TRUST IN ENGINEERING MANAGEMENT, LEADERSHIP PRACTICES AND THE INFLUENCING ROLE OF NATIONAL CULTURE IN THE SAUDI PETROCHEMICAL SECTOR.

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THESIS SUMMARY

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Trust is understood to be widely associated with a range of positive outcomes and the same is true of transformational leadership practices though the precise nature of the relationship between these two variables is still a matter of debate. Furthermore, with the increasing prevalence of multicultural workforces the influencing effect of national culture in this relationship has also become an important consideration. This thesis reports research examining the relationships between trust, transformational leadership practices and culture in the context of Saudi petrochemical engineering companies with multicultural workforces. Using a mixed methods approach, this research combines a survey study of both leaders and followers at these companies with an interview study aimed at probing deeper into the issues raised by the survey. Survey respondents and interview participants included and compared local Saudis and expatriates from the UK and the USA. The survey included the Leadership Practices Inventory and McAllister's affective/cognitive trust scale.

Among the findings were that employees at Saudi petrochemical firms with multicultural workforces report lower levels of both cognitive and affective trust in their leaders, than the leaders do in their own leaders. Overall trust at these firms is broadly in line with other studies using the same survey instrument. Furthermore, the employees at Saudi petrochemical firms with multicultural workforces report lower levels of transformational leadership practices used by their direct leaders than the leaders report about themselves. The employee/observer scores are also lower than a global database of Leadership Practices Inventory scores. On the trust-culture relationship, for both affective and cognitive forms of trust in leader, high collectivism and high power distance are associated with a statistically significantly higher level of trust. The interview data showed a marked contrast in the nature of the trust with Saudi participants having a more automatic, relationship based 'in-group' form of trust while the expatriates framed it more as an instrumental trust. In evaluating the findings, the thesis considers the relative influences of engineering and national culture upon trust and leadership practices and considers the advantages and disadvantages of multicultural engineering workplaces. The thesis makes important contributions to the understanding of the relationships of interest that are significant for researchers and leadership practitioners in the engineering sector and beyond. The research focus on the Saudi Arabian context is also an important contribution because the study of these relationships in other parts of the world is not matched in Saudi arabia or the wider Middle East.

Keywords: engineering, management, leadership, trust, culture

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Glossary of key terms

Affective trust	Affective trust is an emotion-based trust and arises when individuals express genuine care and concern in trust relationships. It involves a sense of obligation to reciprocate and reinforce emotional bonds between leaders and followers.
Cognitive trust	Cognitive trust is trust based on perceptions of another's reliability and dependability to accomplish a task. It is objective, arising from a rational evaluation based on performance.
Culture	Culture is a pattern of meanings, beliefs and expectations held collectively by a group as that group negotiates life's challenges and the social phenomena it encounters.
Culturally diverse workplaces	A culturally diverse workplace is one in which multiple sets of cultural values are represented among the workforce. Individuals from different cultural backgrounds share common organisational membership.
Engineering	A discipline, profession, and economic sector that uses scientific principles and mathematics to design and build tangible items to satisfy human needs. The discipline of engineering encompasses a broad range of more specialised fields such as electrical, chemical, civil and mechanical engineering.
Individualism-collectivism	A cultural dimension used to describe, measure and compare cultures. An individualist culture is one in which people are viewed as independent and autonomous actors while collectivist culture emphasises group membership.
In-group out-group trust	Contrasting forms of trust. In-group trust is presumptive trust in that assigning trustworthiness on the basis of group membership not personal knowledge. Out-group trust is that extended to people who the trustor does not know or who differ on group-identity characteristics, such as culture, nationality and religion.
Petrochemicals	An umbrella term for those chemicals derived from petroleum. Petrochemicals are used in the manufacture of a vast range of products including, adhesives, pain-relieving pharmaceuticals, paints, plastics, fibres, agrochemicals.
Power distance	This cultural dimension represents the way in which power inequalities are perceived and dealt with in a society. It reflects the degree to which these inequalities are tolerated or expected.
Transformational leadership	A leadership approach that sees leaders acting mutually with their followers, appealing to their basic interests and motivating and inspiring them towards a particular goal.

Chapter 1 FRAMING THE RESEARCH

1.1 Introduction

In its broadest terms, the research reported in this thesis concerns organisational performance and how this is affected by the relationships between the variables trust, culture and leadership practices. It is research of a specific type of organisation: engineering firms in the petrochemical sector, and is set in one country, Saudi Arabia. The aim of this first chapter is to introduce the thesis and the research contained therein. Firstly, an overview of the Saudi engineering sector is presented to familiarise the reader with the setting for the present study. After this, the research problem and rationale for conducting the research is explained. This is followed by presentation of the research aims and objectives clarifying from the outset the researchers desired outcomes and achievements. Continuing the delimitation of the research, the next section declares the particular research questions that will be addressed by the research. The chapter then moves on to consider the ways the research will contribute to understanding of the constructs and relationships studied, particularly where gaps in the existing literature exist. Having explained the aims, objectives, questions and sought contributions the following sections explains in brief how this will be achieved and what actions the researcher will undertake when operationalising the study. Finally, the reader is given an overview of how the rest of the thesis is organised and what the aims of each subsequent chapter are.

1.2 Background to the study

Since before recorded history, mankind has endeavoured to adapt its environment to meet its needs. In its broadