of services. It has been highlighted in literature that procurement of services is more complex and difficult than procurement of goods. This is mainly underpinned by the increased level of buyer uncertainty that is characteristic of the procurement of services, as well as the increased efforts that is required to mitigate any uncertainty (Roodhooft and Van den Abbeele, 2006; Wynstra, Rooks and Snijders, 2017).

There are other characteristics of procurement of services that are worth considering during the procurement process, including: simultaneous part production and consumption of services, with the direct involvement of the supplier (service provider) and client (representative of procuring organisation); and the relationship between the buyer and supplier, and the direct involvement of the buyer in the production process. It is critical for the process of procuring services to have a high level of interactivity, show continuity and be dynamic (Roodhooft and Van den Abbeele, 2006). Using the field of consulting as an example, the procurement of services can be split into phases or stages i.e. need detection, selection, implementation and final consumption and evaluation. These are further explained:

- **Need detection**: this process entails a clear definition of the need for the procurement of services from the supplier. The objectives of the services need to be clearly defined and communicated to the suppliers (Edvardsson, 1990; Roodhooft and Van den Abbeele, 2006).
- **Selection**: this involves the selection of a supplier to deliver the service. It could be a difficult and complex process, as it entails the buyer assessing the ability of the supplier to deliver an intangible product. Some key factors that should be considered during this stage, include: prior experience of the supplier; relationship and interactions of the buyer with the supplier; reputation of supplier; and recommendation of supplier (Edvardsson, 1990; Roodhooft and Van den Abbeele, 2006).
- **Implementation**: this entails the implementation of the service, follow-up and regular communication. This stage should involve contributions from both buyers and suppliers (Edvardsson, 1990; Roodhooft and Van den Abbeele, 2006).
- **Final consumption and evaluation**: this include having control points during the implementation process, conducting systematic and regular monitoring, development of reports, and auditing (Edvardsson, 1990; Roodhooft and Van den Abbeele, 2006).

### 2.3.3 PROCUREMENT WITHIN THE OIL AND GAS INDUSTRY

The oil and gas industry have seen an increasing trend in the rate of outsourcing of products and services in the last few decades (Sepehri, 2013); however, based on the literature search conducted for this research, the literature available on procurement within the oil and gas industry is limited. An important activity for a majority of oil and gas organisations, is the selection of service providers and suppliers through highly competitive bidding processes. A wide range of consultants and suppliers are usually selected to deliver goods and services during the procurement process (Sepehri, 2013; Wood, 2016).

Making the most appropriate decisions in the selection of suppliers, as well as detailed justification as to why a specific supplier was selected above others, is very critical because the value of procurement contracts particularly for large facilities projects could be worth hundreds of dollars and decision values worth billions of dollars; therefore, selection of the

right suppliers, contractors and service providers is usually a critical agenda item for decision makers and investors (Wood, 2016). The process for selecting suppliers for large engineering, procurement and construction (EPC) contracts is usually a multi-dimensional and multi-faceted process.

As the value of contracts could reach hundreds of millions of dollars, there are usually several things to consider, including the bid price and multiple set criteria to enable an informed assessment of the suitability of suppliers who are bidding to deliver goods or services (Wood, 2016). As organisations within the oil and gas industry outsource more of their project activities and purchase more goods and services from external suppliers, it is important to have guidance for the managing the procurement process (Sepehri, 2013). Guidance is provided in form of guidelines for the selection of suppliers, including the World Bank Guidelines for Suppliers and Consultant Selection. The guidelines are developed to provide guidance to both buyers and suppliers on the process and activities associated with proposal development and bidding (Sepehri, 2013).

It was identified that within the oil and gas industry, contracts and governance mechanisms are crucial for handling complex procurements that involve several actors (Olsen et al., 2005). A framework was developed by Olsen et al. (2005) that combined incentives, authority (policy) and trust for improving procurement process in the Norwegian oil and gas industry. The findings of the study suggest that proper use of mechanisms such as trust, incentives and policy in the Norwegian oil and gas industry will improve use of other mechanisms and the procurement process in general in the industry. It was also identified that inadequate use will hamper the use of other mechanisms and subsequently the procurement process (Olsen et al., 2005).

The 2007 study by Kumar and Markeset, examined the complexity of oil and gas production and performance in meeting demands. Their research emphasized the need to identify and measure gaps between required and delivered services, and for periodical reassessment of service strategy influencing factors or strategies. Using the case study of Norway, they identified performance-based service, cost drivers and attributes of critical success factors which are essential strategies for improving procurement development, process and performance (Kumar and Markeset, 2007).

It can be noticed that existing research on procurement within the oil and gas industry identified procurement improving measures such as trust, incentives and policy (Olsen et al., 2005), and performance-based service and cost drivers (Kumar and Markeset, 2007). It appears that existing research in oil and gas procurement does not focus much on technology-related strategies, but provides context and lessons learned opportunity for the UAE. Beyond this, literature on procurement in the oil and gas emphasize some sort of strategy is required to improve any aspect of procurement in the industry.

## 2.4 THEORIES IN PROCUREMENT

It has been noted that there is a paucity of data on the role of theory in research on public procurement. The area is under-theorised; however, the tide is changing as authors have started anchoring their contributions in established theories (Flynn and Davis, 2014). Research in this area use a range of theories like Principal Agent Theory, Resources-Based View, Dynamic Capabilities Approach, Network Theory, Resource Dependence Theory and Industrial Organisational Theory (Chicksand et al. 2012). Concern about the scope of theory to adopt or develop when researching procurement has been expressed (Shook et al. 2009); it was also elaborated that it may be healthy to view the discipline through multiple conceptual frameworks or theories (Defee et al. 2010).

This study adds breadth by exploring theories relating to Principal Agent Theory and Network Theory. These theories may provide further breadth and depth analysis (Fabian, 2000) in understanding supplier relationship in the procurement process. Either of these theories may be used to identify key actors and general properties for robustness and structural stability of supplier relationships. The two theories examine concepts of relationship and ones that may be used to solve problems associated with procurement supplier relationship and its impact on procurement and sales within the oil and gas industry in the UAE.

### 2.4.1 PRINCIPAL AGENT THEORY

The Principal Agent Theory (PAT) provides a model that can be used to explain failures and successes in organisational structures, as well as providing an understanding of the

procurement system and its rules. PAT has been utilised in economics, accounting, marketing, and other social sciences over a long period (Eisenhardt, 1989; Yukins, 2010). PAT has its roots in the agency theory. The agency theory is focussed on the broad agency relationship, in which one party 'Principal' delegates work to another party 'Agent', who carries out the work.

In the agency theory, the metaphor of a contract, is used to describe the relationship between the principal and the agent. An overview of the agency theory is provided in Table 2.1. The PAT can be applied in procurement (buyer-supplier), as well as to other agency relationships including lawyer-client and employer-employee (Eisenhardt, 1989). The theory is focussed on determining the best contract, as well as behaviour and outcome, between the principal and the agent. In the procurement process this can be applied to the relationship and interactions between organisations and their suppliers.

The PAT as described above, entails the agent performing services on behalf of the principal. This process involves the delegation of some decision-making authority to the agent. A key challenge with the model is that in some cases there will be a difference between the decisions made by the agents and the decisions that would be most beneficial to the principal's interests. This divergence or difference arises mainly because when a decision needs to be made, the agents will look out for their own interest above that of the principal. This means that when an agent needs to take an action that will be solely beneficial to the principal (without any clear benefit to the agent), the agent will minimise the effort put into the action, instead of maximising the highest level of effort (Soudry, 2006).

In procurement, the principal-agent model can be used to ensure accountability both from suppliers and from those individuals involved in procurement in private and public organisations. The principals, need to ensure that agents (suppliers) who have been contracted to provide goods or services have clearly defined goals and objectives, that are aligned with the organisation's needs. The principals also need to ensure that some decision that will be performed in the actions for the supply of goods and services, are also in the interest of the agent.

*Table 2.2: Agency Theory Summary (adapted from Eisenhardt, 1989)*

| | |
|---|---|
| Main idea | Relationships of principal client and agent reflect efficient organisation, good information and risk-bearing costs |
| Unit of analysis | Entails contract between principal client and agent |
| Human assumptions | Mirror self-interest, bounded rationality and risk aversion |
| Organisational assumptions | Goal conflict among participants may partially arise<br>Efficiency is considered as effectiveness criterion or indicator<br>Information is asymmetry between principal and agent |
| Information assumption | Information is considered also as a purchasable commodity |
| Contracting problems | Agency (moral hazard and adverse selection)<br>Risk sharing |
| Problem domain | Relationship status where principal and agent have partly differing goals and risk preferences.<br>Risk preferences include compensation, leadership, regulation, vertical integration, impression management, whistle-blowing, price transfer etc. |

Table 2.2 shows that the agency theory has key idea that enable organisation to consider risk and nature of procurement contract. It also acknowledges problems, but the relevance of information assumption in which information is seen as purchasable commodity. However, the relationship in this theory focuses on efficiency of organisation, and not on both buyer-supplier relationship and how this influences procurement. This limitation led to examine the network theory examine in the next section.

### 2.4.2 NETWORK THEORY

In the paper published in 1996, the Harland highlighted that due to changes in the last few decades organisations were becoming more externally focussed and had come to recognize that other key players in the supply network could contribute to their success, by making important contributions. Other changes on the global stage also caused firms to increase their

interest and reliance on inter-organisation relationships (Harland, 1996). There are different types of network relationships which includes formal contractual relationships between organisations – this includes buyer-supplier contracts and is applicable to procurement; informal inter-organisational relationships between individuals; social networks among people; and affiliations and shared memberships which suggests mutual connections.

The key focus of the network theory is on improving operational efficiency of organisations by building trust and co-operation (Chicksand et al., 2012). The network model/theory is frequently discussed in articles on supply chain management and will be applicable when critically examining supplier relationships in procurement within the oil and gas industry. A network can be defined as a set of persons, objects or events, which can be called actors or nodes (Harland, 1996). Furthermore, a network comprises of nodes and links; the smallest unit that is made of these two network elements is known as a dyad.

A dyad consists of two nodes – a buyer and a supplier; with the link connecting them described as a buyer-supplier relationship (Choi and Wu, 2009). It has been highlighted that a key focus of literature in supply chain management has been on the relationship between the buyer and supplier (dyad); however, recent literature has also introduced a new concept in supply chain management which has been proposed as the smallest network unit – the triad. The triad comprises of three nodes and the links that connects them (Choi and Wu, 2009). Figure 2.2 highlights this relationship.

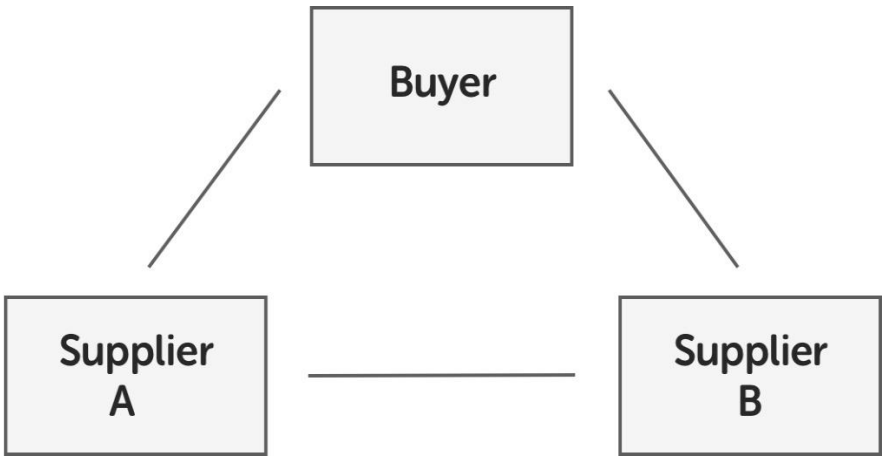


*Figure 2.2: Buyer-supplier triad (Wu, Choi and Rungtusanatham, 2010)*

Figure 2.2 shows that there is evidence of continuous and linked interactions between buyer and supplier, regardless of the numbers of supplier an organisation has. In procurement, the triad consist of the creation and management of interdependencies between one buyer and two competing suppliers (Dubois and Fredriksson, 2008). Both dyad and triad buyer-supplier relationships will be explored in this thesis.

## 2.5 SUPPLIER RELATIONSHIPS IN PROCUREMENT

The ability to dynamically manage supplier relationships and the supply base, is an important managerial challenge for many organisations. It has been suggested that the effective management of supplier relationships necessitates the reconfiguration of the supply base by implementing organisational processes and routines (Forkmann, et al. 2016). The long-term collaboration between buyers and suppliers is focussed on both parties mutually benefiting, with an aim of achieving future objectives. It has been suggested that long-term collaborations between buyers and suppliers enables the maximisation of profits over many dealings.

Based on the resource dependence theory, interdependence in social interactions and social systems consists of two groups – symbiotic interdependence and competitive interdependence. In the symbiotic interdependence relationship, the input for one partner is equivalent to the output of the other partner. On the other hand, in competitive interdependence relationships, one partner achieves a better outcome only when the other partner's outcome or performance is poor (Wang et al., 2016). The resource dependence theory can also be applied to supplier relationships in procurement.

Several studies have highlighted that organisations have a range of relationship bonding strategies that can be used to manage relationships between organisations (Wang et al., 2016). In terms of procurement, this could be between the buyer organisation and the supplier organisation. These relationship bonding strategies relate to emotional, psychological, physical or economic attachment in a relationship through which exchange partners interact, bind and are connected (Wang et al., 2016).

In the 1983 article by Peter Kraljic, he proposed that to enable the long-term availability of important components and materials at competitive costs, organisations had to change their perspective from purchasing which is an operational function, to supply management which is a strategic function (Kraljic, 1983). Supply chain management includes coordination and collaboration with channel partners, who may be suppliers, or third-party service providers or customers (International Atomic Energy Agency, 2016).

The article by Peter Kraljic highlights the importance of supply management in procurement, particularly when an organisation needs to competitively procure critical items under conditions that are complex – this is applicable to procurement within oil and gas, especially with the industry being characterised by a global supply chain that encompasses international and domestic transport, handling of materials, import and export facilitation, information technology, and inventory and ordering visibility and control (Kraljic, 1983; Chima, 2011).

### 2.5.1 TIERS OF SUPPLIERS

Suppliers are important in the procurement process as previously highlighted – the selection and empowerment of the right suppliers contributes to the competitive advantage of an organisation. In the oil and gas industry, there has been a recent trend towards streamlining and consolidating the supply base, ensuring that suppliers who do not meet the objectives of the organisation are removed from the supply base. As per Kraljic's model, supplier management as a strategic process is replacing the more operational function of purchasing (Kraljic, 1983; Sepehri, 2013). The 2013 paper by Mehran Sepehri, proposed a model (using ideas from Kraljic's model) in form of a supplier management framework for project-based companies which has similar requirements for various projects. The proposed model differentiates between two types of suppliers, tiers A and B (Sepehri, 2013).

Tier A suppliers: these suppliers are strategic and important suppliers and make up 20% of suppliers but have 80% value (Sepehri, 2013). These suppliers are very critical to the organisation and could be considered an extension of the organisation (Kraljic, 1983). It is proposed that suppliers who will be grouped under this tier should be strategically selected, empowered and provided with continuous assistance and sponsorship.

Tier B suppliers: these suppliers are selected on a need only basis (Sepehri, 2013). It is proposed that suppliers who come under this tier will need to compete for business based on several factors including speed of delivery and competitive pricing (Kraljic, 1983).

This model was applied to procurement in an EPC oil and gas contractor organisation in Iran. In the research, the model identified helped to focus on strategic suppliers; therefore, closer relationships were established with fewer number of suppliers, leading to higher quality product and services, as well as price discounts (Sepehri, 2013).

### 2.5.2 FACTORS INFLUENCING SUPPLIER RELATIONSHIPS

The relationship between buyers and suppliers have been the focus on literature in supply chain management, providing support to the idea that, commitment in the long-term and trust are key factors that underpin effective buyer and supplier relationships (Cannon et al., 2010). To achieve research objectives, it is critical to understand the interactions between buyers and suppliers in procurement, especially within the oil and gas sector and factors that may influence the relationship or its effectiveness.

In their 2007 article, Caniëls and Gelderman indicated that interdependence and power are important concepts to have a better understanding of buyer and supplier relationships; however, there is a paucity of empirical data in this area (Caniëls and Gelderman, 2007). As highlighted in section 2.5, symbiotic interdependence relationship can be applied in procurement within the oil and gas industry – in this instance, the input from one partner is equivalent to the output of the other partner (Wang et al., 2016). Power and interdependence concepts have a key role in Kraljic's portfolio model, and there is an increase in the use of this approach in managing supplier relationships in procurement (Kraljic, 1983; Caniëls and Gelderman, 2007). Generally, organisations have varying levels of dependence on their suppliers, based on the nature of the buyer-supplier relationship. Previously, literature in the field were focused on the impact of the buyers' dependence on its suppliers; however, recent studies now cover the impacts of the dependence from both a buyer and supplier perspective (Caniëls and Gelderman, 2007). More details on Kraljic's portfolio model is provided in section 2.6.1.

#### 2.5.2.1 MARKET ANALYSIS

This involves the organisation measuring how much buying power it has as a customer, versus how much power its suppliers have (Tangpong et al., 2015). The organisation can conduct systematic assessment of the supply markets, including assessing the relative strength of existing suppliers and the availability of strategic items (quality and quantity). The steps in this phase can be carried out using Porter's Five Forces framework (Kraljic, 1983; Tangpong et al., 2015). However, the strategic positioning of items in the organisation may also provide a clue to the impact of market analysis and the extent to which this was considered in having more strategic or leverage items than bottleneck or routine items.

#### 2.5.2.2 STRATEGIC POSITIONING

Strategic positioning involves the placing or location of the strategic items identified in the purchase classification phase (Kraljic, 1983). However, it is worth noting that the second matrix of Kraljic's portfolio model focuses on the identification of strategic items by highlighting the three key procurement strategies that depends on the balance of power in the relationship between buyers and suppliers. These procurement strategies relationship may be exploitative, balanced or diversified. These three positions are further explained:

1. Exploit: this procurement strategy is identified in buyer-supplier relationships where the buyer has dominance over the suppliers. The items that are procured are called 'leverage items' – products that can be obtained from different suppliers. The buyer has the upper hand in this type of relationship and tend exploit this dominance to their advantage. This is achieved by utilising their dominance in the market to obtain competitive pricing and long-term contracts from various suppliers, in order to reduce the risk associated with procuring 'leverage items' (Kraljic, 1983; Caniëls and Gelderman, 2007; Tangpong et al., 2015).
2. Balance: this procurement strategy is identified in buyer-supplier relationships where there is a balance in the relationship – no dominant partner. The items that are procured here are strategic items. Because of the risk associated with the procurement of these products, the buyers and suppliers form strategic partnerships and are mutually dependent on each other (Kraljic, 1983; Caniëls and Gelderman, 2007; Tangpong et al., 2015).

3. Diversify: this procurement strategy is identified in buyer-supplier relationships where the supplier has dominance. The products here are usually classified as ‘bottleneck items. Due to the supplier dominance in this relationship, buyers have to assess the risks of not having the products and how to mitigate these (Kraljic, 1983; Caniëls and Gelderman, 2007; Tangpong et al., 2015).

The imbalance of power in a buyer-supplier relationship, as seen in exploit and diversify, can lead to partnerships that are unproductive for either party. These type of relationship puts the weaker party at a disadvantage, by eroding their position in the relationship, leading to more conflict, lesser co-operation and finally a breakdown of the partnership (McDonald, 1999). Kraljic explained that balance of power or relationship between buyer and suppliers may be altered or influenced by strategic positioning of purchased items. This positioning (Figure 2.3) enables the identification of areas of vulnerability or opportunities, assessment of the supply risks and the establishment of the strategic thrust for the items.


*Figure 2.3: Purchasing Portfolio Matrix (MindTools, 2018)*

As shown in Figure 2.3, purchasing portfolio matrix may help to determine strength of the buyer and that of the supplier. The strength of each can be classified or assessed as one that is based on exploit or exploitative in nature, a balanced relationship or one that is diversified. The extent of this assessment exploit, balance or diversify may help an organisation to determine necessary actions to either lead the relationship to a balanced one or prevent exploitation if the buyer-supplier relationship tends to be exploitative in nature.

#### 2.5.2.3 ACTION PLANS

Action plans involve the development of action plans for each product or service that is required on a regular basis, based on the positioning of the item (Hesping and Schiele, 2016). The KPM has been used in varying industries including oil and gas, manufacturing, and the automobile industry as an effective tool for the development of differentiated purchasing strategies (Gangurde and Chavan, 2016), as well as a purchasing tool for diagnostic and prescriptive purposes. A key weakness of the KPM, is that it is qualitative in nature, with a subjective method for positioning and weighting commodities or suppliers in the varying quadrants (Montgomery et al., 2017).

#### 2.5.2.4 IMPACT OF CULTURE IN BUYER-SUPPLIER RELATIONSHIP

There are several factors that can impact the effectiveness in a buyer-supplier relationship, one of such factors is the cultural differences between suppliers and buyers. To overcome this challenge there has to be an understanding of the culture from both the supplier and buyer perspective, particularly the cultural view of performance and trust in relation to the long-term orientation of the buyer. In their 2006 article, Kouvelis et al., indicated that relationships between firms which go beyond corporate, national and functional boundaries could be the most challenging aspect of supply chain management.

Therefore, it is important to have an understanding of the current cultural challenges in the supplier-buyer relationship in procurement within the oil and gas sector in the UAE and present solutions (Kouvelis, Chambers and Wang, 2009; Cannon et al., 2010). There is available research with the objective of providing insight on cultural difference and its impact on the buyer-supplier relationship. Zhao et al., in 2006 published a paper that showed the influence of high-power distance and collectivism in the Chinese culture had an impact on

commitment and power in the relationship between buyers and suppliers (Zhao, Flynn and Roth, 2006). Another example is seen in Korea, the culture has an impact on the practices relating to outsourcing practices compared to the outsourcing practices in western countries (Samaddar and Kadiyala, 2006). This implies that cultural practices while considered external factors may influence procurement which is mostly considered internal and organisational requirements.

The significance of this section is that it is important to examine status of supplier relationship in order to better understand how both economic uncertainty (Iacob, 2012) and cultural interference (Cannon et al., 2010) can be better managed to prevent or limit their influence on supplier relationship. In relation to the UAE context, Rees et al. (2007) examined 'Emiratization' as strategic human resource management change initiative in the UAE petroleum company. They considered influence of culture already exist in the oil and gas sector, but evidence revealed that influence of culture in the sector mostly relate to human resource management and not economic practice such as procurement. This position is further examined in the next chapter given that the research by Rees et al. was conducted over a decade ago. Purchasing strategies are examined more critically in the next section.

## 2.6 PURCHASING STRATEGIES

Procurement or purchasing strategy can be explained as the pattern of decisions related to acquiring required materials and services to support operations, and any procurement activities that are consistent with the overall corporate competitive strategy (Watts, Kim and Hahn, 1995). Procurement strategy is critical to the procurement process and must be set out and followed before any major procurement activities are considered (Lester, 2017; Akın Ateş, van Raaij and Wynstra, 2018). Procurement strategies are key in determining the overall strategy of the procurement function of an organisation, as well as influencing all stakeholders and phases of the procurement process (Watts, Kim and Hahn, 1995).

A procurement strategy could include several criteria such as: the objectives and requirements of the goods or services being procured; the number of suppliers to be invited to bid as appropriate; assessment of the risks associated with the purchase; and the type of

contract required for the suppliers (Lester, 2017). It was established that formulating one overall procurement strategy is a challenging task; instead, varied sets of tactics and strategies for varying types of procurement processes and suppliers may be utilised (Bildsten, 2015; Hesping and Schiele, 2015; Akın Ateş, van Raaij and Wynstra, 2018). It is worth noting that different procurement strategies can be adopted during the procurement process (Bildsten, 2015; Akın Ateş, van Raaij and Wynstra, 2018). According to Kraljic's model, varying types of purchases require varying procurement strategies, which are supported by particular sets of practices and resources (Kraljic, 1983).

Different organisations will choose a different procurement strategy, depending on the procurement maturity of the organisations. Maturity in the procurement context is defined as the level of professionalism in the purchasing function (Rozemeijer, Weele and Weggeman, 2003; Schiele, 2007). A maturity model encompasses auditable stages that organisations need to go through to become more sophisticated. Organisations that are mature in their procurement processes utilise best practices that are of a world-class standard, while organisations that lack sophistications do not utilize these best practices (Schiele, 2007).

The degree of an organisation's purchasing maturity, shows the level to which the procurement function of the organisation has been integrated to the process of strategic management decision making, as well as the approach to procurement (Pearson and Gritzmacher, 1990; Rozemeijer, Weele and Weggeman, 2003). In their 2003 paper, Rozemejer et al., developed a matrix of showing five different corporate procurement strategies (Figure 2.4). The procurement strategies were represented in a matrix showing high or low corporate coherence and a high or low purchasing maturity. Corporate coherence in this instance means the degree to which different functions of an organisation are managed or operate as one entity (Rozemeijer, Weele and Weggeman, 2003). However, these functions may be influenced by purchasing type which may be determine by purchasing maturity (high or low) or corporate coherence (low to high) as shown in Figure 2.4.

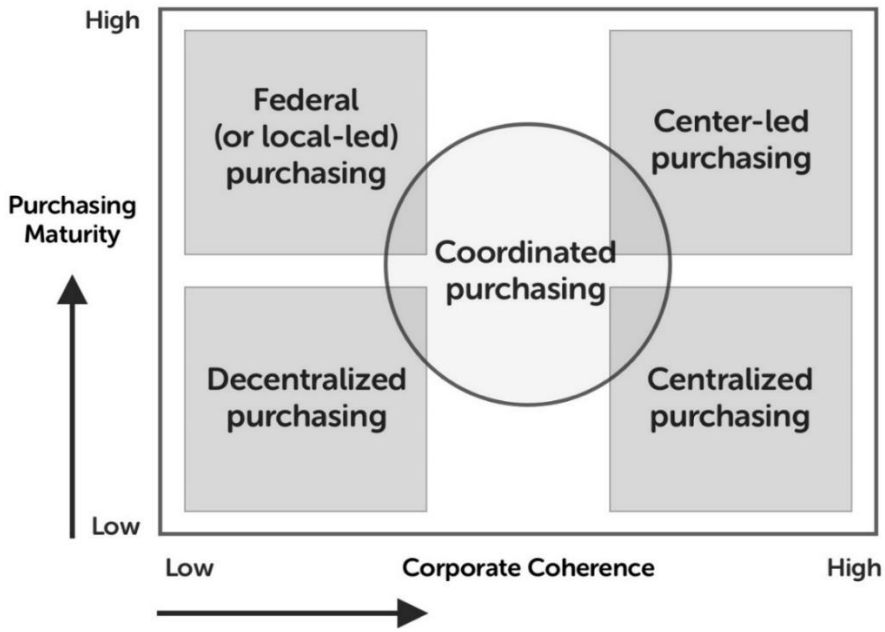


*Figure 2.4: Purchasing strategies (Rozemeijer, Weele and Weggeman, 2003)*

Though Rozemeijer et al (2003) advocated for the purchasing types in Figure 2.4., Gelderman and Semeijn (2006) explained that procurement is broadly divided into two i.e. centralised or decentralised. In centralised, it implies that purchasing decisions are made at the head office or regional office where senior management are able to determine suppliers and what is to be bought (Dubois and Pedersen, 2002). Decentralised on the other hand refers to procurement function and decisions being spread across different branches and location of the organisation (Medeiros and Ferreira, 2018). However, Boehmke et al. (2017) explained that centre led purchasing type supersedes centralised and decentralised because strategic decisions are coordinated centrally while transactional activities for procurement are executed in a distributed manner.

A centre led procurement tends to be advantageous in that it does not have similar characteristics as the centralised, decentralised or federal-led purchasing that prevents them from delivering total value as centre led model. According to Boehmke et al. (2017), centralised procurement sacrifices the capabilities of individual supply markets and consumption patterns that may result in suboptimal buys for branches and poor satisfaction. Decentralised is also limiting because it prevents organisations to leverage their total spend

and align their purchase with objectives of units and the limited knowledge sharing leads to divisions and inconsistency of performance (Knight et al. 2014).

The 2010 paper by Lee DM and Drake PR, described the development of a portfolio model for the development of procurement/purchasing strategies, based on Kraljic's matrix. The portfolio model was applied to two small and medium scale enterprise (SMEs) based in South Korea (Lee and Drake, 2010). The paper further highlights the important role strategic procurement plays in enabling organisations to achieve their competitive objectives and how essential it is that strategic procurement is aligned to the business strategy of the organisation (Lee and Drake, 2010). Thereby alluring to the preferred stance and benefits of centre led purchasing strategy.

In their 2018 article, Ateş, et al., investigated the extent to which a divergence or misfit between procurement or purchasing structure and purchasing strategy impacts the procurement performance of an organisation (Akın Ateş, van Raaij and Wynstra, 2018). Their focus was on innovation and cost purchasing strategies. The authors showed that a misfit between strategy and structure has a negative impact on the procurement performance of an organisation, in the innovation and cost purchasing strategies. The results of the study showed that alignment with the procurement strategy plays a key role in determining success, not necessarily the procurement structure. Furthermore, Ateş, et al., suggested that decision makers in organisations should not underestimate the value of amending procurement structures to varying procurement strategies (Akın Ateş, van Raaij and Wynstra, 2018).

### 2.6.1 PURCHASE CLASSIFICATION

According to Kraljic's model, procured items are grouped based on two factors – the complexity of the supply market and the profit impact or importance of the purchase. The supply risk is measured based on the number of suppliers, availability of the items (goods or services), alternative products available, risk of storage, and competing demand for the item. It is critical that high risk purchases are appropriately managed, whether or not other items have higher or lower risk of purchase (Kraljic, 1983; Lee and Drake, 2010). Lee and Drake, proposed two factors; size of supplier and monopoly conditions for assessing the risks in the supply markets (Lee and Drake, 2010). On the other hand, the profit impact is based on the

volume of items purchased, the impact on competitive strategy or quality of the product and the percentage of the total cost of the items procured (Kraljic, 1983; Lee and Drake, 2010).

Classification of items using Kraljic's model is done by the evaluation and positioning of items into one of the four positions in the four quadrants of the model (Figure 2.5). Each quadrant in the model represents a different procurement strategy (Kraljic, 1983; Lee and Drake, 2010). This classification is also utilised to highlight the connectivity between each procurement strategy highlighted in the quadrant and the power-dependence in the relationships between buyers and suppliers (Kraljic, 1983; Caniëls and Gelderman, 2007; Lee and Drake, 2010).

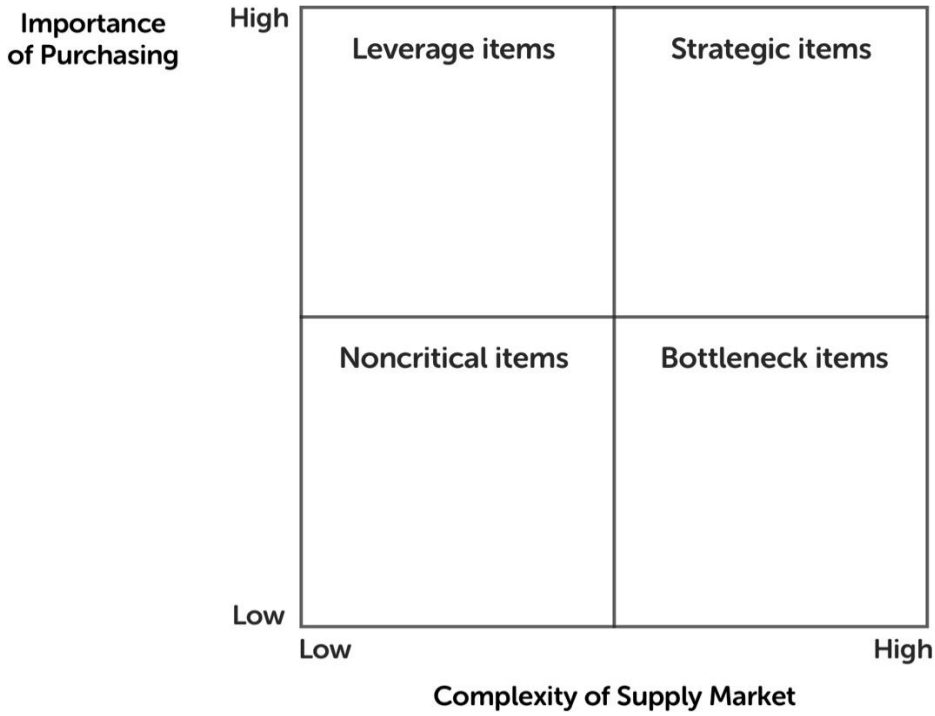


*Figure 2.5: Purchasing Portfolio Model (Kraljic, 1983)*

As noticed in Figure 2.5, the classifications are leverage items and strategic items considered as importance of purchasing, while noncritical and bottleneck items are classified based on complexity of supply market. The elements of the portfolio are further explained.

#### 2.6.1.1 LEVERAGE ITEMS

Leverage items may also be further considered as high profit impact, low supply risk (Lee and Drake, 2010). Procurement of these items is relatively easy to manage; however, they have high importance strategically. These items could potentially be obtained from different suppliers. Therefore, the buyer has dominance over the supplier in the buyer-supplier relationship (Montgomery et al. 2017). The strategy employed here could be underpinned by the principle of bidding competitively (Hesping and Schiele, 2016). The strategy here will include: making the most of the purchasing power, managing the procurement of these items by carefully selecting the supplier, negotiating the price, and using alternative products (Lee and Drake, 2010). Interdependence in the buyer-supplier relationship in this quadrant is lower than the strategic item and higher than the bottleneck items. As indicated, the buyer has dominance in the partnership (Kraljic, 1983; Lee and Drake, 2010; Hesping and Schiele, 2016).

#### 2.6.1.2 STRATEGIC ITEMS

These are items which are considered as high profit impact and high supply risk (Lee and Drake, 2010). The procurement of these strategic items is critical to the success of the organisations and needs the close attention of the procurement team, as well as close relationship and exchanges between the supplier and buyer. The products that fall under this strategic item can usually be purchased from a single supplier, leading to significant risk. The key objectives for organisations will be to build relationships with the suppliers in order to reduce risks. The procurement strategy employed here entails: maintaining strategic partnership between the buyer and supplier; contingencies planning; regular risk analysis; and development of long-term supplier relationship (Kraljic, 1983; Lee and Drake, 2010; Hesping and Schiele, 2016). There is a balance in the relationship between the buyer and supplier, as their mutual dependence and total interdependence is high. This quadrant is characterized by a balanced power relationship between suppliers and buyers (Caniëls and Gelderman, 2007).

#### 2.6.1.3 NON-CRITICAL ITEMS

Being non-critical item also imply that the item is a low profit impact and low supply risk. The procurement of these items is of low strategic importance and easy to manage (Caniëls and Gelderman, 2007). The procurement of these items causes very few commercial or technical challenges (Hesping and Schiele, 2016). The draw back to the procurement of these items, is that the administrative and logistics costs can be high because of the frequency of procurement from many different suppliers (Montgomery et al., 2017). The strategy employed here entails the reduction of the costs of transactions by varying processes including: increasing the efficiency of the process of procurement; using standardized products; and optimization of inventory levels. In this quadrant, power is balanced, as buyers and sellers depend on each other mutually; however, total interdependence is low (Kraljic, 1983; Hesping and Schiele, 2016).

#### 2.6.1.4 BOTTLENECK ITEMS

Bottleneck items are those with low profit impact but with high supply risk (Caniëls and Gelderman, 2007). The procurement of these items is challenging and they are of low importance from a strategic perspective (Hesping and Schiele, 2016). There are significant risks and challenges associated with the procurement of these items, as the suppliers may have so much power – that is, suppliers have dominance in the buyer-supplier relationship. The procurement strategy utilised here includes: ensuring there is a high volume of the item (including overordering); assessing the possibility of engaging with alternative suppliers; and having a back-up plan. Interdependence in the buyer-supplier relationship is low in this quadrant, as the buyer and supplier are not very involved in the relationship, additionally suppliers have more dominance over buyers (Kraljic, 1983; Hesping and Schiele, 2016; Montgomery et al., 2017).

### 2.6.2 EVALUATION OF PURCHASING STRATEGIES AND CLASSIFICATION

Purchasing strategies examined in this section indicate that some strategies like federal, centralised and decentralised may have limitations that does not favour good supplier relationship, making centre led purchasing strategy the more advantageous to facilitate successful procurement process and balanced power relations between suppliers and buyers.

The coordination component of centre led purchasing strategy positions it as an ideal strategy for organisations with different branches such as ADNOC which is being researched in this study. Next chapter focuses on identify the type of purchasing strategy used by this organisation in order to better assess the current status of supplier relationship and how this compare with centre led purchasing strategy if another strategy is used.

In terms of classification of strategy, it is recalled that this section identified classifications based on two factors; complexity of supply market as well as the profit impact or importance of the purchase. These two factors influence the selection of items examined in ADNOC and how this influences supplier relationships. It important to note that due to market complexity, and importance of purchase, organisations may need to make decision that influence short, medium and long-term supplier relationships based on the value of product to the organisation (Hesping and Schiele, 2016). Though this may not necessarily put the supplier in tier A, it means that the organisation may monitor the nature of supplier relationships to prevent it from defaulting to a tier that may cause confusion for staff, buyer and suppliers. Outcomes of this section are summarised in Table 2.3.

*Table 2.3: Comparison of purchasing classification types (adapted from Hesping and Schiele, 2016)*

| Item | Factors | Profit impact | Supply risk | Power dynamics | Relationship |
|---|---|---|---|---|---|
| **Leverage** | Purchase importance | High | Low | Buyer dominance | Interdependence supplier relationship |
| **Strategic** | Purchase importance | High | Low | Mutual | Balance supplier relationship |
| **Non-critical** | Market complexity | Low | Low | balanced | Mutual dependence between buyer and supplier |
| **Bottleneck** | Market complexity | Low | High | Supplier dominance | Low interdependence, no involvement between buyer and supplier |

As shown in Table 2.3, leverage items tend to have more buyer dominance which may be favourable for the oil and gas sector. However, it can also be noticed that strategic, non-critical items are also favourable in terms how having mutual and balanced power dynamics as well as supplier relations. It can be deducted that while leverage items would be more beneficial to ADNOC in strengthening supplier relationships, strategic and non-critical items may also help to enhance the relationships as well as sustain it.

The rationale for this is that the relationship in both strategic and non-critical items are balanced and mutual dependence between both parties (Hesping and Schiele, 2016). As long as both parties i.e. supplier and buyer regard the relationship beneficial and both ways, it is more likely for both to seek means to sustain the relationship. Based on critical explanations provided in this chapter and evaluation in this section, the research questions to aim to answer in ADNOC context are:

1) What type of buyer-supplier relationships exist in the UAE oil and gas sector?
2) What purchasing strategy best explains the current status of procurement in ADNOC?
3) Which purchasing classification and supplier relationship are most effective in ADNOC?
4) What factors influence supplier relationship in ADNOC?

Therefore, attempts are made to answer these questions in the next chapter. The questions and deductions are further investigated through primary data collection in ADNOC where gaps are identified or questions cannot be answered from secondary data in the next chapter.

## 2.7 SUMMARY OF CHAPTER TWO

This chapter review the background to procurement, theories in procurement and supplier relationship. A critical evaluation of Kraljic model or KPM have shown that different factors may influence supplier types and relationships despite the major requirements for procurement in service or manufacturing industries. While the literature review did not neglect the role of due process in procurement, the tiers in which suppliers are classified may determine whether procurement is delayed, efficient, timely or satisfactory. For specifically,

the two tiers of suppliers are identified to be A and B, where A types are strategic and important suppliers and tier B suppliers are suppliers who are selected based on the need for products and services (Sepehri, 2013). While it can be argued that all goods or services procured by an organisation are needed, the emphasis appears to be on priority given to some products or service procured over others, hence the tiers.

Though the selection or types of suppliers are important as explained in this chapter as they may determine the success of procurement. It is however the nature of supplier relationships and factors that influence the interactions between suppliers and buyers that emphasises is placed on. Factors such as market analysis, strategic positioning, action plans and influence of culture are significant to alter the power balance and dynamics of supplier relationship regardless of the tier type. Therefore, explanations and critique of literature in this chapter have proven vital in understanding and assessing ADNOC which is the case study. Information herein have also revealed that supplier relationships can be improved through centre led strategy and leverage purchasing items. Based on the type of supplier tier and classification of items as shown in Table 2.2, supplier relationships may be enhanced through strategic and non-critical purchasing items due to their balanced power relations and mutually dependent supplier-buyer relationships.

Therefore, this chapter has helped to achieve objective one which is to; identify and review improvement strategies for buyer-supplier relationships. The improvement strategy identified as one with stronger potential to improve supplier relationships is; centre led strategy. This chapter has also helped to achieve part of objective two which is to; critically examine purchasing strategies and factors that influence supplier relationships. The purchasing strategies identified are leverage, strategic and non-critical items. Factors identified as likely to influence them all are market analysis, strategic positioning, action plans and culture.

The next chapter focuses on reviewing and assessing UAE purchasing strategy and supplier relationships drawing from theories and explanations provided in this chapter.

# CHAPTER 3

# UAE PURCHASING STRATEGY AND SUPPLIER RELATIONSHIPS

## 3.1 INTRODUCTION

The purpose of this chapter is to critically assess the UAE context in relation to the theories examined in Chapter two. Using deductive approach, this chapter explains procurement in UAE in general while assessing the process against theories examined in previous chapter. Subsequent sections attempt to assess procurement strategies used in the case study organisation and effectiveness of the strategies identified as well as gaps that inform the need for a comprehensive model that can enhance procurement buyer-supplier relationships in organisation and UAE oil and gas sector. Conclusion of this chapter briefly explains why the problems identified in Chapter One exist and summarises key outcomes of this chapter.

## 3.2 PROCUREMENT CONCEPTS IN UAE OIL AND GAS

Within the oil and gas industry in the UAE, procurement can be described as the planning and management of all activities involved in procurement, sourcing, logistics management and conversion (International Atomic Energy Agency, 2016). The IAEA document further explained that procurement entails collaboration and coordination with suppliers and other channel partners, including third part service providers. It is a process that combines demand and supply within and across organisations, which plays a very active role as it entails the management of relationships with suppliers within an oil and gas organisation.

The UAE oil and gas sector uses the integrated management system to facilitate its procurement activities. An integrated management system is defined as a set of interrelated elements used for establishing policies and objectives that subsequently enable objectives to be efficiently and effectively achieved (IAEA, 2016). Integrated management system is also considered as a system that consolidates all business processes into a single management system that is manageable, easier, more effective and efficient to follow than having a

number of separate systems (PWC, 2018). The aim of this is manageability and safety of the process not necessarily the supplier and the relationship required to deliver successful procurement. Figure 3.1 demonstrates how the integrated management system is utilized to contribute to a safe and healthy culture with oil and gas organisations in the UAE.

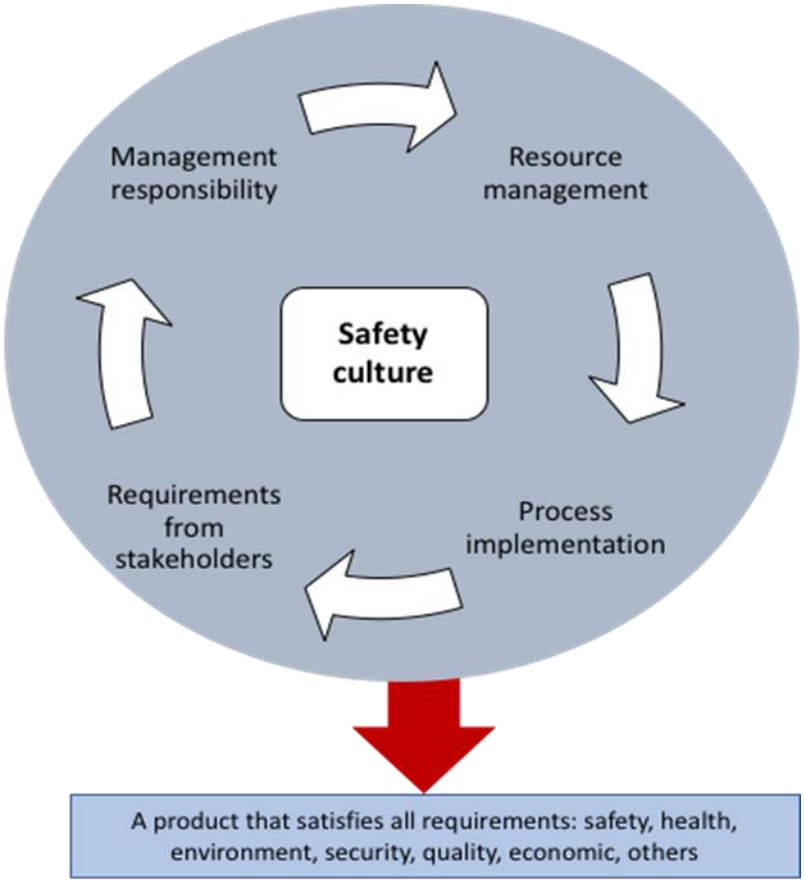


*Figure 3.1: Integrated management system within oil and gas in UAE.*

*Adapted from: International Atomic Energy Agency (2016)*

Within the oil and gas industry in the UAE, the key function of the integrated management system is to streamline processes that are similar (and avoid duplication) and provide excellent business outcomes for the organisation. The integrated management system is used for procurement specifications, evaluation of suppliers and their requirements, and to ensure products and services are of a high quality. However, reference is lacking to component of the system that facilitates supplier relationship and how this enables successful procurement. The integrated system is also used to ensure sustainable procurement which is an important

concept in the oil and gas sector. Sustainable procurement contributes to the reduction and elimination of waste, leading to savings in costs and resources (IAEA, 2016).

Sustainable or 'green' procurement is defined by the IAEA (2016) as the process through which organisation meet its procurement needs (goods and services), works and undertakes the process in a manner that demonstrates value for money on a whole life basis in terms of generating benefits to organisation, society and the economy while minimizing the damage to the environment (IAEA, 2016). As explained in IAEA (2016), sustainable procurement in the UAE oil and gas is achieved through: a) conservation of water and energy, (b) Encouraging reuse and recycle, (c) Reducing quantities of materials procured, (d) asking questions on the need to purchase product, (e) Optimization of transportation efficiencies. These processes are monitoring and evaluation process that enable organisations to maintain commitment to and achieve sustainable procurement. Though challenges abound in that the level of effectiveness of these measures are yet to be assessed in relation to how they strengthen buyer-supplier relationships, it is worthy to note that measures exist in the sector.

When assessed against the procurement process stages by Raymond (2008) in Chapter Two, the UAE procurement process appears to lack the inception of procurement which is the determination of need. While it may be given that need for procurement is already identified, the other stages such as specification, competition, evaluation, negotiation, contract award, contract management and evaluation of success are clearly lacking in the UAE procurement process. There appears to be gap for a public sector entity and the requirements and principles that govern procurement explained Kumar et al. (2015), Hunsaker (2009), Raymond (2008) and Albano et al. 2017).

These authors emphasised the importance of principles such as value for money (Kumar et al. 2015), ethics (Hunsaker, 2009), transparency, accountability and competition (Raymond, 2008). In more recent work, authors like Hanák and Muchová (2015) explain the importance of using procurement stages in the public sector or by government entities to efficiently manage resources through a well-managed tender and procurement process. Furthermore, commitment to sustainability allures to the concepts of procurement explained by Lindgreen et al. (2009). Gaps appear to exist in this area of the procurement concept used in the UAE.

### 3.2.1 UAE OIL AND GAS ORGANISATIONS

This section examines procurement within the prominent oil and gas companies in the UAE. Abu Dhabi Company for Onshore Petroleum Operations Limited (ADCO) is the leading onshore oil and gas producer within the Abu Dhabi National Oil Company (ADNOC) Group, producing 5.6 cubic feet of gas and 1.6 million barrels of oil per day. In 2017, ADNOC consolidates its services, resources, products and people under one brand, with ADCO now trading as ADNOC Onshore (ADNOC ONSHORE, 2018c, 2018b). A key objective for operation in ADNOC is; achievement of sustainable oil and gas supply in the long-term. The organisation invests in new technologies which contributes to the maximisation of the outputs of the existing operations, explores the commercial viability of new resources and utilise oil and gas reserves more effectively.

Abu Dhabi Gas Liquefaction Company Limited (ADGAS) are a liquefied natural gas (LNG) production and gas processing company based in Abu Dhabi. In 2017, the organisation consolidates its services, resources, products and people under one brand, with ADGAS now trading as ADNOC LNG. The management team for ADGAS is made up of 5 members including the CEO Mr Fahim Kazim (ADNOC GROUP, 2018a; ADNOC LNG, 2018c). ADGAS was established in 1973 and was the first LNG production company in the region. The majority shareholder is ADNOC (70%), other shareholders include Total (5%), BP (10%) and Mitsui & Co (15%). The organisation supplies LNG and liquefied petroleum gas (LPG) to JERA – the Japanese power company; ADGAS is a major supplier of JERA's power generation needs.

On a local level, ADGAS supplies the UAE national grid with 1 billion standard cubic feet of gas per day for industrial and residential use (ADNOC LNG, 2018b). A key aim of the organisation is to increase the supply to the UAE national grid in line with the national energy strategy. The organisation is also committed to safeguard the environment and reduce the impact of their operations, by reducing emissions and flaring (ADNOC LNG, 2018c). ADGAS processes and produces LNG, LPG, sulphur and paraffinic naphtha for export. As previously indicated, the organisation supplies one billion standard cubic feet of gas per day to the UAE's national grid. The organisation's oil and gas industrial operations takes place at Das Island which is located 160km off the coast of Abu Dhabi. A record that indicate high

level of operation and procurement within the country and for the UAE government. This record also indicates that ADNOC which is the case study being examining in this study is a tier A supplier to the UAE government and appears to be in a balance purchasing relationship with the government. However, ADNOC is not being researched as a supplier, but as an organisation with several suppliers who needs to have enhanced relationship with its suppliers in order to deliver on its national and global aim.

ADGAS works in close partnership with other ADNOC Group companies including ADCO. Products are exported from Das Island and Ruwais by ADNOC Logistics and Services (ADNOC LNG, 2018b). ADGAS has an electronic system for streamlining and improving supplier registration, procurement, account payables and sourcing. Existing suppliers and those suppliers who meet the organisation's criteria, may bid for new opportunities to tender using the ADNOC LNG supplier portal (ADNOC LNG, 2018a). ADNOC and ADGAS has a great focus on health, safety and environmental protection (HSE), which enables the organisation to be more efficient and profitable, safeguarding employees. The organisation has specific codes of practice, procedures and policies to ensure the aims of HSE are achieved (ADNOC GROUP, 2018b). There are codes of practice and policies that have been provided for employees to guide their interaction with third parties including suppliers.

The policies and procedures are in place to ensure integrity of sourcing process. The policies ensure that suppliers are selected in a fair process and on merit. All suppliers are tasked with aligning themselves with the principles set out in the organisation's code of conduct. There is a 'no tolerance' policy for suppliers who fail to act with the level of integrity that is expected by the organisation from its employees. The organisation expects employees and suppliers to act with integrity when working together, as the reputation of the organisation is impacted by this (ADNOC GROUP, 2016). From an ethics perspective, ADNOC group developed a document that provides details on the minimum standard of ethical business practice the organisation expects from suppliers to any part of the ADNOC Group (ADNOC GROUP, 2017). It is unclear whether the ethical standards facilitate business transaction or supplier relationship in the manner which is investigated in this study. The next section focuses on procurement fairness and ethics.

### 3.2.2 FAIRNESS AND ETHICS IN PROCUREMENT

It is worth noting that procurement of large capital equipment, services, major projects and smaller goods are subjected to and may need to be managed through different policy and standards. Procurement professionals are often aware of the laws around their practice, but different factors (culture, economic and political) play a role in influencing unethical behaviours in procurement, as well as in relationship between suppliers and buyers (Sepehri, 2013). Unethical practices within the oil and gas industry include: unfair treatment of suppliers, giving gifts, undeclared conflict of interests and bribery (Sepehri, 2013). Others are, awarding contracts preferentially, overlooking quality defects intentionally, extortion and money laundering (Kalvet and Lember, 2010). Unethical behaviours can impact projects within oil and gas, and some of these behaviours can have disastrous or fatal consequences especially when related to safety.

While the policies and procedures in place are to prevent or mitigate impacts of unethical practices, the integrated system did not make ethical requirements one of the requirements for satisfactory procurement. Another vagueness such as this further question the status and effectiveness of current procurement concepts and practices in the UAE oil and gas sector. Stated ethical policies indicate that UAE oil and gas organisations tend to adhere to global standards of practice on ethical procurement for public organisations. For instance, the practice states procurement organisations should adopt a code of ethics and ensure all employees to uphold the code during engagement with suppliers. Some elements of ethical procurement according to the code of practice identified in ADNOC and other oil and gas procurement guidance, include:

i. Approaches for avoiding conflict of interest.
ii. Policies and processes to ensure business interaction with suppliers are transparent and fair.
iii. Methods for reporting corruption and ensuring it is not tolerated.
iv. Approaches to ensure adequate policies are developed for giving and receiving gifts (ADNOC code of practice, n.d.).

Due to countries strict commitment to global standard and excellence (Rees et al. 2007), these elements are strictly monitored and adhered to in order to guarantee success. The

approaches for avoiding conflict of interest help with clarifying the requirements for procurement, and the unacceptable conduct of individuals and departments who oversee the process. Policies and processes are then incorporated as guidance to encourage and ensure compliance. While the principles that guide fairness and transparency may vary from one supplier to another, approaches for avoiding conflict play important role in maintaining a balance between fairness, transparency and conflict of interest.

Reporting methods are for identifying gaps and capturing any lapses that may have been capitalised on. The policies that regulate giving and receiving of gifts are properly developed, and they serve as mitigating measures for preventing fraud and corruption through procurement. Emphasis on collaboration, trust and policy in the UAE procurement process also allure to fundamentals of procurement as explained by Laeequddin et al. (2012), innovation and policy by Lember et al. (2013) and collaboration by Allal- Chérif and Maira (2011). Despite this reference, the lack of reference to key characteristics of procurement in manufacturing or / and service industry as identified in Chapter two indicate that gaps may exist except further investigated.

Manufacturing industries or companies may have three classes or characteristics of procurement, namely; straight rebuy, modified re-buy and new task re-buy (Leonidou, 2005). No reference is made to the nature of rebuy. Nor reference made to influencing factors such as characteristics of the supplier (reliability and flexibility); products (low prices); individual (senior management support and honesty of communication); and purchase situation (routine purchases) in deciding procurements (Sinčić Ćorić et al., 2017). Though principles of fairness and ethics are also considered as measures for risk management, they are not considered as fundamental characteristics of successful procurement in manufacturing or service companies.

Explanations and critique of the oil and gas procurement in this section further exposes more gaps that justify the importance of this research and possible explanations for why the research problems exist. Risk management is considered next because it is another key part of the IAEA document reviewed as guidance for procurement in the oil and gas sector.

### 3.2.3 RISK MANAGEMENT

Procurement within oil and gas in the UAE have defined risk management structures that describes the chain of command, the structure of communication and the management framework within which decision processes and risk management takes place (IAEA, 2016). Risk management is a very critical element of the procurement strategy, as well as in the relationship between suppliers and buyers (Kalvet and Lember, 2010). Risk management is a process that is continuous and encompasses the update of procurement documents and their risk management plans (Yaraghi and Langhe, 2011). Risks include technical challenges, breakdown in supplier-buyer relationship, cost of products, and schedule of delivery (Kalvet and Lember, 2010).

It is important that risks are continually assessed to ensure there are structures in place to mitigate any fallouts. A risk management plan (RMP) is a key output of the risk management process within oil and gas organisations in the UAE. The RMP entails the identification and analysis of risks, communication to stakeholders regarding the process of identifying the risk and how the risk will be managed, actions for mitigating the risk and monitoring processes. RMPs are kept up to date and reviewed regularly. A colour rating risk ranking chart is depicted in Figure 3.2.

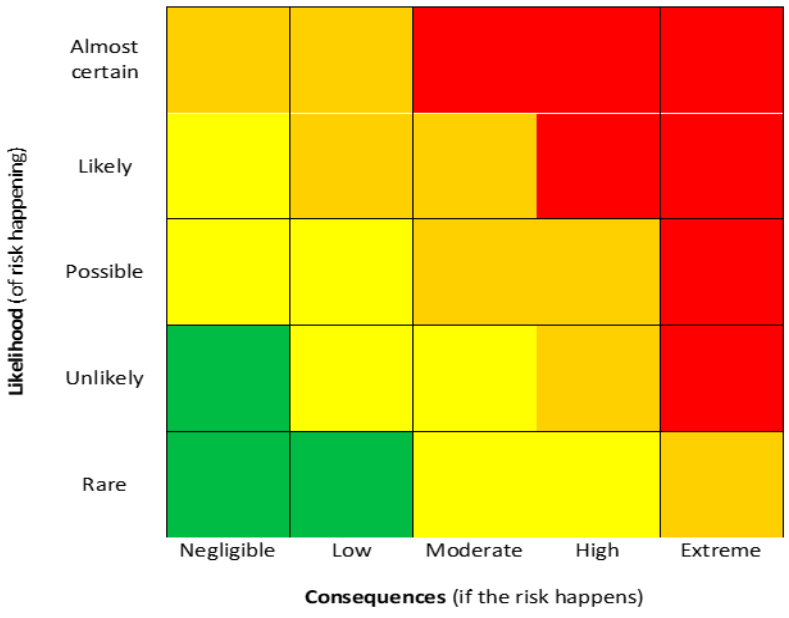


*Figure 3.2: Risk ranking chart (IAEA, 2016)*

As noticed in the risk ranking chart, the green sections are considered low risk because of their rarity and negligible impacts. The yellow sections are moderate consequence, but possible risk zone, while the amber and red are considered high and extreme consequences and almost certain risks. The risk management process follows a rigorous process that allows high or extreme consequence risks to be identify in order to minimise their likely of occurrence (Kalvet and Lember, 2010). However, should risk mitigation not be possible, measures such as procedures and processes are in place as discussed in the previous section to reduce risk impacts (Yaraghi and Langhe, 2011). All these measures are all critical to sustainable procurement.

Risk management appears to be well grounded but not specified to need detection for product of services, selection of suppliers, implementation of service and evaluation of final consumption. These were stages explained by Roodhooft and Van den Abbeele (2006) and Wynstra, Rooks and Snijders (2017) as critical to mitigating uncertainty of procurement in service industry discussed in section 2.3.2. Overall, procurement in UAE oil and gas have good reference to processes, but lacks the fundamentals identified in literature. Procurement within oil and gas as researched by Sepehri (2013) allure to having processes that are highly competitive, where suppliers are selected based on defined parameters.

Though UAE concept is a process, there is no reference to defined or clear pathway for selecting suppliers nor the characteristics of successful procurement and evaluation of its final consumption. While the gap identified in this section does not conclusively indicate lack of selection process, it reveals that the vagueness around procurement practice in the oil and gas may potentially lead to confusion and delay. Some of the research problems identified in Chapter One. Due to vagueness of processes, the next section aims to explain existing procurement and purchasing strategies using theories identified in literature for better understanding of the UAE oil and gas procurement.

## 3.3 THEORETICAL EXPLANATION OF PROCUREMENT MODEL

One of the research objectives is to develop a comprehensive model that can be adopted to facilitate procurement supplier relationship in two oil and gas companies in the UAE. To achieve this specific objective, the procurement status, purchasing strategies and supplier relationship in the UAE oil and gas is further assessed in this section. In the previous chapter, theories in procurement were critically examined. Theories such as Principal Agent Theory (PAT) and Network Theory (NT) were examined in details as the most appropriate for explaining procurement activities in relation to supplier relationship.

PAT fundamentally operates where an agent moderates, performs decides procurement services on behalf of the principal client with the supplier (Yukins, 2010). The NT includes having formal contractual relationships between the organisation and suppliers based on the procurement (Chicksand et al., 2012), connected by two nodes; buyer and supplier (Wu et al., 2010). While the focus of NT is to improve operational efficiency, build trust and cooperation (Chicksand et al., 2012), that of PAT is to manage problems and share risks between the agent and buyer organisation (Eisenhardt, 1989). These brief explanations inform assessment and deductions made in this section regarding status of procurement, purchasing strategies and supplier relationship in ADNOC.

Procurement strategies that are used in the UAE oil and gas companies, ADNOC inclusive are developed to manage an organisation's external resources – including suppliers, minimize risk and maximize value (IAEA, 2016). Procurement strategies examine different aspects of purchasing services and items, including: what, how, where and why an organisation conducts purchasing activities. Procurement strategy forms part of supply chain strategy as indicated by the UK Chartered Institute of Purchasing and Supply (IAEA, 2016). For example, there are risks associated with the buyer-supplier relationship in the context of the items in the four quadrants of Kraljic's portfolio matrix. Therefore, organisations in the UAE develop strategies to mitigate the risks in the buyer-supplier relationship, to prevent issues with supply of key products and services. It is worth noting that risk management is an integral part of procurement oil and gas organisation's management systems in the UAE as indicated earlier in this chapter.

During the development of a procurement strategy, several steps are followed, these include but are not limited to: gaining a thorough understanding of the current procurement process, defining the overall objectives and the measure of success, and strategy implementation. The vision, mission and written policies and procedures are very important outputs of the procurement strategy development process not supplier relationship. The UAE oil and gas companies, especially ADNOC use informed customer during procurement which connotes formal relationship for a specific purpose. The terminology 'informed customer' primarily pertains to the capability that is essential for oil and gas organisations when working with suppliers (IAEA, 2016). Being an 'informed customer' is critical within the oil and gas industry and in ADNOC.

The importance relates to having an understanding of what is required from suppliers and the type of relationship to cultivate, as these will contribute to the organisation achieving its strategic objectives (ADNOC GROUP, 2017). Reference to strategic objectives being achieved through informed customer or suppliers establishes that ADNOC relates directly with its suppliers. This infers that ADNOC operates and its supplier relationship can be explained through network theory, though the tier of suppliers is not stated since emphasises is placed more on capability and not on needs (tier B) or value of what is supplied (tier A). For instance, the capability of an informed customer is defined as the ability of the organisation to have a clear understanding and knowledge of the product or service to be supplied (IAEA, 2016). Understanding of capability allows oil and gas companies to have oversight of critical activities carried out by suppliers. ADNOC needs the following outlined to characterise a supplier as informed customer:

I. An understanding and knowledge of what is required from the supplier and how the work will be actualised.
II. Thorough understanding and knowledge of the why the supplier's services are required.
III. Develop strategic relationship with suppliers as appropriate and ensures regular interactions.

IV. The ability not to inappropriately influence work outcomes or advice from suppliers, in order that the supplier advice reflects its own technical opinion (IAEA, 2016; ADNOC Group, 2017).

Specific trainings are conducted for dedicated staff employed to oversee the 'informed customer' within procurement. The key objectives for these staff include: developing and managing effective and positive relationships with suppliers and developing efficient processes.

Review of informed customer role and capability have further helped to understand likely nature of supplier relationship and types of supplier dominant in ADNOC. Number III in the list of what ADNOC ought to know made reference to strategic relationship with suppliers. This allures to the possibility that suppliers in ADNOC are mostly Tier A suppliers who are strategic and important suppliers who provide more than 70% of valued products and services (Sepehri, 2013) to ADNOC. This assumption is further investigated in the next section.

## 3.4 SUPPLIER RELATIONSHIP IN ADNOC

The procurement strategy document will usually include details on: guidance on roles and responsibility of the organisation; guidance on supplier selection and management of suppliers; and policies around codes of conduct and ethics. A critical element of the procurement strategy is the decision around the nature and types of commercial relationships to cultivate, especially with suppliers. These relationships will need to be reviewed on a fairly regular basis to ensure that the procurement strategic objectives are being met. The standard procurement tiers within the oil and gas industry in the UAE are shown in Figure 3.3.

Kraljic's portfolio matrix is utilised for procurement activities. The utilisation of the model enables the grouping of items previously described (strategic, leverage, bottleneck and non-critical/routine items). Figure 3.3; the power dependence in the supplier-buyer relationship and the actions organisations take to manage suppliers (Table 3.1).

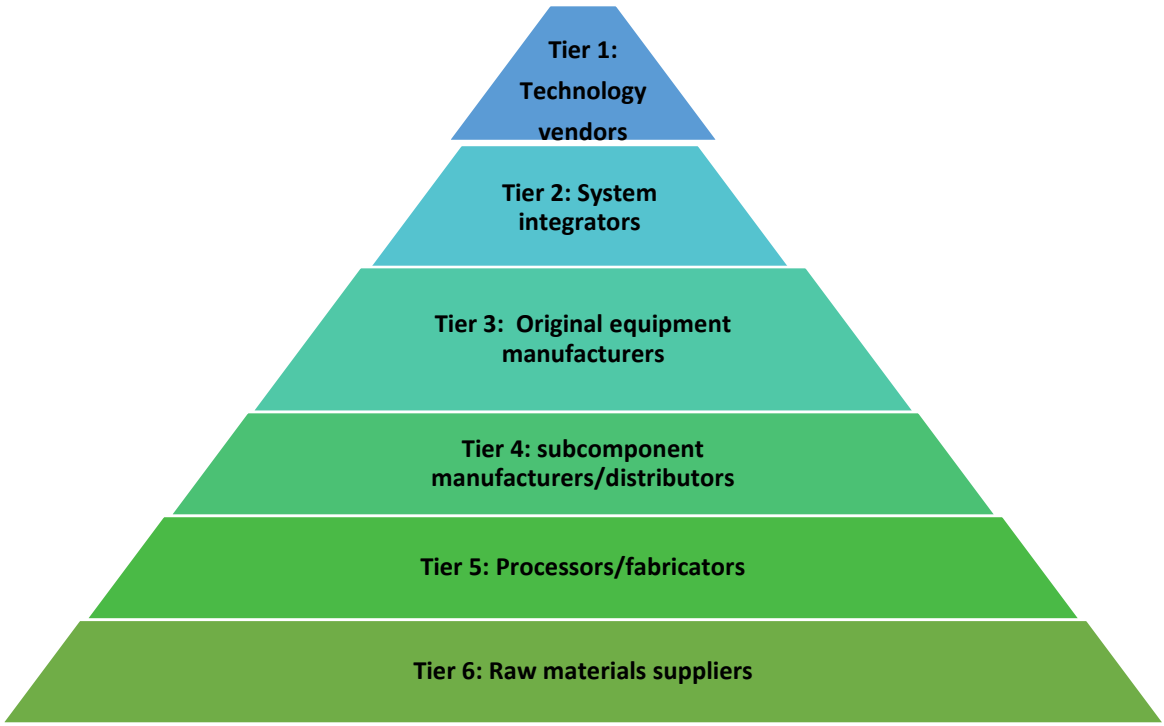


*Figure 3.3: Procurement Tiers within oil and gas in the UAE. Adapted from: (International Atomic Energy Agency, 2016)*

There are 6 tiers in the pyramid that explain the procurement in oil and gas in UAE. As noticed, technology, system integrators, original equipment manufacturers, subcomponent manufacturers, processors and raw materials are the essential items mostly procured in UAE Oil and gas, and same can be said for ADNOC. It can be noticed that these are tiers are developed based on products and services. Therefore, Table 3.1 aligns the 6 tiers with two tiers identified in literature to determine supplier types. Justification for linking the 6 tiers to just 2 tiers identified in literature is to enable further evaluation of current procurement status in UAE and ADNOC. Selection is made using same explanations provided in section 2.5 (Chapter two) where supplier tiers were examined and discussed.

*Table 3.1: Correlation between UAE tiers and tiers from literature*

| **UAE Supplier Tiers** | **Justification for linkage** | **Tiers from Literature** (Kraljic, 1983; Sepehri, 2013) |
|---|---|---|
| Tier 1: technology | Need to compete for business | Tier B1 |
| Tier 2: System integrators | Strategic and important | Tier A1 |
| Tier 3: Original equipment manufacturers | Strategic and important | Tier A2 |
| Tier 4: Subcomponent manufacturers / distributors | Need to compete for business | Tier B2 |
| Tier 5: Processors / Fabricators | Need to compete for business | Tier B3 |
| Tier 6: Raw materials suppliers | Strategic and important | Tier A3 |

It can be noted that there are three tiers A and three tiers B which have been serially numbered to prevent confusion. Further assessment is done of the information available in the procurement guidelines using Kraljic model is shown in Figure 3.4. It is noticed that leverage, strategic, routine and bottleneck items are all presented as possible product and service to procure. Though literature establishes that bottleneck result in supplier dominance and high risk for buyer (Kraljic, 1983), the guidelines includes it to warm oil and gas organisations of its risks to ensure that bottleneck items are procured minimally.

Items considered as leverage in the oil and has relates to those with high expenditure area, with existing alternate products or services, many qualified supply sources and ones where goods or services are readily available (Sepehri, 2013). Those considered strategic are ones critical to operations, with few qualified supply sources (Tangpong et al., 2015), but with large expenditure, with complex specifications because they are designed to have quality which are critical to the oil and gas companies.

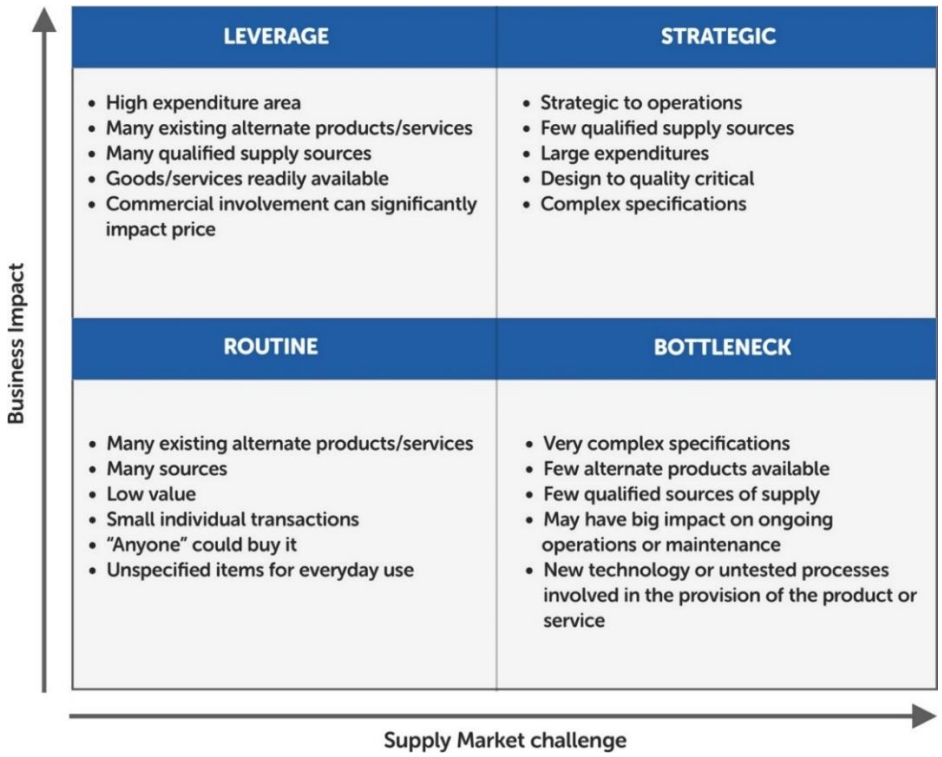


*Figure 3.4: Strategic positioning of items (IAEA, 2016)*

Though strategic positioning of items (Figure 3.4) and their respective classifications are important and good to know, it equally important to retain focus on the supplier relationships they generate.

*Table 3.2: UAE Strategic Positioning, supplier relationships and associated risks*

| **UAE Strategic positioning of items** | **Strategic positioning & relationships** (Kraljic, 1983; Caniëls and Gelderman, 2007; Tangpong et al., 2015) | **Risk level** |
|---|---|---|
| Leverage | Exploit (buyer dominance) | Low risk to buyer |
| Strategic | Balance (mutual dependence) | Shared risk |
| Routine | Balance (mutual dependence) | Shared risk |
| Bottleneck | Diversify (supplier dominance) | High risk to buyer |

Routine also known as non-critical are products or services with alternatives, low in value with several sources, such that anyone could buy it, and not restricted to the oil and gas company. The non-critical or routine items are ones which require small individual transactions, but nonetheless needed by the organisation. Though relationship and power relations between the buyer and supplier is balanced, there is a disadvantage in the strategic positioning item. The drawback is that the administrative and logistics costs can be high because of the frequency of procurement from many different suppliers (Montgomery et al., 2017). However, the procurement of these items causes few commercial and technical challenges and have low supply risks (Hesping and Schiele, 2016).

Procurement items classified in the bottleneck quadrant are ones with very complex specifications, which involve untested processes and or new technology. Additional information examined shows that both tiers A and B are present in the UAE and ADNOC. Further evaluation also reveal that the four classifications are present but more procurement tend to be occurring within strategic and leverage items than other classifications. Table 3.3 further outlines and explains the procurement supplier relationship in ADNOC. This table helps to derive necessary information for the primary data that is collected in ADNOC.

*Table 3.3: Procurement relationship interdependence in UAE oil and gas industry (Kraljic, 1983; Lee and Drake, 2010; IAEA, 2016)*

| Item position | Examples of items | Typical sources | Typical approach | Relationship interdependence | Typical action plan |
|---|---|---|---|---|---|
| **Strategic item** | Direct commodities i.e. strategic items, with high value | Established global suppliers<br><br>Tier A1, A2, A3 | Strategic relationships are partnerships with mutual benefits. Relationships are actively managed, with senior management involvement as appropriate | • There is a balance in the relationship between the buyer and supplier, as their mutual dependence and total interdependence is high. Characterized by a balanced power relationship between suppliers and buyers | • Usually includes long-term contracts or service or life agreement with organisations, where organisations work closely with suppliers for product innovation or/and process development<br>• Integrated systems<br>• Supplier manages product and service.<br>• On-site representation<br>• Contingency planning and risk analysis |
| **Leverage item** | Commodities i.e. courier services, etc where multiple suppliers are available | Multiple suppliers, mostly local<br><br>Tier B1, B2, B3 | Leverage relationships are built mostly around price. Costs are cut using innovation and competition | • Interdependence in the buyer-supplier relationship is lower than the strategic item and higher than the bottleneck items. As indicated, the buyer has dominance in the partnership | • Short term contracts or blanket orders<br>• Focus on price.<br>• Suppliers are made aware that they are competing based on price |

| Item position | Examples of items | Typical sources | Typical approach | Relationship interdependence | Typical action plan |
|---|---|---|---|---|---|
| **Bottle neck item** | Complex specification products (e.g. electronic parts, outside services) | Global suppliers, often new suppliers with new technology<br><br>Tier A1, A2 | Always ensures supply of critical items | • Interdependence in the buyer-supplier relationship is low. Limited or zero involvement of buyer and suppliers in the relationship, additionally suppliers have more dominance over buyers | • Usually long-term contracts.<br>• Priority is for suppliers to be motivated to provide quality service<br>• Explores ideas for developing new suppliers or alternative products |
| **Non-critical/routine item** | Office supplies, desktop computers, laptop computers, etc. | Local suppliers<br><br>Tier B1 | Takes up minimal time and effort. Minima management attention and investment. | • Power is balanced, as buyers and sellers depend on each other mutually; however, total interdependence is low | • Usually mid-term contracts.<br>• Supplier's own specifications are utilized |

Table 3.3 indicates that there are more strategic and leverage items procured by ADNOC, thus alluring to 'balanced' and 'exploit' supplier relationship types. The table also reveals the links between sources, approaches and relationship interdependences which influence the action plan for enhancing procurement, and procurement supplier relationships. The assessment of procurement supplier relationship in the UAE oil and gas reveals the need to further investigate the current status, in order to determine the most suitable model for enhancing supplier relationships.

Deductive explanations of information provided and available by ADNOC indicate that the relationship between ADNOC and its tier A suppliers may be classified as exploit, balance or diversify (Table 3.2) as explained by Kraljic (1983), Tangpong et al. (2015), Hesping and Schiele (2016). The same can be assumed for its tier B suppliers. The purchasing strategy by ADNOC is also unclear. Based on the information assessed in this chapter and discussion in Chapter two, the strategy could be federal, centre-led, decentralised, centralised or coordinated purchasing as explained by Rozemeijer, Weele and Weggeman (2003), Dubois and Pedersen (2002), Medeiros and Ferreira (2018) and Boehmke et al. (2017).

Based on Table 3.3, the influencing factors in ADNOC may be considered as market analysis, strategic positioning and action plans. It may be inferred that these three factors currently influence the supplier relationships the most in UAE oil and gas and in ADNOC. While no reference is made to impact of culture, further inquiry is conducted to determine which factor influence purchasing strategy and supplier relationship in ADNOC.

## 3.5 DEDUCTION AND CONCLUSION

This chapter is instrumental in achieving the research objectives especially by providing more context for what is operational in UAE and ADNOC. Procurement activities are conducted using integrated management system which lacks the fundamentals of procurement process identified in chapter two. Though procurement in itself is not the focus of this study, it is important to understand fundamentals of procurement in UAE and how this relates to established norms and procedures in this field.

Principles like fairness, ethics and risk management that guide procurement in oil and gas sector are identified in this chapter to inform the process, but they are vague in terms of how they relate to supplier relationship or improve the process for successful procurement. Theoretical explanations provided were more helpful in understanding the current status as it revealed that network theory is the applicable theory that explains the relationship dynamics between ADNOC and its suppliers. It was further revealed that there are 6 tiers of purchasing classification. Using KPM they were classified into tiers A and B respectively.

The general conclusion is that though there is better understanding of what may be operating in ADNOC, there is still limited knowledge of supplier relationships and strategy used as well as factors that may be influencing current purchasing items. The five questions developed from literature review thus need to be answered through further inquiry of procured goods to better determine the supplier relationship in the organisation. Out of all the five questions; question two may be answered by stating that all four quadrant items are the purchase classification and their associated strategies operating in UAE oil and gas sector. However, strategic and leverage items then to be the purchase classifications more prominent. The effectiveness of these two classifications, type of buyer-supplier relationships, factors influencing supplier relationships and elements that can inform an enhancing model are all further investigated.

The next chapter discusses the methods adopted for conducting this investigation and justification for selecting the methods.

# CHAPTER 4

# RESEARCH METHODOLOGY

## 4.1 INTRODUCTION

The purpose of this chapter is to discuss and justify the methods adopted for conducting this study. Section 4.2 explains the research design and approach while the next section discusses and justifies the strategies adopted for conducting this study. Section 4.4 explains sampling and data collection. The process for designing and developing the questionnaire is also examined in this section so that the rationale for adopting techniques used for data analysis, and determining validity and reliability is better understood and justified. Ethics and chapter summary sections wrap up this methodology chapter which clarifies the process for data management and for generating objective results for this research.

## 4.2 RESEARCH DESIGN AND APPROACH

Research design ought to adhere to logic of inquiry, the purpose of the inquiry and the direction of reasoning (Denzin and Lincoln, 2011). This research is an exploratory study that intends to add value to UAE Oil and Gas industry. Exploratory study as a research design can be used to address phenomena with high levels of uncertainty, limited empirical data and limited understanding of problems (Babbie, 2015). Exploratory research is conducted to identify the explanations for research problems, so that the salient variables, relevant to the research may be better understood (Denzin and Lincoln, 2011). This context has informed the choice of exploratory design for this research, as well as associated design and approach most suitable for this study.

### 4.2.1 DESIGN JUSTIFICATION

The understanding of exploratory design also informs the review of two types of research designs i.e. qualitative and quantitative. The quantitative research approach is considered as the systematic empirical investigation on phenomena that are observable and could be tested

using statistical or numerical techniques (Denzin and Lincoln, 2011). Qualitative research on the other hand is an inquiry method that is exploratory in nature used for understanding motivations, opinions and underlying factors or providing insights into a problem which are descriptive rather than predictive (Babbie, 2015).

Qualitative research helps to develop ideas, models and hypotheses for potential quantitative research (Evans et al. 2011). Qualitative research covers a wide range of methods and approaches, thus suggesting that other methods not conventional to qualitative research approach may be used to increase the quality and objectivity of data collected (Sarantakos, 2012). While explanations in different research methodology literature explains the advantages and disadvantages of quantitative and qualitative research designs, the design adopted for this study came from reviewing different articles on procurement. Previous studies and recent research in procurement provided insights into design that have been successfully used to gather data and arrive at valid outcomes.

Researchers in the field of procurement used case studies (Cox, 1996; Gardenal, 2013), literature review (Virolainen, 1998; Laeequddin et al. 2012), and survey (Carr and Smeltzer, 2000; Aboelmaged, 2010; Lember et al. 2013). It was noticed that literature closely related to this study area or specifically on procurement on oil and gas used quantitative research design. Prior investigation in this field provided guidance for how their research outcomes were achieved and potential methods that may be adopted for this research. This justifies the choice of method for investigating procurement strategies in the oil and gas industry in the UAE. Therefore, quantitative research design is selected because it helps to examine processes that involve people at any location and at their own convenience (Bordens and Abbott, 2011). Once design is selected, this decision also influences the choice of research approach explained in the next subsection.

### 4.2.2 APPROACH ADOPTED

To decide the approach, the process followed to develop the research questions were also considered. Saunders et al. (2014) explain that it is the ability to identify potential relationships that exist between themes that helps with development of new theory or as explained by May (2011) the advancement of an existing theory. For example. Bazeley

(2008) explained that existing theory influences the object of study. The object of study in this case is procurement relationship, especially supplier and buyer relationship in the UAE. Figure 4.1 shows the process and flow which is not always smooth but nonetheless helps to achieve or arrive at new theory which is the essence of conducting a PhD.

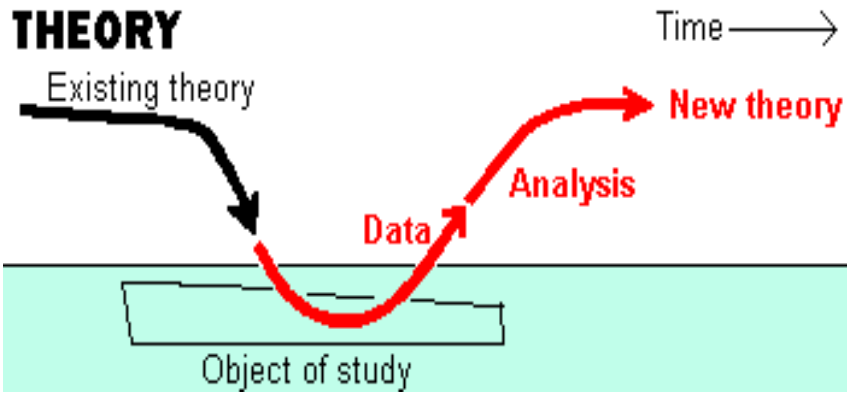


*Figure 4.1: Impact of theory on research process*

*(Adapted from Bazeley, 2008)*

This process indicates that the object of study may be influenced by existing theory, thereby leading to data collection, analysis and possibility of developing new theory over time. According to Bazeley (2008) this process is subjective; a new theory may be developed when the process is followed as objectively as possible. Furthermore, May (2011) reinforced that the research problem and existing knowledge in a field of study may also influence the techniques adopted for conducting a research which is later explained in this chapter. Ultimately, the evidence gathered through the survey is interpreted and evaluated to determine the domain of findings. In summary, the process in Figure 4.1 helped to ensure that:

1. Well formulated and fruitful questions are asked.
2. Both grounded and testable hypotheses are devised to answer the questions.
3. Logical consequences of the assumptions are derived.
4. Techniques to test the assumptions are designed to test the techniques for relevance and reliability.
5. The tests are executed.

6. The results are interpreted.
7. The truth or validity of data is evaluated, particularly to determine the assumptions made out of the research context (Bazeley, 2008; May, 2011).

As a result, the process for investigating appropriate research design and approach was carefully undertaken. Methods literature indicate that two main research approaches are commonly used. These are deductive and inductive approaches (Saunders et al. 2014). According to Sekeran (2009) deductive is the process by which the researcher starts with a theoretical proposition and then moves towards concrete empirical evidence. On the other hand, May (2011) explain induction as the process by which the researcher observes certain phenomena and arrives at certain conclusions.

As shown in Table 4.1 deductive is a highly structured approach which moves from theory to data and application of controls to ensure validity of data and results (Creswell, 2011). This process influences the data collection and analysis, a stage which is presented in Chapter Four. However, the reverse is the case with induction approach which follows an upward movement as shown in Table 4.1. Inductive is about qualitative data collection which focuses on research context but with more flexible structure (May, 2011). Table 4.1 below depicts the major differences between deductive and inductive approaches.

*Table 4.1 Differences between deductive and inductive approaches*
*Adapted from Saunders et al. (2014). May (2011) and Creswell (2012)*

| **Inductive approach** | **Deductive approach** |
|---|---|
| The collection of qualitative data | The need to explain casual relationships between variable |
| Less concern with the need to generalise | A highly structured approach |
| A close understanding of the research context | Moving from theory to data |
| A more flexible structure to permit changes of research emphasis as the research progresses | The application of controls to ensure validity of data |

Creswell (2012) and Velde et al. (2004) explain that different types of research approaches allow the researcher to understand the best suited way to conduct a study. The selection of an appropriate research approach is a crucial to success any research project. It is also necessary to ensure that the approach selected is used the most suitable way to address the research problem. Since characterises of deductive shown in table 4.1 is consistent with quantitative research design. Therefore, in this research adopts a deductive approach used in developing the theoretical framework from literature. A deductive approach is adopted for this research, while the design uses quantitative research design. The proposed research design is to combine secondary data such as literature review of oil and Gas organisations in the UAE and other existing information on procurement research with primary data. The next section explains how this aligns with the strategies and the research strategy selected for conducting this study.

## 4.3 RESEARCH STRATEGIES

In this section, strategies that are available and may be used for study of this nature is examined, discussed and the choice made for this study justified. There are a number of research strategies in social science research that can be used to gather primary data. Primary data refers to data collected directly from research participants or respondents for the purpose of study at hand (May, 2011; Saunders et al. 2014). Secondary data refers to information which already exists; for example, archival records, company documentation, publications, and annual reports. (Saunders et al. 2014). According to May (2011) and Creswell (2012) strategies such as surveys, interviews, observation, ethnography, historical analysis of archival information and case studies are some of the commonly used in recent studies.

Bell (2005) pointed out three conditions that can be used in deciding appropriate research strategy:

a) the type of research question that needs to be answered;

b) level of control from investigator; and

c) the nature and extent of study focus on contemporary events.

Conditions outlined by Bell (2005) are not conclusive and may be influenced by strategies and the extent to which a research focuses on contemporary issues. Table 4.2 shows the three conditions and how they differ from strategy to strategy.

*Table 4.2: Characteristics of strategies*

*Adapted from Bell (2005), May (2011) and Saunders et al (2014)*

| **Strategy** | **Form of Research Question** | **Control of investigator** | **Focus on Contemporary Events** |
|---|---|---|---|
| Experiment | How, Why? | Yes | Yes |
| Survey | Who, What, Where, How many, How much? | No | Yes |
| Archival analysis | Who, What, Where, How many, How much? | No | Yes/No |
| History | How, Why? | No | No |
| Case study | How, Why | No | Yes |

As noticed, the form of research questions posed by each strategy differ; survey and archival analysis having the most significant question forms that can be inquired. Given that this study needs further information, clarification and understanding of the nature or status of buyer supplier relationship in the UAE oil and gas sector, the survey is considered more suitable for this study than archival analysis. The survey is used in this study because it can used to inquire about different forms of research questions as indicated in table 4.2. These questions help to conduct the research in a variety of ways especially when important information is required for a study. Furthermore, survey strategy is compatible with quantitative design and deductive approach which are designs and approach appropriate for measuring variables. The survey which is a data gathering method that is therefore used in this study to collect, analyse and interpret the views of a target population (Denzin and Lincoln, 2011).

In this study, survey is used to benchmark the buyer-supplier relationship in ADNOC and the factors that may influence procurement process in the oil and gas sector. No single data source of information is perfect (Creswell, 2012). To this end, Saunders et al. (2014) emphasised that combing multiple sources of evidence can help to clarify the real meaning of the phenomenon being seen. The survey is used in combination with secondary data or information on procurement the UAE and globally. Limited secondary data on procurement in the UAE further justify the need to use survey to complete the inquiry process for understanding buyer-supplier relationship in the UAE oil and gas organisations. The reason for using a single case study is explained in the next section. As mentioned in chapter two, ADNOC is a group and this makes it a good case study to research.

### 4.3.1 CASE STUDY ORGANISATION

ADNOC is selected because of its size and the assurance that sufficient sample size that will reflect the current status of procurement in the country would be captured. The organisation manages 11 oil and gas fields within Abu Dhabi, including Asab, Bab and Al Dabb'iya. The organisation actively explores opportunities for the potential development of new oil and gas fields. There is great focus on health, safety and environmental protection (HSE), which enables the organisation to be more efficient and profitable, safeguarding employees. The organisation has specific codes of practice, procedures and policies to ensure the aims of HSE are achieved (ADNOC GROUP, 2018b).

There are codes of practice and policies that have been provided for employees for their interaction with third parties including suppliers. These policies and procedures have been put in place to ensure integrity in the process of sourcing. The policies ensure that suppliers are selected in a fair process and on merit. All suppliers are tasked with aligning themselves with the principles set out in the organisation's code of conduct. There is a 'no tolerance' policy for suppliers who fail to act with the level of integrity that is expected by the organisation from its employees. The organisation expects employees and suppliers to act with integrity when working together, as the reputation of the organisation is impacted by this (ADNOC GROUP, 2016).

From an ethics perspective, the company group developed a document that provides a code that provides details on the minimum standard of ethical business practice the organisation expects from suppliers to any part of the ADNOC Group (ADNOC GROUP, 2017). An electronic system for streamlining and improving supplier registration is also developed to facilitate, procurement, account payables and sourcing.

Existing suppliers and those suppliers who meet the organisation's criteria, may bid for new opportunities to tender using the ADNOC Onshore tendering portal (ADNOC ONSHORE, 2018a). Base on the above discussion, the researcher decided to use ADNOC as the main organisation to investigate and survey as the data collection strategy or technique because other organisations in the UAE may have too small a sample size to arrive at a conclusion or objective outcome. Another important step in this inquiry is sampling and how this influence data collection process. This is discussed in the next section.

## 4.4 SAMPLING AND DATA COLLECTION

Sampling may be described as the method used to determine and select the appropriate size of population or people to engage in a study for the purpose. While this may be true, Babbie (2015) defined sampling as the process of selecting units whether people or organisations from the target population or population of interest that is being studied. In this study, random sampling is chosen to ensure that the relevant sample size is informed by those involved in, and working in procurement in the oil and gas organisations are recruited to complete the survey. According to Bordens and Abbott (2011), random sampling is a scheme or process which ensures that each subgroup of the population has an equal probability of being chosen as the sample. This sampling method influenced the data collection process through which participants were recruited to complete the online survey.

Survey design is important because it helps the researcher to put relevant information of the study area into the document for further data to be collected. According to Bergman (2008) survey design may also be influenced by relevant literature as done in this study. Known to be guided by principles of statistics, the survey is adopted in this stage to determine any factors that may not be inherent variables being examined in this RQ, but relevant to result

analysis and interpretation. The survey is chosen because it is proven to be one of the effective techniques for gathering necessary information for advancing a study (Denscombe, 2014).

However, Flick (2011) explained that good survey is designed based on the questions it sought to answer but must challenge the respondents to critically reflect on the study area before answering. Questions must also be concise, clear, relevant, focused (Saunders et al. 2014) and designed appropriately to test or assess variables (Denscombe, 2014). These factors were incorporated in designing the survey which is divided into three parts; first part focusing on demographic questions, second part on questions relating to consumables and minor items, while last part is on procurement of major equipment. The first part of the questionnaire is designed to gather some basic demographic details about the participants (refer to appendix A). Parts two and three have questions that examine buyer-supplier relationship, purchase classification and effectiveness of purchasing strategies.

Responses to individual questions were rated by respondents using Likert scale; "Strongly Agree" = 5; "Agree" = 4; "Neutral" = 3; "Neither Agree or Disagree" = 3; " Disagree" = 2; and " Strongly Disagree" = 1. The data collection process was in stages where secondary (reports) were collected from ADNOC Group. Executives of this organisation participated in a consultation process to ensure that staff provided appropriate reports without compromising the privacy and confidentiality of the organization. This process also helped with the pilot study to test the survey. The outcome of this process informed the design of the final survey uploaded online. Information (secondary data) collection and as pilot study participants helped with the primary data collection process.

Online survey was circulated to all staff in procurement unit and those involved in procurement decision making process in ADNOC and a total of 312 completed the survey. Respondents are from ADNOC onshore and ADNOC LNG, though 7 people did not provide name of their organisation or unit. After the survey is closed the data is downloaded and uncompleted surveys are eliminated. For example, some people only answered the demographic questions. 64 surveys were in this category and were removed from the data analysed. At the end, a total of 248 surveys were analysed.

## 4.5 DEMOGRAPHIC INFORMATION

This section explains the demographic information of research participants because this is important for validity.

Demographic information analysed below include gender (DI2), age range (DI3), years of experience in the oil and gas industry (DI4), and years of experience in current organisation (DI5). Demographic information, scale, age and experience range are all adapted from previous research such as Rees et al. (2007), Sepehri (2013), Zahi and Adnan (2012), Ruqaishi and Bashir (2013), Gamal Aboelmaged (2010), Luzon and El-Sayegh (2016), Aldhaheri et al. (2018) to mention a few. These researchers conducted their study using oil and gas or public sector organisations in UAE and the Gulf region. The existing pattern, scale and range identified and verified by previous researchers, adopted by previous studies which are already published informed the scope of demographic information collected and analysed in this study. This section presents the outcome of this data type.

### 4.5.1 GENDER ANALYSIS

It is important to understand the gender balance in any sector so that needs and gaps can be identified (Babbie, 2015). Though the impact of gender balance in the oil and gas sector is not the focus of this study, the gender pattern is examined to determine the influence this may have on buyer-supplier relationship and effectiveness of purchasing strategies used in the UAE as against those identified in the literature in Chapter Two. Therefore, Figure 4.2 presents the percentage of male to female of respondents.

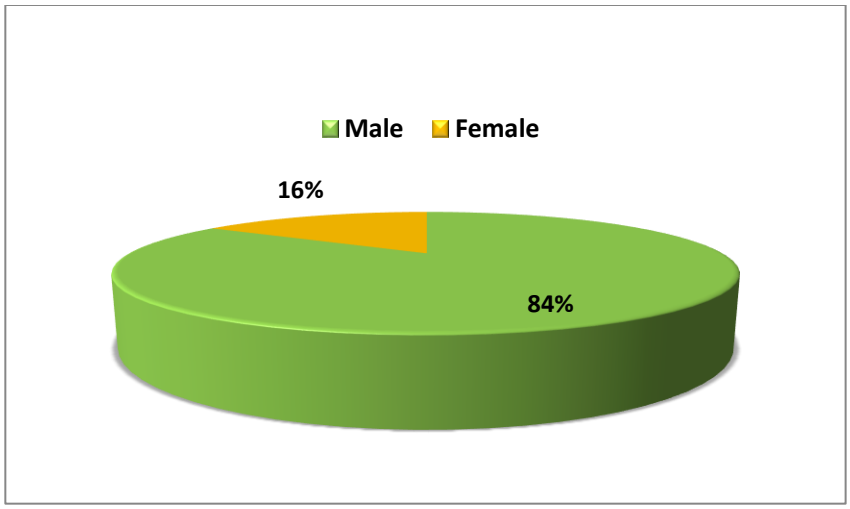


*Figure 4.2: Percentage of male and female respondents*

The figure shows that out of all the respondents, 84 percent are male, while remaining 16 percent are female. The implication of this is that there are more males in the oil and gas sector than females. While this may not come as a surprise given the patriarchal system in the UAE (Zahi and Adnan, 2012), it is also worth noting given that many foreigners work in the UAE especially in the oil and gas organisations. The implication of this is that procurement process in these organisations are more likely to be dominated by males and decision-making process influenced by them. Though literature did not allure to the influence of gender on procurement relationship, it may be a factor to consider when discussing the final result in this study.

### 4.5.2 AGE RANGE

Ages or age of respondents involve in a study is also important (Saunders et al. 2014). This is because it helps to determine whether the respondents are matured enough to make objective decision and understand the context of study. Five classifications were created to determine the age range of respondents which is shown in Figure 4.3.

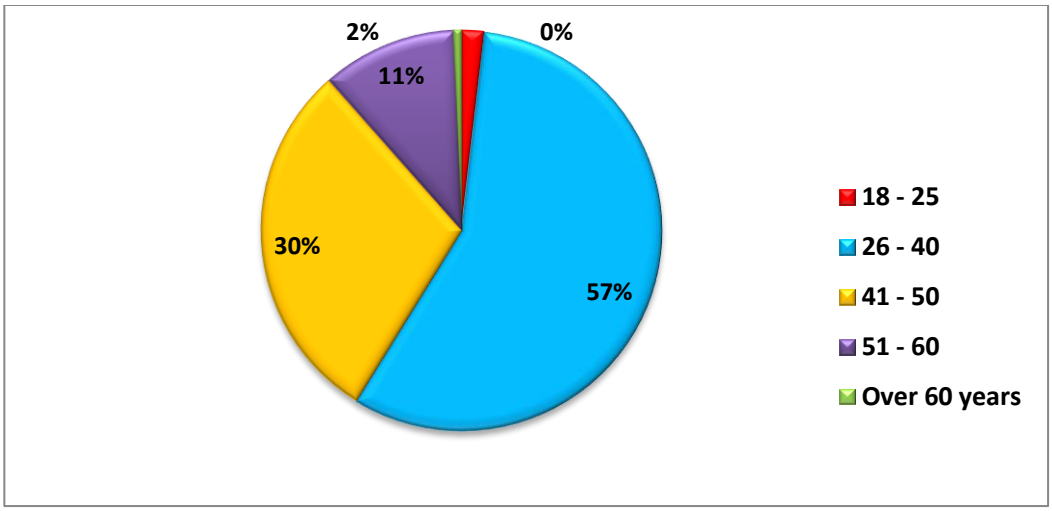


*Figure 4.3: Age range of respondents*

Figure 4.3 shows that 0 percent i.e. 1 respondent is older than 60 years of age. The findings also reveal that the oil and gas sector tend to be dominated by people within the range of 26 – 40years of age and people in their 40s. The implication of this finding is that most of the workers in the UAE oil and gas sector are foreign nationals as indicated during the secondary data analysis in Chapter three. Foreign nationals are required based on their experience which is needed to develop the sector in the UAE. Though essential, this may influence procurement strategies adopted in the sector. This influenced the next question which is about years of experience.

### 4.5.3 YEARS OF EXPERIENCE

Years of experience working in a sector helps to determine the level of expertise, extent to which the respondents are familiar with the sector. To assess this assumption, the years of experience are classified into five categories presented in Figure 4.4.

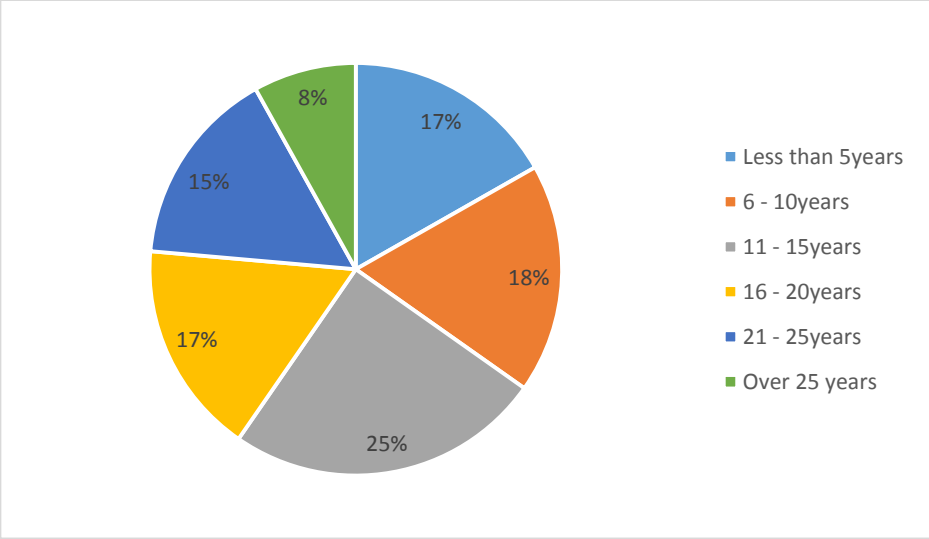


*Figure 4.4: Respondent' years of experience*

The result shows that the highest representations are those with 11 to 15 years of experience, followed by those with 6 to 10 years, and those with 16 -20 years and less than 5 years respectively. To determine the context of this finding, the next question focused on years of experience in the current organisation.

### 4.5.4 YEARS OF EXPERIENCE IN CURRENT ORGANISATION

This information is important to determine how long respondents have worked in their organisation and in the oil and gas sector to objectively answer questions on procurement strategies as required in this survey. Clarifying and stating the level or years of experience is crucial for validity of data and results. Therefore, Figure 4.5 shows that the highest percentage of the respondents have less than five years of experience in their current organisation.

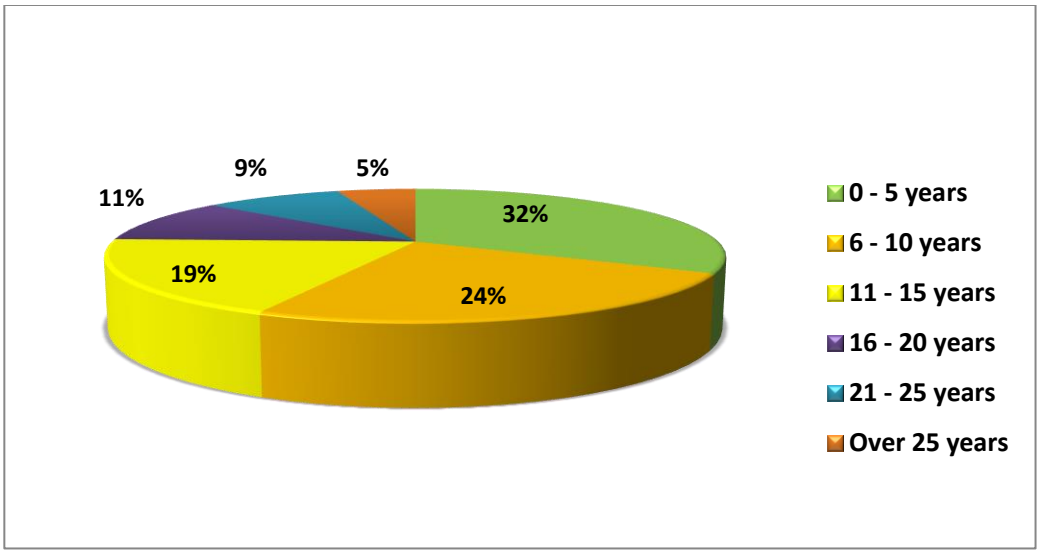


*Figure 4.5: Respondents' years of experience in current organisation.*

Figure 4.5 shows that 32 percent have less than 6 years working experience in current organisation which is still higher than the percentage of those with less than 6 years working experience in the sector. This implies that some of the respondents may have moved from one organisation to another. Regardless, the cumulative total of those with more than 10 years working experience in their current sector is significant at 44 percent though not over 50 percent of the respondents. This information is considered when discussing the result in the discussion chapter and it also influenced the data analysis techniques and how the analysis was conducted to retain validity of data and results.

## 4.6 DATA ANALYSIS

This section explains analysis process and methods used to analyse and validate results. Quantitative data from online survey is downloaded using Statistical Package for Social Sciences (SPSS) which is a statistical software. This software is commonly used to test variables as intended in this study. Using this software and data analysis technique is suitable for analysing survey. In addition to this, Cronbach alpha is used to conduct reliability and internal consistency of the variables. Cronbach's alpha measures how closely related a set of items are as a group, otherwise known as the measure of internal consistency (Raykoy, 2004).

### 4.6.1 MEASUREMENT MODEL

Cronbach alpha is generally referred to as a measure of scale reliability in which high value of alpha indicate that the measure is unidimensional especially when it is necessary to provide evidence that a scale is unidimensional (Hogan et al. 2000). Within this context, dimensionality is determined or confirmed through exploratory factor analysis. Though not a statistical test, Cronbach alpha is a coefficient of reliability or consistency. While both convergent and discriminant aim is to test for validity, Cronbach alpha aims for reliability. Therefore, in this test and measurement process, the variables are combined to test for internal consistency in order to determine if the score for the convergent validity is reliable.

Thus, any number from 0 to 1 is good considered ideal, while a negative number indicate that something is wrong with the data. However, Padilla and Divers (2016) recommended that Cronbach's alpha of 0.70 and 0.80, and above are good and 0.90 and above is best. Therefore, this is used as benchmark for results presented in the next chapter. Triangulating the data from all sources is crucial to developing a comprehensive model for improving procurement supplier relationship in oil and gas in the UAE. The research ethics and other ethical considerations are examined in the next section.

Furthermore, all demographic information gathered through the survey discussed in previous sections. This information is further analysed using software and Cronbach alpha. According to Kumar (2014) there are indications that the computer programs can accelerate, handle complicated statistical techniques, display the analysed data and present them in graphically way. Bryman (2008) emphasised that using computer programs and software help the researcher to handle data analysis better enabling; writing up, notes translation, data linking and report writing, but more importantly retaining validity of the data.

### 4.6.2 RESEARCH VALIDITY AND RELIABILITY

Validity is the extent to which the research findings accurately represent what is really happening in the situation (Gill and Johnson, 2010). Flick (2011) argued that three basic errors may occur: error type 1 which relates to incorrect principle; error type 2 which is rejecting correct information by mistake and error type 3 which is asking the wrong question(s). Creswell (2012) concluded that validity relates to measuring the right concept,

while reliability concerns with consistency and stability in the measurements. The goodness of measures determines the reliability of measures and accuracy in measurement. This infers that both validity and reliability help to determine the internal consistency.

There are different ways in which reliability and validity can be tested and ensured in a study. Saunders et al. (2014), Gill and Johnson (2010) and Kumar (2014) explain that there is construct, internal and external types of validity. External being a process that establishes the extent to which a research finding can be generalised or applied beyond the sample research and the immediate context of study (Gill and Johnson, 2010). This validity type is more common in qualitative research. Construct validity on the other hand relates to operational measures in which concepts are being studied (Kumar, 2014).

Construct validity uses three tactics i.e. the use of multiple source of evidence to increase validity of constructs or variables. Subsequently, chain of evidence is used to identify and gather relevant data and the use of triangulation to cross examine the survey findings with findings from the literature review (Kumar, 2014). Internal validity is the validity type that focuses on establishing a relationship between variables and conditions or factors that may influence the outcome of the variables (Saunders et al. 2014; Kumar, 2014). Table 4.3 outlines the characteristics of the three validity types briefly explained as they tend to be more widely used in conducting research.

*Table 4.3: Validity types and process*

*Adapted from Sekaran (2009) and Gill and Johnson (2010)*

| **Tests** | **Research Tactics and Plan** | **Phase of research in which tactics occurs** |
|---|---|---|
| Internal validity | • Do explanation-building<br>• Do hypotheses testing<br>• Do time-series analysis | Data analysis<br>Data analysis<br>Data analysis |
| External validity | Use replication logic in survey | Research design |
| Construct validity | • use multiple sources of evidence<br>• establish chain of evidence | Data collection<br>Data collection |

Table 4.3 shows the tactics, plan and phases in which the three validity types are used in a research. In this study being quantitative that focused on a case study, two of the validity outlined in the table were used. Internal validity is used to develop explanations from theory using the deductive approach. Deductive process helped the researcher to develop research questions relating to explanations of buyer-supplier relationship, purchase classification and effectiveness of purchasing strategies. In addition to this, the internal validity and reliability of each variable is measured to determine Cronbach's alpha value. Result for internal validity and reliability of the extent to which each question measured the variables is presented in Table 4.4.

*Table 4.4: Internal validity and reliability results*

| **Variables** | **Cronbach' Alpha** | **N of questions** |
|---|---|---|
| Buyer-supplier relationship | .72 | 7 |
| Purchase classification | .75 | 8 |
| Purchasing strategies effectiveness | .75 | 8 |

According to Padilla and Divers (2016) Cronbach's value of 0.7 and above is considered good internal validity i.e. the questions measure the construct it was supposed to measure quite well. Internal validity and reliability were achieved by using explanation building method to analyse the data gathered. The research questions and variables are also helpful to testing and increasing the internal validity. Construct validity is also applied; a process where both primary and secondary data which were combined for the discussion of results to determine the outcomes of each objective. Construct validity also reflected in the manner in which the research questions were answered by testing and testing for internal validity and mean score of responses from the research respondents.

Therefore, this section explains how data collected during the course of this study is analysed, the process and how findings were reviewed, supported and monitored to increase validity so that the contribution to knowledge justified. Process explained in this section is supported by putting ethics requirements into consideration.

## 4.7 RESEARCH ETHICS

Researchers and study process need to comply with ethical requirements for any research. Saunders *et al.* (2014) refer to ethics as actions and processes that guide the study process, the behaviour of researcher and protect the research participants. This explanation focuses on process and actions, Kumar (2014) explained ethics as the moral principles, standards and norms that guide the decision and choices taken during a research process. As the custom is in any academic institution, the USQ Human Ethics Committee approved this study before the fieldwork or primary data was collected in 2018. In compliance with the ethics process, the principles of voluntary participation, risk assessment, informed consent and anonymity were all considered relevant, and applied throughout this study.

In terms of voluntary participation, Bulmer (2001) states that research participants should not be forced to participate in a research. In this study, this principle and ethics requirements were adhered to especially during the consultation process for collecting secondary data and the primary data collection process. While the consultation process for secondary data collection was face to face which allowed interaction and direct explanation from the researcher, the process for ensuring voluntary participation during the primary data collection was different. By sending the link to the survey, it is explained that completing the survey is taken as free and voluntary participation in which respondents can decide not to participate and withdraw or discontinue their participation at any time.

To this end, some incomplete surveys were discovered during the data analysis process. Informed consent is another ethical requirement in which approval need to be sort from participants before any data is collected (Gill and Johnson, 2010). This is similar to voluntary participation. As explained the process for ensuring voluntary participation and informed consent for both secondary data and primary data collection process differ slightly due to context and strategies used.

Anonymity and confidentiality are processes that ensure that the identity of research respondents is protected throughout and in the aftermath of conducting a study (Creswell, 2013). Both anonymity and confidentiality are important in any research one of this nature where the activities of a major organisation are being researched. It is important to protect

the identity of participants so they can freely provide information and correct answers to questions. To achieve this, names and other personal information were optional so that people can decide the amount of personal information they want to provide. The choice of primary data collection strategy is also in consideration of protecting identity of respondents so that information provided or individual answers cannot be traced back to people. Analysis method and technique also helped to make individual answers difficult to identify or trace from the conclusion.

Risk assessment is another important action that Saunders et al. (2014) encouraged researchers to take. This is to ensure the safety of both the researcher and participants in any given environment, location and circumstances. While this study does not pose any risk to the researcher and participants as indicated in the ethics application form and application signed off by the university, necessary precautions were taken when the researcher met with individuals during the secondary data collection. Participants were met in their offices in a safe environment where other people were present. This prevented the possibility of lone-working and exposure to harm. Though a research conducted on the oil and gas sector, there was no on-shore or on-site visit made as this study does not relate to field or oil rig activities. Lastly, the survey was circulated through online which is a means to prevent participant or researcher to travel to any remote location to participate or observe the data collection process.

## 4.8 CHAPTER SUMMARY

This chapter has explained this research methodology by discussing and justifying the design, approach, strategies and data collection and analysis process and techniques. Though no single method is perfect, this study has combined different strategies and carefully considered options that may be viable but not used for this study. By acknowledging that available or possible options exist, this chapter has revealed that the methods used were the most suitable for the nature of study being conducted. The deductive approach encouraged and allowed questions to be derived from the examining existing sources of information in procurement both in and outside of UAE. Given that the topic is relatively new, the limited empirical data specific to UAE would have caused problems that could have limited the study.

Combining methods and strategies minimised major disruption to this study. Lastly, the use survey to assess the procurement strategies and status of buyer-supplier relationship in the UAE oil and gas organisations proved important as presented in the next chapter. Data analysis process and using two types of validity also ensured that a valid and reliable outcome is arrived at for this research. Therefore, completing this chapter helps to clarify the methods selected for this study, as well as explain the rationale for their selection out of all available options. This chapter is crucial to ensuring that all research questions are answered so that the research objectives can be achieved.

# CHAPTER 5

# FINDINGS AND ANALYSIS

## 5.1 INTRODUCTION

This chapter presents findings from the survey conducted in the United Arab Emirates (UAE). As explained in the previous chapter, the survey focused on examining the current supplier relationship in the UAE oil and gas sector, specifically in ADNOC which is the leading company in both products. It also aims to evaluate the effectiveness of procurement strategies used and their capability in enhancing supplier relationship in the major oil and gas organisation. To achieve these set-out purposes, this chapter is divided into six main sections. The first section outlines the research questions, demographic information and the relationship to findings. The second and third sections present main aspect of the variables tested and the findings for each one. Section following the first three sections focuses on interpreting the findings and discussing the research results. The last section summaries findings in this chapter.

## 5.2 RESEARCH QUESTIONS AND DEMOGRAPHIC INFORMATION

The literature review generated some questions that needed to be answered in order to achieve the research objectives and overall purpose for conducting this study. These questions are:

1) What type of buyer-supplier relationships exist in the UAE oil and gas sector?
2) What purchasing strategy best explains the current status of procurement in ADNOC?
3) Which purchasing classification and supplier relationship are most effective in ADNOC?
4) What factors influence supplier relationship in ADNOC?

These questions are applied to procurement of consumables and minor items and major equipment respectively which are the products ADNOC prioritises as tiers A and B. All questions asked to test procurement of consumables (Tier B) are coded PCM, while that of minor equipment (Tier A) are PME. Each segment has three sections, A, B and C respectively all with questions relating to the four research questions. Each variable is given codes and the coding system is used throughout this chapter to present and interpret findings to facilitate the data analysis and interpretation process. This is to prevent confusion and to avoid duplicating key findings for each procurement type. Table 5.1 shows that distinct codes are used for each procurement types though the variables are similar.

*Table 5.1: Internal validity and reliability results*

| **Procurement type** | **Variables** | **Code** |
|---|---|---|
| Consumables and minor items (Tier B) | Buyer-supplier relationship | PCMA 1- 7 |
| | Purchase classification | PCMB 1 - 8 |
| | Purchasing strategies effectiveness | PCMC 1 – 8 |
| Major Equipment (Tier A) | Buyer-supplier relationship | PMEA 1- 7 |
| | Purchase classification | PMEB 1 - 8 |
| | Purchasing strategies effectiveness | PMEC 1 – 8 |

Information in the table corresponds with internal validity and reliability presented in table 4.4 in the previous chapter. Table 5.1 shows that there are 7 questions in buyer-supplier relationship, 8 questions focusing on assessing purchase classification type (Kraljic, 1983) and 8 questions on effectiveness of purchasing strategies (Bildsten, 2015; Hesping and Schiele, 2015; Akın Ateş, van Raaij and Wynstra, 2018). The questions vary because Kraljic (1983) explained that various types of purchases require varying procurement strategies which are supported by particular sets of practices and resources. Hence the rationale for having more questions for purchase classification and effectiveness of purchasing strategies in survey.

Therefore, two sets of results are presented, interpreted and discussed in this chapter. The importance of collecting valid data influenced the recruitment of respondents as explained in the methodology chapter. The demographic information and findings from conducting the survey in the UAE explained in the previous chapter informed this section and content of this chapter. As a recap, demographic findings reveal that; there are more males than females in UAE oil and gas sector; most employee in the oil and gas organisation are within the age range of 26 to 50 years, and quite a significant number of people have between 6 – 25 years in the field.

A cumulative total of 86% have less than 20years experience working in their current organisation. These outcomes reveal that the respondents have sufficient years of experience in the industry between them to be able to provide relevant and useful information. These factors are significant as explained by Iacob (2012) in clarifying the measurable results of supplier relationship management and conditions in the oil and gas sector.

## 5.3 TESTS FOR VALIDITY OF VARIABLES

Though procurement maturity often determines the different strategies used (Rozemeijer, Weele and Weggeman, 2003), Lee and Drake (2010) emphasised the role strategic procurement plays in enabling organisations achieve their competitive objectives. However, Ates et al (2018) explained the role of decision makers in organisations in influencing procurement structures and strategies used. Therefore, the survey asked respondents to indicate whether they are in supply chain department or non-supply chain department, but all respondents are involved in procurement process.

As indicated in the demographic information, 52% of the respondents are from non-supply chain department while others are from supply-chain. This influenced the result significantly by providing an objective perspective into the current status of buyer-supplier relationship and effectiveness of procurement strategies used in the UAE oil and gas organisation presented later in this chapter. The next subsection presents test for variables and findings.

### 5.3.1 TEST FOR PCM VARIABLES

As mentioned, two procurement types are assessed and coded with a total of 23 questions assessing each procurement type. This subsection presents the findings that emerged from the measurement model which revealed the highest value indicated by the respondents for each question, the frequency despite a lot of missing answers, percentage and Cronbach's alpha for each construct and procurement type. Table 5.2 shows that the highest value selected by the respondents for PCMA questions is 4 which is 'agree' and the Cronbach's alpha for PCMA is 0.72.

*Table 5.2: Test for internal validity of PCM*

| | Question | Highest Value | Frequency | Percentage | Cronbach's Alpha |
|---|---|---|---|---|---|
| PCMA | | | | | **0.72** |
| | **PCMA1** | 4 | 66 | 26.61 | |
| | **PCMA2** | 4 | 46 | 18.55 | |
| | **PCMA3** | 4 | 57 | 22.98 | |
| | **PCMA4** | 4 | 58 | 23.39 | |
| | **PCMA5** | 4 | 54 | 21.77 | |
| | **PCMA6** | 4 | 39 | 15.73 | |
| | **PCMA7** | 4 | 37 | 14.92 | |
| PCMB | | | | | **0.75** |
| | **PCMB1** | **4 & 5** | **46** | **18.55** | |
| | **PCMB2** | 4 | 59 | 23.79 | |
| | **PCMB3** | 4 | 50 | 20.16 | |
| | **PCMB4** | 4 | 51 | 20.56 | |
| | **PCMB5** | 4 | 45 | 18.15 | |
| | **PCMB6** | 4 | 52 | 20.97 | |
| | **PCMB7** | **3** | **47** | **18.95** | |
| | **PCMB8** | 4 | 52 | 20.97 | |
| PCMC | | | | | **0.75** |
| | **PCMC1** | 4 | 51 | 20.56 | |
| | **PCMC2** | **2** | **38** | **15.32** | |
| | **PCMC3** | 4 | 50 | 20.16 | |
| | **PCMC4** | 4 | 52 | 20.97 | |
| | **PCMC5** | 4 | 43 | 17.34 | |
| | **PCMC6** | 4 | 57 | 22.98 | |
| | **PCMC7** | 4 | 54 | 21.77 | |
| | **PCMC8** | **2** | **36** | **14.52** | |

Table 5.2 shows that PCMB is the value selected the most by the respondents. For PCMB1 4 (agree) and 5 (strongly agree) were the same frequency at 18.55 % each. PCMB7 is 3 (neutral) which means respondents neither agree nor disagree. The implication of this result is discussed later because it is a question relating to purchase classification. Given that the Cronbach's alpha for all PCMB questions is 0.75, the result for PCMB is accepted as valid. PCMC also generated unique findings because though 4 is the highest value selected by the respondents, PCMC2 and PCMC 8 generated 2 as the most selected value. 2 on the measurement scale is 'disagree'.

PCMC is also accepted because the Cronbach's alpha is 0.75 which indicates better reliability of the construct, therefore, the overall findings for this section is accepted. Though the loading error for PCMA, PCMB and PCMC vary and percentage for each construct is less than 50%, the Cronbach's alpha values are more than 0.70 which means the findings are valid and reliable. However, the unique findings in PCMB (PCMB1; PCMB7) and PCMC (PCMC2; PCMC8) are noted and discussed later.

### 5.3.2 TEST FOR PME VARIABLES

Similar process for PCM is applied to carry out test for PME variables. This is presented in Table 5.3. This table shows the test result for internal validity of PMEs.

*Table 5.3: Test for internal validity of PME*

| | **Question** | **Highest Value** | **Frequency** | **Percentage** | **Cronbach's Alpha** |
|---|---|---|---|---|---|
| PMEA | | | | | **0.72** |
| | **PMEA1** | **2** | **36** | **14.52** | |
| | **PMEA2** | 4 | 48 | 19.35 | |
| | **PMEA3** | 4 | 34 | 13.71 | |
| | **PMEA4** | 4 | 40 | 16.13 | |
| | **PMEA5** | 4 | 49 | 19.76 | |
| | **PMEA6** | 4 | 46 | 18.55 | |
| | **PMEA7** | **2** | **25** | **10.08** | |
| PMEB | | | | | **0.75** |
| | **PMEB1** | 4 | 26 | 10.48 | |
| | **PMEB2** | 4 | 43 | 17.34 | |
| | **PMEB3** | 4 | 50 | 20.16 | |
| | **PMEB4** | 4 | 32 | 12.90 | |

| | | | | | |
|---|---|---|---|---|---|
| | **PMEB5** | **3** | **31** | **12.50** | |
| | **PMEB6** | 4 | 40 | 16.13 | |
| | **PMEB7** | 4 | 36 | 14.52 | |
| | **PMEB8** | **3** | **29** | **11.69** | |
| PMEC | | | | | **0.75** |
| | **PMEC1** | 4 | 48 | 19.35 | |
| | **PMEC2** | 4 | 41 | 16.53 | |
| | **PMEC3** | **2** | **30** | **12.10** | |
| | **PMEC4** | 4 | 45 | 18.15 | |
| | **PMEC5** | 4 | 48 | 19.35 | |
| | **PMEC6** | 4 | 31 | 12.50 | |
| | **PMEC7** | 4 | 46 | 18.55 | |
| | **PMEC8** | 4 | 40 | 16.13 | |

In bold in Table 5.3, PMEA1 and PMEA7 both generated the value of 2 which is 'disagree'; PMEB5 and PMEB8 generated 3 which is 'neutral'. PMEC3 had 2 (disagree) as the highest value selected by the respondents. Despite the varied value for PME variables, the Cronbach's alpha for PME generated the same outcome as PCM. The implication of having Cronbach's alpha more than 0.5 is that the questions measured the variables it was designed to measure which is significant and important for arriving at valid result. With this understanding that values differ, Cronbach alpha becomes the levelling ground to confirm that the questions appropriately measured the variables it set out or designed to measure.

This section has shown that questions asked were valid for the variables it aimed at testing. The findings further indicate that though values differ within PCM and PME, the Cronbach alpha applied to the test validity of variables helped to ascertain that the results would be valid and reliable as much as required for the research questions and aim. The next section presents the main findings for PCM and PME respectively.

## 5.4 FINDINGS FOR PCM AND PME

This section presents findings for PCM which is tier B suppliers and PME, tier A suppliers. Findings are shown for both tests to reveal the outcomes for supplier relationship, purchase classifications and effectiveness of purchasing strategies.

### 5.4.1 PCM – TIER B FINDINGS

The mean values for each scale are presented in Table 5.4. It is the measure of variables that shows comparison between the buyer-supplier relationship, purchase classification and effectiveness of purchasing strategies.

*Table 5.4: Mean values for each PCM scale and variables*

| Variable | N | Mean | Std Dev | Cronbach's Alpha |
|---|---|---|---|---|
| **PCMA total** | 116 | 24.78 | 3.66 | 0.72 |
| **PCMB total** | 108 | 28.80 | 4.00 | 0.75 |
| **PCMC total** | 98 | 27.34 | 3.85 | 0.75 |

The mean values for PCM did not flag any irregularities, except for findings from the test for variables identified in the last section i.e. PCMB (PCMB1; PCMB7) and PCMC (PCMC2; PCMC8). It infers that while these variables are further discussed, it is important to cross examine the factors that may influence PCM supplier relationship. This test is measured against the demographic information provided by the respondents. The rationale for conducting the test on influencing factors aligns with the explanation of Iacob (2012) who explained that vital and social factors relating to individuals may influence effectiveness and success of supplier relationships.

It also aims to confirm what factor may potentially influence supplier relationship in ADNOC in addition to those identified in literature as market analysis (Tangpong et al., 2015), strategic positioning (Kraljic, 1983), action plans (Hesping and Schiele, 2016) and cultural influence (Rees et al. 2007). Therefore, Table 5.5 test for impact of gender on the buyer-supplier relationship, purchase classification and effectiveness of strategies. Test is for any significance difference with less than 0.05 value.

*Table 5.5: Test for impact of gender on PCMA, PCMB and PCMC*

| | **Gender recode** | **N** | **Mean** | **Std. Deviation** | **T-Test** | **Significance** |
|---|---|---|---|---|---|---|
| PCMA total | Male | 98 | 24.56 | 3.58 | 1.48 | 0.141 |
| | Female | 18 | 25.94 | 3.98 | | |
| PCMB total | Male | 93 | 28.81 | 3.90 | 0.07 | 0.948 |
| | Female | 15 | 28.73 | 4.70 | | |
| PCMC total | Male | 88 | 27.35 | 3.61 | 0.12 | 0.906 |
| | Female | 10 | 27.20 | 5.81 | | |

Findings in Table 5.5 shows that the significance for PCMA, PCMB and PCMC are not less than 0.05, rather they are 0.141, 0.948 and 0.906 respectively. This finding indicates that there is no significant difference in the mean scores for male and females indicating that gender does not influence any of the variables in this category. Similar test is conducted for age range with the aim to determine whether this factor would influence any of the variables being measured. Table 5.6 presents the findings.

*Table 5.6: Test for impact of age range on PCMA, PCMB and PCMC*

| | **Age recode** | **N** | **Mean** | **Std. Deviation** | **T-Test** | **Significance** |
|---|---|---|---|---|---|---|
| PCMA total | </= 40 years | 67 | 25.22 | 3.76 | 1.55 | 0.124 |
| | > 40 years | 49 | 24.16 | 3.47 | | |
| PCMB total | </= 40 years | 60 | 29.33 | 4.55 | 1.57 | 0.119 |
| | > 40 years | 48 | 28.13 | 3.10 | | |
| PCMC total | </= 40 years | 52 | 27.60 | 4.50 | 0.71 | 0.481 |
| | > 40 years | 46 | 27.04 | 2.97 | | |

Again, this rest shows that no significant difference in age range, indicating that regardless of the age range, the buyer-supplier relationship, purchase classification and effectiveness of purchasing strategies are not affected negatively. However, when the same test is run to test the impact of years spent in the organization, the finding is different as shown in Table 5.7.

*Table 5.7: Test for impact of years in organisation on PCMA, PCMB and PCMC*

| | **years in organization recode** | **N** | **Mean** | **Std. Deviation** | **T-Test** | **Significance** |
|---|---|---|---|---|---|---|
| PCMA total | </= 10 years | 39 | 25.62 | 4.09 | 1.91 | 0.058 |
| | >10 years | 76 | 24.26 | 3.31 | | |
| PCMB total | </= 10 years | 34 | 29.91 | 4.48 | 2.05 | **0.043** |
| | >10 years | 73 | 28.23 | 3.68 | | |
| PCMC total | </= 10 years | 28 | 28.39 | 5.05 | 1.68 | 0.096 |
| | >10 years | 69 | 26.96 | 3.20 | | |

In bold in Table 5.7 for test on PCMB, the significant difference is less than 0.05 for those with more than 10-year work experience in the organisation. This shows that purchase classification is influenced by years of experience spent of those in procurement. In terms of confidence, it implies that the more years spent in an organisation the lesser the confidence in the purchase classification type. This is a peculiar finding because this position is not supported, nor seen in literature and prior study in this area. This finding encouraged a further test of PME variables in the next section.

5.4.2 PME – TIER A FINDINGS

The findings for PCM shows that PME may also have unique outcome that would need to be further explained from literature. Thus, the same process for testing PCM variables is also followed for PME, the mean values for each scale are presented in Table 5.8. At a glance, the findings for test of buyer-supplier relationship, purchase classification and effectiveness of strategies does not differ significantly from that of PCM.

*Table 5.8: Mean values for each PME scale and variable*

| **Variable** | **N** | **Mean** | **Std Dev** |
|---|---|---|---|
| **PMEA total** | 88 | 24.25 | 3.82 |
| **PMEB total** | 84 | 28.75 | 3.93 |
| **PMEC total** | 80 | 28.57 | 3.81 |

Like PME, the mean values for PCM did not flag any irregularities. But it is still noted that the test for variables revealed that respondents 'disagree' with PMEA1, PMEA7 and PMEC3, while neutral about PMEB8. Thus, the analysis process focused on factors that influence buyer-supplier relationship, purchase classification and purchasing strategies such that the overall interpretation of the findings can be provided in the next section. Table 5.9 shows the rest for impact of gender on the three variables with a total of 23 questions. Like PCM, the purpose of this test is to examine the significant difference when the value is less than 0.05.

*Table 5.9: Test for impact of gender on PMEA, PMEB and PMEC*

| | **Gender recode** | **N** | **Mean** | **Std. Deviation** | **T-value** | **Significance** |
|---|---|---|---|---|---|---|
| PMEA total | Male | 80 | 24.24 | 3.68 | -0.10 | 0.923 |
| | Female | 8 | 24.38 | 5.29 | | |
| PMEB total | Male | 76 | 28.62 | 3.78 | -0.95 | 0.347 |
| | Female | 8 | 30.00 | 5.24 | | |
| PMEC total | Male | 72 | 28.51 | 3.52 | -0.43 | 0.670 |
| | Female | 8 | 29.13 | 6.20 | | |

Table 5.9 shows that gender does not impact any part of PMEA, PMEB and PMEC. Similar test is conducted for age range to determine the potential impact, if any. Table 5.10 shows the finding for the test.

*Table 5.10: Test for impact of age range on PMEA, PMEB and PMEC*

| | **Age recode** | **N** | **Mean** | **Std. Deviation** | **T-Test** | **Significance** |
|---|---|---|---|---|---|---|
| PMEA total | </= 40 years | 47 | 24.40 | 4.20 | 0.40 | 0.687 |
| | > 40 years | 41 | 24.07 | 3.36 | | |
| PMEB total | </= 40 years | 47 | 29.34 | 4.55 | 1.57 | 0.121 |
| | > 40 years | 37 | 28.00 | 2.85 | | |
| PMEC total | </= 40 years | 45 | 29.11 | 4.36 | 1.43 | 0.155 |
| | > 40 years | 35 | 27.89 | 2.89 | | |

Table 5.10 shows that there is no significant different between those below 40 years compared to those above 40 years. However, the impact of years spent in an organisation does not reveal the same result as impact of age. Table 5.11 shows the test for impact of years spent in an organisation on PMEA, PMEB and PMEC.

*Table 5.11: Test for impact of years in organisation on PMEA, PMEB and PMEC*

| | **years in organization recode** | **N** | **Mean** | **Std. Deviation** | **T-Test** | **Significance** |
|---|---|---|---|---|---|---|
| PMEA total | </= 10 years | 26 | 25.27 | 4.32 | 1.64 | 0.105 |
| | >10 years | 62 | 23.82 | 3.54 | | |
| PMEB total | </= 10 years | 26 | 30.58 | 4.52 | 2.99 | **0.004** |
| | >10 years | 58 | 27.93 | 3.36 | | |
| PMEC total | </= 10 years | 24 | 30.54 | 4.78 | 3.19 | **0.002** |
| | >10 years | 56 | 27.73 | 2.99 | | |

Table 5.11 reveals that there are significant differences in PMEB and PMEC values. As shown in bold, the significance is less than 0.05 for PMEC for those who had been in the organization for </=10 years compared to those who had been in the organization for more than 10 years. Inferring that the longer people spend in the UAE oil and gas organisation, the lower their confidence in purchase classification and effectiveness of purchasing strategies. These two variables i.e. purchase classifications and effectiveness of purchasing strategies are influenced by years people spend in the organisation especially in the UAE oil and gas sector.

This section concludes presentation of all the findings for PCM and PME. Both sections 5.3 and 5.4 have revealed information peculiar to ADNOC beyond the generic information examined in Chapter three. The implications of these findings are further explained in relation to the research variables.

## 5.5 INTERPRETATION OF FINDINGS

This section interprets the findings presented earlier in this chapter. Since there is no disputing that the questions measured the construct it aimed to measure, the findings are accepted as valid. To this end, the findings presented in this chapter are interpreted as valid outcomes and results with implications for procurement supplier relationship in ADNOC. However, areas where there is significant support for a position or variable are interpreted in this section. The focus of interpretations is on variables and questions that received the

highest percentage from both supply and non-supply chain respondents or on those where views vary significantly between both types of respondents.

### 5.5.1 IMPLICATION OF FINDINGS

There were distinct findings for PCM (consumable and minor items) which is also Tier B suppliers. These findings are worth interpreting and discussing. For instance, there was significant difference between mean score for buyer relationship between those in non-supply chain and those in supply chain departments when responding to PCMA as seen in Table 5.12.

*Table 5.12: Differing views on buyer supplier relationship in ADNOC*

| | **dept recode** | **N** | **Mean** | **Std. Deviation** | **T-Test** | **Significance** |
|---|---|---|---|---|---|---|
| PCMA total | Non- supply chain | 86 | 24.27 | 3.53 | -2.59 | **0.011** |
| | Supply chain | 30 | 26.23 | 3.70 | | |

The respondents considered PCMA1, PCMA4 and PCMA3 (in that order) as most reflective of the status of supplier relationship in ADNOC. These three tested for exploit and balanced buyer supplier strategic positioning. While supply chain considered exploit more prevalent in ADNOC, non-supply chain respondents believe the relationship is balanced. These varied views indicate a significant difference of views and opinions. The classification of items that fall within these supplier relationships are leverage items (exploit) and strategic and non-critical items which are balanced or have mutual dependence respectively.

While these three items are non-detrimental to the buyer (Hesping and Schiele, 2016), they have different levels of profit impacts and supply risk (Sepehri, 2013). For instance, leverage items have high profit impact and low supply risk; strategic items have high profit impact and high supply risk; while non-critical items have low profit impact and low supply risk (Kraljic, 1983; Tangpong et al., 2015).

The implication of this finding is that while ADNOC may have good supplier relationships because of evidence of its dominance and balanced power dynamics through leverage,

strategic and non-critical items, the profit impact and supply risks of these items need to be carefully considered in order to enhance the relationship.

The findings for PCMB which relates to purchase classification peculiar to ADNOC generated results that both corresponds with and conflicts with findings for PCMA. For example, PCMB2, PCMB6 and PCMB8 had the highest percentage in descending order. These questions tested for presence of strategic items, bottleneck items and noncritical items respectively. While both PCMB2 and PCMB8 aligns with findings interpreted in PCMA, the evidence of bottleneck items is significant finding which conflicts it. Respondents confirmed that there are dominant suppliers and that risks and challenges are associated with most items procured. This further allure to ADNOC procuring significant bottleneck items which were undetected in PCMA.

Though PCMA is not designed to test for purchase classification, it reveals possibility of limited knowledge in ADNOC of the relationship between supplier relationships and strategies as well as purchase classification. Limited knowledge may also create barriers in understanding the consequences of having significant bottleneck items without influencing the buyer supplier relationship in more favourable terms for the long-term. Bottleneck items have low profit impact and high supply risk (Kraljic, 1983). They result in supplier dominance, low interdependence and limited involvement between buyer and supplier (Tangpong et al., 2015). While having the upper hand may be beneficial to the supplier, it is not beneficial for relationship building between both parties since there is limited involvement between them for procurement.

The interpretation of this finding is that having significant bottleneck items hinders any form of relationship from occurring between buyer and supplier in the immediate and long term. Without a relationship, there is no supplier relationship to improve or enhance. Lastly, high supply risk and supplier dominance may be detrimental for the organisation.

Respondents were more in agreement about PCMC6, PCMC7 and PCMC4 in terms of effectiveness of purchasing strategies. PCMC questions focused on testing purchasing strategies effectiveness. Where PCMC6 tested for bottleneck items with supplier dominance, PCMC7 tested for routine or noncritical items with mutual dependence and PCMC4 tested

for leverage items with buyer dominance. Interpretation of this results is that respondents (both supply chain and non-supply chain) consider bottleneck items more bottleneck items with supplier dominance as the most effective purchasing strategy in ADNOC. This is followed by mutual dependence of routine items and lastly leverage items which are reflect buyer dominance.

Should this be the actual reflection of the status in ADNOC, the implication of this finding is that the effective purchasing strategies in ADNOC is not favourable to the organisation, rather to their disadvantage since suppliers have dominance in their purchasing process. Though this finding corresponds with part of the information assessed in Chapter three, it was envisaged that the findings specific to ADNOC would reveal procurement process that is more balanced, of mutual dependence or buyer dominance. Therefore, the implication of this finding is that due to;

- Diversify (supplier dominance) in the relationship in bottleneck items, buyers have to assess the risks of not having the products and how to mitigate these (Kraljic, 1983; Caniëls and Gelderman, 2007; Tangpong et al., 2015). ADNOC would need to continuously find ways to provide contingency planning as identified already in findings for PCMB which then comes at higher cost to the ADNOC.
- Non-critical (mutual dependence) in the relationship with routine items, buyers tend to incur more administrative and logistics costs because of the frequency of procurement from many different suppliers (Montgomery et al., 2017). Though there are few commercial or technical challenges (Hesping and Schiele, 2016), and power is balanced, total interdependence is low (Kraljic, 1983; Hesping and Schiele, 2016).
- Exploit (dominance of buyers) in the relationship with leverage items, interdependence of buyer-supplier relationship is lower than strategic item, higher than the bottleneck items and mutual in routine items (Hesping and Schiele, 2016).

Therefore, the dominance (exploit) relationship strategy may enhance the current position of supplier relationship in ADNOC. This relationship strategy and strategic positioning may need to be improved to reduce supplier dominance from bottleneck items and maintain the balance generated from routine items.

Overall findings for PCM discussed thus far reveal new findings and contribution to knowledge. However, another major finding is the influencing factor that may impact supplier strategies which was identified in the course of this inquiry. Table 5.7 indicate that there were differences in the mean scores for PCMB, PMEB and PMEC for those who had been in the organisation for</=10 years compared to those who had been in the organization for more than 10 years. This finding indicates that years of experience in an organisation influences purchasing classification and supplier relationship. Of all the influencing factors on supplier relationship examined in literature, none covered the impact of employee years of experience as a potential internal factor. It appears this factor plays a key role in influencing supplier relationship in ADNOC which is discussed later in this chapter.

### 5.5.2 IMPLICATION OF PME FINDINGS

Findings for PME also presented some distinct findings. PME is about major equipment which are items mostly provided by Tier A suppliers. The distinct findings are interpreted as done for PCM, though the percentages and frequencies were not as high as PCM. The respondents considered PMEA5, PMEA2 and PMEA6 (in that order) as the status of supplier relationship for major equipment in ADNOC. These three tested for diversify and exploit. Double confirmation for diversify with PMEA5 and PMEA6, which appears diversify is more prevalence in ADNOC for major equipment purchase. Unlike PCM, the views on this did not vary between supply chain and non-supply chain as all respondents were quite decisive recording the high percentage and frequencies for the two questions on diversify.

The classification of items that fall within diversify are bottlenecks items (supplier dominance) and that of exploit are leverage items (buyer dominance). It appears that for major equipment purchase, the views and assessment are straightforward as either supplier dominance or buyer dominance. The implication of this findings is that leverage items have high profit impact and low supply risk, while for bottlenecks items, buyers have to assess the risks of not having the products and how to mitigate these (Kraljic, 1983; Tangpong et al., 2015). Furthermore, ADNOC may have good supplier relationships because of evidence of its buyer dominance which is not the most prominent at the moment in the organisation, but the prominent supplier dominance from bottlenecks items may truncate any positive aspect of their supplier relationship emerging from buyer dominance.

The findings for PMEB which relates to purchase classification for procurement of major equipment in ADNOC. PMEB3, PMEB2 and PMEB6 had the highest individual percentage and frequencies. These questions tested for leverage, strategic, and bottlenecks items respectively. Evidence of both leverage and bottlenecks were already identified in test for PMEA as a significant two extremes. However, for the actual test for purchase classification that most dominant in this variable, leverage items are considered with the most dominant strategic positioning in ADNOC for major equipment purchase.

Though with mutual dependence and balanced relationship between buyer and supplier, strategic items are still known to have high supply risk despite its high profit impact (Kraljic, 1983; Tangpong et al., 2015). Therefore, buyer dominance (exploit) relationship is the most prominent PMEB classification. The result shows supplier dominance and mutually dependent strategic partnership are present. Despite the evidence of mutual dependence, it is still possible that bottleneck items may still end up creating supplier dominance which may creep up to more prominent position.

Respondents indicated that PMEC1, PMEC5 and PMEC7 are the variables that best reflect the purchasing strategies that most effective in ADNOC. Both PMEC1 and PMEC5 have the same percentage number and frequencies. PMEC1 test for strategic items, PMEC1 for bottleneck items and PMEC7 for routine items. The interpretation of this is that there are evidences of balanced and diversify power are at same level in ADNOC, while mutual dependence may be hindering the process of either of the two. Whatever the case is, it can be interpreted that no purchasing strategy and classification is more effective than the other.

There are two classification; balanced and diversify, both are considered equally effective or there is neutral purchasing strategy in ADNOC especially in relation to procurement of major equipment. Therefore, the implication of this finding is that due to;

- Balanced relationship resulting from strategic items procurement, any risk associated with this relationship can be resolved through the strategic partnerships that are formed by buyers and suppliers (Kraljic, 1983; Caniëls and Gelderman, 2007; Tangpong et al., 2015). This is possible because they are mutually dependent on one another (Tangpong et al., 2015).

- Diversify that emanates from bottlenecks items, buyers are exposed to risks because supplier has dominance (Kraljic, 1983). This makes ADNOC responsible for assessing risks of not having a product / service should the supplier fail to supply.

Triangulating data for both balanced relationship and dominance supplier relationship indicate that both balanced and diversify relationship cannot operate at similar level of effectiveness for the same product. If they are at similar level, then they are both driven by market strength and at very low level without any strength to the organisation as indicated in Figure 2.3 in Chapter Two. Therefore, with similar level of effectiveness associated to both balanced and diversify relationship in ADNOC and both likely to be driven by market analysis and strength, it is rationale to make deductions that no purchasing strategy is effective especially for procurement of major equipment.

Lastly, PME also revealed similar findings as PCM in terms of influencing factors. Table 5.11 shows that years of experience or years spent in an organisation influences both purchase classification and effectiveness of supplier relationship. Unlike PCM which shows influence of years spent on purchase classification, PME shows that years spent in an organisation especially more than 10 years influence supplier relationships as well as effectiveness of purchase classification and effectiveness of major equipment procurement. All findings for PME and PCM are further discussed in the next section to determine the extent the research questions have been answered.

## 5.6 DISCUSSION OF FINDINGS

This section discussed the findings for PME and PCM in relation to the research questions. Information from theoretical explanations of procurement, supplier relationship and purchasing strategies in chapters two and three are triangulated with primary data presented in earlier part of this chapter. The primary data collected in ADNOC set out to answer five questions to enable triangulation with secondary data evaluated in previous chapters on this research topic, aim and objectives.

Question 1: *What type of buyer-supplier relationships exist in the UAE oil and gas sector?*

Literature established that buyer-supplier relationships in UAE oil and gas sector may be explained using network theory (NT) based on the characteristics assessed in chapter three. Chicksand et al. (2012) explained that NT helps to improve operational efficiency, build trust and cooperation. Using nodes to connect buyer and suppliers (Wu et al. 2010), the type of buyer suppliers that exist in ADNOC which were assessed in this study is categorised into two; Tier A (procurement of major equipment) and Tier B (procurement of consumables and minor items). Supplier relationship of these two tiers are assessed in this study. Applying the buyer-supplier triad by Wu et al. (2010), this can be represented as:

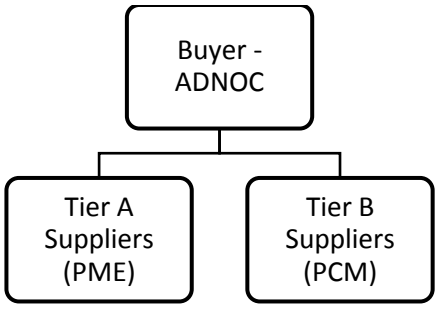


*Figure 5.1: Buyer-supplier triad for ADNOC (adapted from Wu et al. 2010).*

The suppliers are not connected in Figure 5.1 as suggested by Wu et al. (2010) because no evidence existed of relationships between suppliers, just between Tier A suppliers and the buyer and vice versa for Tier B. Due to this triad arrangements, the buyer-supplier in ADNOC is centralised, with decisions resting with the head or regional offices where senior management determine suppliers and what is bought (Dubois and Pedersen, 2002). This is further supported by the respondents being from both supply chain and non-supply chain department of ADNOC. However, this relationship type is not without its limitations as it sacrifices the capabilities of individual supply markets and consumption patterns that may result in suboptimal buys for branches and poor satisfaction (Boehmke et al. 2017). The findings also revealed that the buyer-supplier relationships that exists between these two tiers are different.

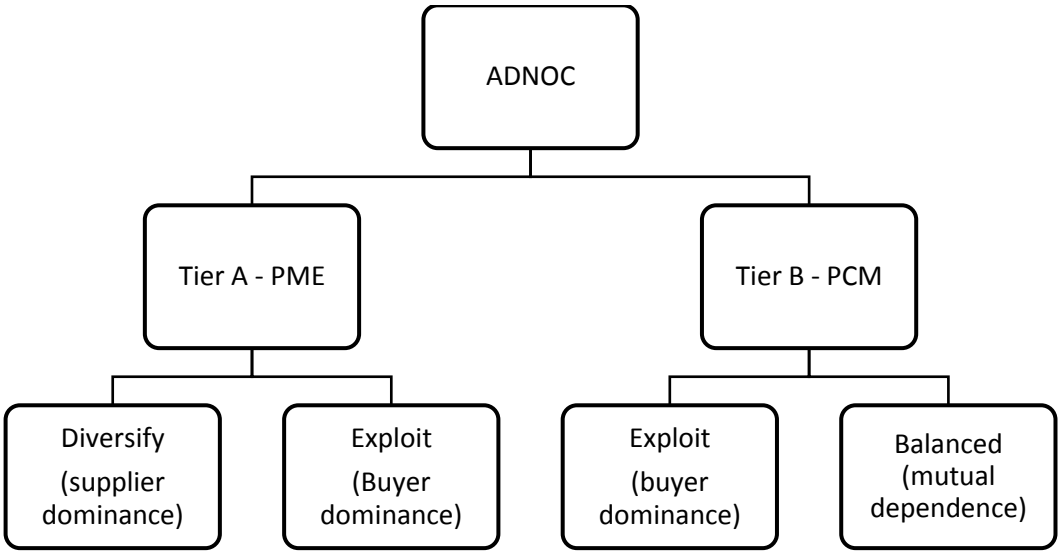


*Figure 5.2: Buyer-supplier relationship types triad for ADNOC*

Therefore, the type of buyer-supplier relationships that exist in ADNOC (UAE) are diversify and exploit for Tier A suppliers and explore and balanced for Tier B suppliers.

Question 2: *What purchase classification best explains the current status of procurement in ADNOC?*

The process for answering question 1 has helped to answer this question. Centralised purchasing strategy best explains the current status of procurement in ADNOC as explained by Rozemeijer et al (2003) and Gelderman and Semeijn (2006). Centralised is used to manage purchasing activities with Tiers A and B suppliers who have varied relationship types. However, the prevalent purchase classification that best explains current status of procurement in ADNOC differ for each tier. Leverage and strategic items best explain the purchase classification for tier A (PMEB), and strategic and bottlenecks items best explain purchase classifications for tier B in ADNOC (PCMB)

Question 3: *Which purchasing classification and supplier relationship are most effective in ADNOC?*

This question generated different answers for each tier. Tier A indicated balanced and diversify purchasing strategy and power dynamics were both effective in ADNOC.

Deductions were made based on triangulation that to indicate that both could not operate without risks to the other, hence no strategy is noted to be more effective. For tier B, diversify, non-critical and exploit classifications and their corresponding strategies were identified as effective. However, based on the highest percentage from the respondents, diversify classification and supplier dominance relationship type appears to be more effective for PCM items.

Question 4: *What factors influence supplier relationship in ADNOC?*

Years of experience of employees especially when longer than 10 years in an organisation is identified as a factor that influences PME and PCM. For PME years of experience influences both purchase classification and effectiveness of supplier relationship, while in PCM it influences only purchase classification.

Findings presented in this chapter are summarised in Table 5.13.

*Table 5.13 Summary of findings*

| | **Tier A** | **Tier B** |
|---|---|---|
| **Supplier Relationship types** | Diversify (supplier dominance) | Exploit (buyer dominance) |
| | Exploit (buyer dominance) | Balanced (mutual dependence) |
| **Purchase Classification** | Leverage | Strategic items |
| | Strategic | Bottlenecks items |
| **Effective strategy** | NONE (*Balanced & diversify were same*) | Diversify, non-critical and exploit |

Table 5.13 outlines the key findings for each variable tested and research questions. As noticed in the table, some elements are enhancing while some are major barriers to healthy relationships. Therefore, it is recommended that a model that may enhance supplier relationships in ADNOC and wider UAE oil and gas sector need to eliminate all elements that may hinder good supplier relationship. A model that reflects all enhancing component of Table 5.13 is presented and explained in the next and conclusion chapter.

## 5.7 CHAPTER SUMMARY

This chapter presented the findings from primary data collected in the UAE from ADNOC. It is significant for scholarship because it is the chapter that outlines, interprets and discusses original contribution to knowledge and those that challenges existing scholarship in the field of procurement and supplier relationship. The demographic information has been critical in this study. First, it provided information that indicated good engagement with the online survey and that respondents were capable of understanding the question based on their number of years in the organisation and sector.

Second, demographic information on years of experience of respondents further proved useful beyond representative digits as an influencing factor on supplier relationships especially in the determining the purchase classification (PCM and PME) and effectiveness of purchase strategy (PME). Overall, this chapter has moved this study towards completion by ensuring that all research questions generated from the literature review are answered in the most objective and valid way. The test for validity and reliability enabled the outcome arrived at in this chapter, triangulation also aided the process and results presented in the latter part of this chapter.

Identifying the type of buyer-supplier relationships that exist in UAE especially in ADNOC is significant for answering other research questions. Questions which relate to supplier relationships, purchase classification that best explains the current status of procurement relationship in ADNOC and effectiveness of classification and relationships are quite significant contribution to scholarship. Therefore, the being able to document this chapter has helped to achieve three research objectives and to help generate information that can help with achieving the last objective. The next chapter which concludes this thesis provides other recommendations in addition to the model for enhancing supplier relationships in ADNOC and in the UAE oil and gas sector in general.

# CHAPTER 6:

# CONCLUSION AND RECOMMENDATIONS

## 6.1 OVERVIEW OF FINDINGS

This chapter concludes the study which has investigated buyer-supplier relationships, purchasing strategies and classification that support good supplier relationship as well as factors influencing buyer-supplier relationships. Findings presented (summarised in Table 5.13), interpreted and discussed in the last chapter show that within the UAE especially in the case study organisation, both diversify and exploit relationship types exist in the UAE oil and gas sector. In fact, discussion indicate that these two supplier relationship types where either the supplier dominants the relationship or the buyer dominates, are the most prominent relationship types in the sector.

Although discussions of findings further revealed that balanced relationship where there is mutual dependence often exist with certain consumable and minor items procurement is concerned, all over two types of relationship types tend to dictate the nature of procurement in the oil and gas sector. However, purchase classification does not necessarily correspond with the relationship types as it appears from findings that strategic items classification is more prevalent for major equipment and minor items procurements. Strategic items lead to mutual dependence, high total interdependence and balanced relationship between buyer and supplier (Kraljic, 1983; Tangpong et al., 2015). It is peculiar to identify that the prominent relationship types in the sector and ADNOC does not quite reflect the preferred purchase classification operating in the organisation.

Perhaps this may have accounted for why it was difficult for the respondents to determine the most effective strategy operating in ADNOC with mutually beneficial relationship and supplier dominant relationship operating parallel to each other in the organisation. Recommendations are provided later in this chapter to address this issue, but it can be deducted from the findings that buyer dominance is not the most prominent relationship type nor is the current purchasing classification and strategy favourable to ADNOC in the

immediate and long-term. The next section outlined the research results that informed this conclusion, and justification for recommendations provided later in this chapter.

## 6.2 SIGNIFICANT RESEARCH OUTCOMES

The rationale of this study to investigate and assess supplier relationships and identify influencing factors that impact the relationship have been motivated by problems identified by the researcher. Problems such as prolonged transaction process, minimal use of support systems and platforms as well as inconsistency with procured items all pointed to supplier relationship issues (Li and Shao, 2015; van Weele and van Raaij, 2014; Laeequddin et al. 2012). Li and Shao (2015) related prolonged procurement process to challenges with managing and sustaining supplier relationship. Laeequddin et al. (2012) explained inconsistency as part of supplier relationship problems, procurement and sales performance difficulties.

Minimal use of support system, ICT and other platforms for conducting procurement is considered as trust in such systems, and need to engage with suppliers directly to ensure prompt and satisfactory procurement which is often impossible to achieve through ICT (van Weele and van Raaij, 2014). Associating different problems to supplier relationship does not only emphasize the need for good supplier relationship, but inquiry into why current supplier relationship fails to prevent or minimize problems that motivated this study. Therefore, this section examines the research objectives to determine the extent to which they provided explanations for existing problems, solutions and measures to take by ADNOC and UAE oil and gas to enhance supplier relationships in the country.

### 6.2.1 SUPPLIER RELATIONSHIP

This subsection outlines the key results from objective one. Objective one which is; '*to identify and review buyer-supplier relationship types and strategies*' offered guidance for this study. For instance, literature revealed that supplier relationship may be understood through different theories, but network theory was selected as the most appropriate. This is because network theory includes buyer-supplier contracts and is applicable to procurement

which entails informal inter-organisational relationships between individuals; affiliations and mutual connections (Chicksand et al., 2012). The link between buyer and supplier is established and explained through a dyad which consists of two nodes (tiers A and B) for which the relationship may have different interactions (Wu et al., 2010). Supplier relationship may be categorised as symbiotic, dependence, mutual dependence, interdependence and competitive interdependence, dominance or balanced (Wang et al. 2016).

Certain strategies used by organisations may lead to, or favour power balance, coordination of successful procurement activities and relationship with suppliers. Strategies such as centralised, decentralised, federal and centre-led (Dubois and Pedersen, 2002; Gelderman and Semeijn, 2006; Boehmke et al. 2017) were identified and reviewed in chapter two. Of all these, centre-led is considered more favourable and helps to generate balanced or interdependence relationship through its coordinated strategic decisions and distributed transactional procurement activities (Boehmke et al. 2017). Identifying these relationship types and strategies in literature provided good foundation for examining the possible relationship type that exists in the UAE oil and gas and in ADNOC which is the case study.

In UAE and ADNOC, diversify (supplier dominance), exploit (buyer dominance) and balanced were identified as the supplier relationship types that exist. These three relationship types were identified from two tiers of supplier types, and exploit was common in both tiers. However, centralised was identified as the strategy used which often does not result in buyer dominance, hence the rationale for three types of supplier relationship types existing in ADNOC. Though a contribution to knowledge, it further appears that a combination of three supplier relationship types coexisting in an organisation influences its purchase classification and inability to determine the most effective strategy used by the organisation for procurement of its strategic or major items. A potential contribution to knowledge and perhaps learning for the organisation. The next section covers the results that informed this assertion.

### 6.2.2 PURCHASING CLASSIFICATION AND STRATEGIES

Another major result is recorded for purchasing classification and strategies. Objectives two and three findings contributed to the major result recorded here especially in UAE context. Objective two; '*to critically examine purchasing strategies and factors that influence supplier relationships*' enabled the researcher to identify and examine purchasing strategies already identified from objective one. The different types of purchasing strategies such as centralised, centre-led, decentralised and federal led all operation within four types of purchase quadrant (Gelderman and Semeijn, 2006). Kraljic' portfolio model was crucial in examining and understanding the quadrant whose component is determined by either importance of purchasing or complexity of market (Kraljic, 1983; Tangpong et al., 2015; Hesping and Schiele, 2016). Leverage and strategic items are those decided by importance of purchasing, while those considered based on complexity of market are non-critical (routine) and bottleneck items (Kraljic, 1983; Hesping and Schiele, 2016).

In ADNOC, leverage and strategic items were identified for major equipment procurement, and strategic and bottleneck items were identified for consumables and minor item procurements. All four were examined though leverage was identified by the respondents from ADNOC as the main classification for major equipment and strategic as the classification for consumable items. More significant result for this objective is the latter part which required confirmation of factors influencing purchase classification and supplier relationship. Literature specified four factors, namely; market analysis, strategic positioning, action plans and impact of culture (Tangpong et al. 2015; Gangurde and Chavan, 2016). But primary data from ADNOC revealed that employee's years of experience in the organisation influenced both purchase classification and effectiveness of supplier strategies.

Findings further revealed that spending more than 10 years working in an organisation influences purchase classification for consumable and minor item procurement (PCM). Years of experiences influences major equipment procurement (PME) in two ways; purchase classification and effectiveness of strategies. Perhaps this accounts for the inability to determine the most effective strategy for major equipment purchase as required for objective three.

Objective three; '*to evaluate the effectiveness of current classification and supplier relationships in the UAE oil and gas organisation*' was achieved through two research questions. Diversify, non-critical and exploit purchase classification were identified as the most effective strategies for consumable and minor items, while diversity is the identified by the respondents as the most effective of them all for this tier. It implies that supplier dominance is considered as the most effective for this category, which is not a favourable relationship for ADNOC. If years of experience influences the classification for their tier of supplier, then there is high level of risks for ADNOC.

As explained by Kraljic (1983), Caniëls and Gelderman (2007) and Tangpong et al. (2015), buyers have to assess risks of not having products and how to mitigate the risks. However, if this condition is internally generated through the influence of years of experience, then the organisation need to apply internal measures to prevent the influence. Sepehri (2013) who examined the petrochemical organisation also warmed against supplier dominance in the industry. Though the major finding is not supported in literature anywhere making it a major contribution to knowledge, advancing current scholarship by embarking on internally generated influencing factors of supplier relationship may be worthwhile. This suggestion is included as recommendations later in this chapter.

Another significant finding for this objective which was mentioned earlier is that, no strategy was found as effective for tier A suppliers. Tier A suppliers are responsible for major equipment. This classification is considered the organisation's strategic items, and not having any effective strategy in this tier exposes the organisation to some risks both in the immediate and in the future. Therefore, recommendations are provided to address this finding too. The last objective is presented in the next subsection.

### 6.2.3 SUPPLIER RELATIONSHIP MODEL

Objective four is significant in this study because it aims to; "*develop a model that can be adopted to enhance procurement supplier relationships and purchasing strategies in the UAE oil and gas organisations"*. This objective draws on findings from the first three objectives. Through triangulation gaps, major findings and critical information are all brought together to inform the model design. The research results are that buyer-supplier types and strategies in ADNOC are Tiers A and B respectively. Relationship between

ADNOC and the suppliers exists through centralised strategy without interactions between the suppliers nor distributed procurement activities by ADNOC as explained in procurement literature. This is not the most favourable strategy for a buyer and this reflects in the purchasing strategies and internal factor that influences purchase classification and supplier relationships. Supplier relationships most prominent for each supplier tier though favourable for tier B, it could be detrimental for tier A. Though influenced by years of experience of employees, the more effective strategy for tier B is unfavourable to ADNOC while lack of effective strategy for tier A makes the procurement supplier relationship in the organisation critical. Therefore, a supplier relationship model that does the following is necessary:

- addresses the lack of effective strategy in Tier A;
- improves the prevalent supplier dominance (diversify) in Tier A;
- improves the most effective strategy in Tier B from diversify to exploit;
- enhances strategic items in Tier B to leverage relationship status.
- introduces control measures to minimise the influence of employees with over 10 years working experience on procurement decision regarding Tiers A and B.

This model is necessary for ADNOC and any other oil and gas organisation with similar supplier relationship status. The supplier relationship model aims to enhance supplier relationship over a period of time. In the immediate however, it is important that an initial assessment is conducted within an organisation to ascertain how staff with over 10 years of experience are able to influence procurement relationship. It is important to verify whether the influence is merely as a result of decision-making process or deliberate attempt to alter the supplier relationship dynamics to favour preferred suppliers. While this line of inquiry exceeds the scope of this study, it is important to include a 'check and balance' process to check that procurement is not being bias but objective enough to foster beneficial relationship to the organisation. Therefore, Figure 6.1 shows the a 5-stage process which may run concurrently or as a pathway to enhanced supplier relationship.

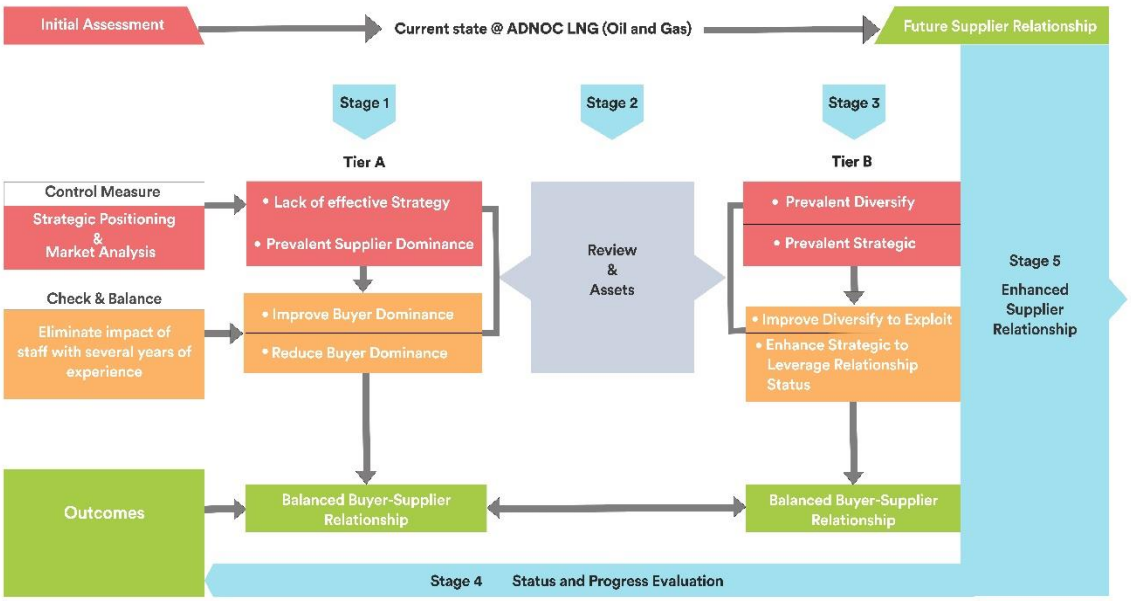


*Figure 6.1: Supplier Relationship Model*

As noticed in Figure 6.1 some texts are in red coloured boxes which imply that they are critical and actions need to be taken to address the current situation or status. Both Tier A and B can be addressed simultaneously since they are different types of procured items. However, the review and assessment would need to be thorough to ensure that balanced buyer-supplier relationship is achieved as an outcome. Arriving at a balanced relationship status as explained in this research is the outcome that would be indicative of how objective the process was. While this is the immediate or medium-term outcome that should be achieved, enhanced supplier relationship becomes the overall long-term outcome when stages 1 -4 are repeatedly conducted.

The primary goal of this model is to improve purchase classification and enhance supplier relationship which is the set-out goal of this study. In addition to this, the observations that motivated this study is now better understood in terms of causes and barriers to having enhanced supplier relationship that may benefit ADNOC and other oil and gas companies

in the immediate and long terms. The next section discusses recommendations that may be necessary to improve current status of things in the organisation and sector in general.

## 6.3 RECOMMENDATIONS FOR POLICY AND PRACTICE

Recommendations provided in this section are based on gaps identified and potential implication of the results herein on policy and practice. Chapter Three details information from the policy document in the UAE which guides procurement activities in government entities in the country. While this document may have set the grounds for operational tasks and risk management in the oil and gas and nuclear unit, it does not cover the potential impact of policy on supplier relationships and how this may generate further risks for the oil and gas companies to manage. Based on research results that stipulate that supplier dominance causes more risks for the buyer to manage, it is important to improve policy document to incorporate supplier relationships that favour buyer dominance or mutual dependence.

Therefore, recommended to review current policy for procurement and tailor it to specific needs of oil and gas sector rather than having generic procurement policy for critical infrastructure industries. It is also recommended that the policy change should influence procurement practice in ADNOC and other oil and gas organisations in the UAE. Policy change in isolation without corresponding it with practice would not alter current status quo. Therefore, it is important to align any policy change with practice to change current behaviour and improve supplier relationship. A roadmap is suggested to aid the process. A roadmap is a way of representing an organisations strategy towards achieving its goals and may vary in content and sequence (Rusey and Salonitis, 2016). This roadmap is simple, comprising of components that can aid the process, leading to enhanced and sustainable supplier relationship. The roadmap includes; strategic actions such as policy review and initial organisational assessment; implementation of the five stages in the supplier model; update policy and procurement process and supplier relationship in the oil and gas sector, as well as re-implement


*Figure 6.2: Roadmap to enhanced Supplier Relationship*

An organisational culture of enhanced supplier relationship is therefore formed as a result of using this roadmap and repeating the process that includes implementation of stages in the supplier relationship model. In this sense, the recommendations for policy and practice are interwoven. This further justifies the need to conduct a review of current policy; i.e. general guidance review discussed in Chapter Three and any internal procurement policy of ADNOC to identify any component to support supplier dominance. Identifying the specific area may inform a rapid policy review which then encourages any change that may be required to address problems identified in this study.

## 6.4 LIMITATIONS OF THE STUDY

Like any research work, this one also presented some challenges that had to be managed. The limitations of this study first came from challenges experienced with data collection (secondary and primary) in the UAE. About three organisations registered interests in participating in this study, but only one eventually participated due to policy change after the research had started. The initial plan to conduct a comparative study became a critical

assessment of an organisation. Benchmarking the supplier relationship in ADNOC against fundamental standards required for buyer-supplier relationship in any organisation proved more beneficial than using the standard of another organisation.

A solution worthwhile, this was called until another limitation resulted from nature of procurement in the oil and gas industry in the UAE where several people are involved in the process called due process. Having supply chain and non-supply chain participating in this study could have been problematic, but later worked well in terms of providing explanations for internal factors influencing procurement.

Timeframe was altered several times to ensure that data is analysed using combination of data analysis techniques explained in the methodology chapter. This was time consuming and demanding process which should not be underestimated by future researchers embarking on procurement related topics that seek understand system, process and strategies and not merely verify them using hypothesis. Due to these limitations, some recommendations are provided in the next section to future researchers and for future research to advance this study area.

## 6.5 RECOMMENDATIONS FOR FUTURE RESEARCH

This study has made significant contribution to knowledge by challenging the current scholarship on factors influencing supplier relationship. But not without its challenges addressed in the previous section. It is recommended that future researchers consider the peculiarity of their topic, policy changes in organisation being researched and how this may impact their topic. Regardless of the challenges and limitation of this study, it is an important piece of work in the supply chain and procurement field. This study has advanced knowledge in this area by acknowledging that factors do influence buyer-supplier relationship in any organisation.

In oil and gas sector, the influence of any of factors both external and internal can be detrimental resulting in high risk for the organisation to manage. As identified through the research results, the case study organisation may benefit from improving its policy and practice that govern procurement and relationships with tiers A and B suppliers going

forward. Future research may want to conduct further study in this area of 'influence of internal factors (strategy, system, staff and structure) on supplier relationships in the oil and gas industry'. Researcher in other field may apply this research result to other public sector organisations that operate its services on several procurements.

Another area for future researchers to consider is 'impact of supplier relationships and purchase classification on coping with external factors and sustainability of operations in the oil and gas sector'. This research did not extend its scope to the area of sustainability, but global economic, conflict and regional crisis have directly and indirectly affected the prices of oil and threats to operations, employment and continuity of services in certain countries. Being able to assess and manage procurement supplier relationship amidst such external uncontrollable conditions is important for the UAE and countries that depend on oil as its revenue.

Other recommendations for future studies may include; impact of organisational culture on supplier relationship types and strategies; effectiveness of purchase classification in sustainability; leadership role in enhancing buyer-supplier relationship types in the UAE. While the researcher is unable to dictate to future researchers the direction to follow, it is envisaged that this research results would inspire interests in this under researched aspect of procurement.

## 6.6 REFLECTION AND RESEARCH CONCLUSION

This research has been a learning process, despite challenges experienced. Conducting a study that involves a multibillion-dollar organisation can be challenging on in its own right, but with my supervisors' guidance, appropriate measures were taken to manage the situation. For instance, data collection process enabled a project management process, in fact the entire study required a project management plan to arrive at this stage where the results in Table 6.1 can be summarised.

*Table 6.1: Overview of research Objectives, Methods and Results*

| Research Objective | Method | Result |
|---|---|---|
| Objective One – Identify and review buyer-supplier relationship types and strategies | Literature review | Symbiotic, interdependence, competitive interdependence, mutual dependence determined through market complexity and importance of purchasing |
| Objective Two – Examine purchasing strategies and factors that influence supplier relationships | Secondary and primary data<br>Literature review<br>Online survey | Literature – Strategies: centralised, decentralised, federal-led, centre-led. Supplier relationships: buyer dominance, supplier dominance and balanced.<br>Influencing factors – Market analysis, action plans, strategic positioning and cultural influence.<br>Primary data – Centralised strategy, supplier dominance (tier A) and buyer dominance (Tier B).<br>Strategic positioning, action plans, market analysis and employee years of experience |
| Objective Three – Evaluate the effectiveness of current purchase classification, and supplier relationships in the UAE oil and gas organisation | Secondary and primary data<br>Literature review<br>Online survey | No effective strategy for tier A and diversify (supplier dominance) for tier B. |
| Objective Four – Develop a model that can be adopted to enhance | | A comprehensive model that addresses current problems, improves and enhances status of |

| | | |
|---|---|---|
| procurement supplier relationships and purchasing strategies in the UAE oil and gas organisation | Triangulation of results for objective one, two and three | supplier relationship in ADNOC and other UAE oil and gas organisations |

While the contribution to knowledge have been discussed in this chapter, the entire research process has been a personal learning process. As a researcher and an individual, my communication, writing, time management and interpersonal skills have been improved and shaped by the research milestones and expectations for conducting a quality and objective work that can benefit my sector and country.

It is therefore concluded that beyond the research results, the process required for a successful PhD have been enlightening and one that have helped to achieve the research aim which is to critically assess strategies for enhancing procurement buyer-supplier relationships, and to identify factors influencing current supplier relationship within the UAE oil and gas sector. It is envisaged that the model developed as a result of conducting this study is adopted for enhancing supplier relationship in ADNOC and other oil and gas companies with similar structure, strategy, system and shared values.

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APPENDIX 1 – PARTICIPANT RECRUITMENT LETTER

# Strategies for enhancing supplier relationships and influencing factors in the UAE Oil and Gas Sector

UNIVERSITY OF SOUTHERN QUEENSLAND

*Dear participant,*

I appreciate your support and participation to fill this survey that related to my PhD program, this research objective seeks your experience about studying the Strategies for enhancing supplier relationships in the UAE in Oil and Gas Sector. The estimated time to fill this questionnaire is approximately 10 minutes.

Your responses will be treated as highly confidential and it will be used only for the research purposes without disclosure of the identity of the participants in this survey.

*Kindest Regards*
*Ali Al Hammadi*

USQ Australia - Ethics Approval No. H17REA245
Project Title Strategies for enhancing supplier relationships in the UAE Oil and Gas Sector.
Approval date 14th November 2017
Expiry date 14th November 2020
HREC Decision Approved

The standard conditions of this approval are:
(a) Conduct the project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments made to the proposal required by the HREC
(b) Advise (email: human.ethics@usq.edu.au) immediately of any complaints or other issues in relation to the project which may warrant review of the ethical approval of the project
(c) Make submission for approval of amendments to the approved project before implementing such changes
(d) Provide a 'progress report' for every year of approval
(e) Provide a 'final report' when the project is complete
(f) Advise in writing if the project has been discontinued, using a 'final report'

Yours sincerely,
Dr Mark Emmerson
Ethics Officer
There are 13 questions in this survey

APPENDIX 2 – SAMPLE OF CODED QUESTIONNAIRE

## Questionnaire – Strategies for enhancing supplier relationships and influencing factors in the UAE Oil and Gas Sector

The aim of this survey is to assess strategies used for improving supplier relationships for the procurement within oil and gas in the UAE. It aims to answer the following questions and capture the corresponding variables.

**Section 1**: Demographic information **(DI)**

1. **DI1**

| **NAME (optional):** | |
|---|---|

| | | **Tick** | | **Tick** |
|---|---|---|---|---|
| **Organisation** | ADNOC on-shore | | ADNOC LNG | |
| **Department** | Supply Chain | | Non-Supply Chain | |

2. **DI2** Can you please tick your gender?

| Male | | Female | |
|---|---|---|---|

3. **DI3** What is your age range?

| **18 –25 years** | | **50 – 60 years** | |
|---|---|---|---|
| **26 – 40 years** | | **Over 60 years** | |
| **41 – 50 years** | | | |

4. **DI4** Can you please indicate your years of experience in the Oil and Gas industry?

| **Less than 5 years** | | **16 – 20 years** | |
|---|---|---|---|
| **6 – 10 years** | | **20 – 25 years** | |
| **11 – 15 years** | | **Over 25 years** | |

5. **DI5** Can you please tick your years of experience in your current organisation?

| **0 – 5 years** | | **16 – 20 years** | |
|---|---|---|---|
| **6 – 10 years** | | **20 – 25 years** | |
| **11 – 15 years** | | **Over 25 years** | |

Part 2- **Questions in this part of the survey relates to procurement of consumables and minor items such as stationery, chemicals, printers etc. (PCM)**

The survey scale is:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **A** | **Code** | **Buyer-supplier Relationship** | **1** | **2** | **3** | **4** | **5** |
| 1. | **PCMA1** | As an organisation we have sufficient resources and power available to us now and in the future to select any supplier required to operate and succeed | | | | | |
| 2. | **PCMA2** | As an organisation we require minimal resources and only select suppliers when needed | | | | | |
| 3. | **PCMA3** | Our suppliers depend on us for income and direction in order to complete procurement successfully | | | | | |
| 4. | **PCMA4** | Partnership and collaboration between our organisation and suppliers is strong and leads to successful procurement. | | | | | |
| 5. | **PCMA5** | Our organisation and suppliers collectively decide on price, quality and quantity before placement of the order / agreement | | | | | |
| 6. | **PCMA6** | Procurement is successful without any interactions between our organisation and suppliers | | | | | |
| 7. | **PCMA7** | Suppliers provide what is required by the organisation without consultation with strategic decision makers | | | | | |
| **B** | **Code** | **Purchase Classification** | **1** | **2** | **3** | **4** | **5** |
| 1. | **PCMB1** | Procurement of items / service are critical to the success of the organisation | | | | | |
| 2. | **PCMB2** | Contingency planning and regular risk analysis are needed for most procured items | | | | | |
| 3. | **PCMB3** | Procurement of most items are easy to manage even though they have high importance | | | | | |
| 4. | **PCMB4** | Items can easily be obtained from suppliers | | | | | |
| 5. | **PCMB5** | Procurement of most items used by the organisation is challenging | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6. | **PCMB6** | There are significant risks and challenges associated with procurement of most items because suppliers are dominant in the market | | | | | |
| 7. | **PCMB7** | Most items purchased do not have long-term value and are easy to manage. | | | | | |
| 8. | **PCMB8** | Procurement of most items have high administrative and logistics costs | | | | | |
| **C** | **Code** | **Purchasing Strategies Effectiveness** | **1** | **2** | **3** | **4** | **5** |
| 1. | **PCMC1** | As an organisation we have strategic partnership with our suppliers | | | | | |
| 2. | **PCMC2** | Maintaining strategic partnership with our suppliers is not important nor necessary | | | | | |
| 3. | **PCMC3** | Our organisation manages all procurement price negotiation and uses alternative products where necessary | | | | | |
| 4. | **PCMC4** | We often have to procure at market price or price provided by our suppliers | | | | | |
| 5. | **PCMC5** | The organisation over orders most items as backup plan to have good supply of these items | | | | | |
| 6. | **PCMC6** | We use several suppliers for ensuring continuous supply of all items | | | | | |
| 7. | **PCMC7** | We manage procured items by reducing transaction costs, standardizing products and increasing efficiency of procurement process | | | | | |
| 8. | **PCMC8** | We do not use any strategy to increase efficiency of procurement process | | | | | |

Part 3- **Questions in this part of the survey relates to procurement of major equipment such as OEM etc. (PME)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| **A** | **Code** | **Buyer-supplier Relationship** | **1** | **2** | **3** | **4** | **5** |
| 1. | **PMEA1** | As an organisation we have sufficient resources and power available to us now and in the future to select any supplier required to operate and succeed | | | | | |
| 2. | **PMEA2** | As an organisation we require minimal resources and only select suppliers when needed | | | | | |
| 3. | **PMEA3** | Our suppliers depend on us for income and direction in order to complete procurement successfully | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4. | **PMEA4** | Partnership and collaboration between our organisation and suppliers is strong and leads to successful procurement. | | | | | |
| 5. | **PMEA5** | Our organisation and suppliers collectively decide on price, quality and quantity before placement of the order / agreement | | | | | |
| 6. | **PMEA6** | Procurement is successful without any interactions between our organisation and suppliers | | | | | |
| 7. | **PMEA7** | Suppliers provide what is required by the organisation without consultation with strategic decision makers | | | | | |
| **B** | **Code** | **Purchase Classification** | **1** | **2** | **3** | **4** | **5** |
| 1. | **PMEB1** | Procurement of items / service are critical to the success of the organisation | | | | | |
| 2. | **PMEB2** | Contingency planning and regular risk analysis are needed for most procured items | | | | | |
| 3. | **PMEB3** | Procurement of most items are easy to manage even though they have high importance | | | | | |
| 4. | **PMEB4** | Items can easily be obtained from suppliers | | | | | |
| 5. | **PMEB5** | Procurement of most items used by the organisation is challenging | | | | | |
| 6. | **PMEB6** | There are significant risks and challenges associated with procurement of most items because suppliers are dominant in the market | | | | | |
| 7. | **PMEB7** | Most items purchased do not have long-term value and are easy to manage. | | | | | |
| 8. | **PMEB8** | Procurement of most items have high administrative and logistics costs | | | | | |
| **C** | **Code** | **Purchasing Strategies Effectiveness** | **1** | **2** | **3** | **4** | **5** |
| 1. | **PMEC1** | As an organisation we have strategic partnership with our suppliers | | | | | |
| 2. | **PMEC2** | Maintaining strategic partnership with our suppliers is not important nor necessary | | | | | |
| 3. | **PMEC3** | Our organisation manages all procurement price negotiation and uses alternative products where necessary | | | | | |
| 4. | **PMEC4** | We often have to procure at market price or price provided by our suppliers | | | | | |
| 5. | **PMEC5** | The organisation over orders most items as backup plan to have good supply of these items | | | | | |
| 6. | **PMEC6** | We use several suppliers for ensuring continuous supply of all items | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 7. | **PMEC7** | We manage procured items by reducing transaction costs, standardizing products and increasing efficiency of procurement process | | | | | |
| 8. | **PMEC8** | We do not use any strategy to increase efficiency of procurement process | | | | | |

# APPENDIX 3 – DATA ANALYSIS SUMMARY RESULTS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **A** | **Code** | **Buyer-supplier Relationship** | **1** | **2** | **3** | **4** | **5** |
| 1. | **PCMA1** | As an organization we have sufficient resources and power available to us now and in the future to select any supplier required to operate and succeed | 0 | 5 | 22 | 66 | 23 |
| 2. | **PCMA2** | As an organization we require minimal resources and only select suppliers when needed | 0 | 22 | 33 | 46 | 15 |
| 3. | **PCMA3** | Our suppliers depend on us for income and direction in order to complete procurement successfully | 2 | 9 | 31 | 57 | 17 |
| 4. | **PCMA4** | Partnership and collaboration between our organization and suppliers is strong and leads to successful procurement. | 0 | 4 | 25 | 58 | 29 |
| 5. | **PCMA5** | Our organization and suppliers collectively decide on price, quality and quantity before placement of the order / agreement | 0 | 11 | 27 | 54 | 24 |
| 6. | **PCMA6** | Procurement is successful without any interactions between our organization and suppliers | 14 | 33 | 24 | 39 | 6 |
| 7. | **PCMA7** | Suppliers provide what is required by the organization without consultation with strategic decision makers | 9 | 29 | 33 | 37 | 8 |
| **B** | **Code** | **Purchase Classification** | **1** | **2** | **3** | **4** | **5** |
| 9. | **PCMB1** | Procurement of items / service are critical to the success of the organization | 0 | 6 | 10 | 46 | 46 |
| 10. | **PCMB2** | Contingency planning and regular risk analysis are needed for most procured items | 0 | 5 | 14 | 59 | 30 |
| 11. | **PCMB3** | Procurement of most items are easy to manage even though they have high importance | 1 | 17 | 31 | 50 | 9 |
| 12. | **PCMB4** | Items can easily be obtained from suppliers | 1 | 14 | 38 | 51 | 4 |
| 13. | **PCMB5** | Procurement of most items used by the organization is challenging | 1 | 20 | 32 | 45 | 10 |
| 14. | **PCMB6** | There are significant risks and challenges associated with procurement of most items because suppliers are dominant in the market | 0 | 15 | 33 | 52 | 8 |
| 15. | **PCMB7** | Most items purchased do not have long-term value and are easy to manage. | 1 | 19 | 47 | 35 | 6 |
| 16. | **PCMB8** | Procurement of most items have high administrative and logistics costs | 0 | 8 | 41 | 52 | 7 |
| **C** | **Code** | **Purchasing Strategies Effectiveness** | **1** | **2** | **3** | **4** | **5** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9. | **PCMC1** | As an organization we have strategic partnership with our suppliers | 0 | 1 | 30 | 51 | 16 |
| 10. | **PCMC2** | Maintaining strategic partnership with our suppliers is not important nor necessary | 18 | 38 | 18 | 19 | 5 |
| 11. | **PCMC3** | Our organization manages all procurement price negotiation and uses alternative products where necessary | 1 | 6 | 26 | 50 | 15 |
| 12. | **PCMC4** | We often have to procure at market price or price provided by our suppliers | 0 | 5 | 31 | 52 | 10 |
| 13. | **PCMC5** | The organization over orders most items as backup plan to have good supply of these items | 1 | 22 | 28 | 43 | 4 |
| 14. | **PCMC6** | We use several suppliers for ensuring continuous supply of all items | 0 | 4 | 24 | 57 | 13 |
| 15. | **PCMC7** | We manage procured items by reducing transaction costs, standardizing products and increasing efficiency of procurement process | 0 | 2 | 31 | 54 | 11 |
| 16. | **PCMC8** | We do not use any strategy to increase efficiency of procurement process | 10 | 36 | 33 | 16 | 3 |

Part 3- **Questions in this part of the survey relates to procurement of major equipment such as OEM etc. (PME)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **A** | **Code** | **Buyer-supplier Relationship** | **1** | **2** | **3** | **4** | **5** |
| 8. | **PMEA1** | As an organization we have sufficient resources and power available to us now and in the future to select any supplier required to operate and succeed | 10 | 36 | 33 | 16 | 3 |
| 9. | **PMEA2** | As an organization we require minimal resources and only select suppliers when needed | 0 | 2 | 23 | 48 | 16 |
| 10. | **PMEA3** | Our suppliers depend on us for income and direction in order to complete procurement successfully | 1 | 20 | 30 | 34 | 4 |
| 11. | **PMEA4** | Partnership and collaboration between our organization and suppliers is strong and leads to successful procurement. | 1 | 8 | 28 | 40 | 11 |
| 12. | **PMEA5** | Our organization and suppliers collectively decide on price, quality and quantity before placement of the order / agreement | 0 | 2 | 17 | 49 | 20 |
| 13. | **PMEA6** | Procurement is successful without any interactions between our organization and suppliers | 1 | 8 | 21 | 46 | 12 |
| 14. | **PMEA7** | Suppliers provide what is required by the organization without consultation with strategic decision makers | 13 | 25 | 22 | 24 | 4 |

| B | Code | Purchase Classification | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| 9. | **PMEB1** | Procurement of items / service are critical to the success of the organization | 7 | 23 | 23 | 26 | 9 |
| 10. | **PMEB2** | Contingency planning and regular risk analysis are needed for most procured items | 0 | 3 | 10 | 43 | 28 |
| 11. | **PMEB3** | Procurement of most items are easy to manage even though they have high importance | 0 | 1 | 13 | 50 | 20 |
| 12. | **PMEB4** | Items can easily be obtained from suppliers | 1 | 13 | 30 | 32 | 8 |
| 13. | **PMEB5** | Procurement of most items used by the organization is challenging | 3 | 17 | 31 | 27 | 6 |
| 14. | **PMEB6** | There are significant risks and challenges associated with procurement of most items because suppliers are dominant in the market | 0 | 10 | 28 | 40 | 6 |
| 15. | **PMEB7** | Most items purchased do not have long-term value and are easy to manage. | 0 | 10 | 24 | 36 | 14 |
| 16. | **PMEB8** | Procurement of most items have high administrative and logistics costs | 3 | 19 | 29 | 28 | 5 |
| **C** | **Code** | **Purchasing Strategies Effectiveness** | **1** | **2** | **3** | **4** | **5** |
| 9. | **PMEC1** | As an organization we have strategic partnership with our suppliers | 0 | 4 | 26 | 48 | 6 |
| 10. | **PMEC2** | Maintaining strategic partnership with our suppliers is not important nor necessary | 0 | 1 | 27 | 41 | 11 |
| 11. | **PMEC3** | Our organization manages all procurement price negotiation and uses alternative products where necessary | 12 | 30 | 17 | 15 | 6 |
| 12. | **PMEC4** | We often have to procure at market price or price provided by our suppliers | 0 | 7 | 22 | 45 | 6 |
| 13. | **PMEC5** | The organization over orders most items as backup plan to have good supply of these items | 0 | 5 | 22 | 48 | 5 |
| 14. | **PMEC6** | We use several suppliers for ensuring continuous supply of all items | 4 | 9 | 29 | 31 | 7 |
| 15. | **PMEC7** | We manage procured items by reducing transaction costs, standardizing products and increasing efficiency of procurement process | 0 | 4 | 21 | 46 | 9 |
| 16. | **PMEC8** | We do not use any strategy to increase efficiency of procurement process | 0 | 3 | 24 | 40 | 13 |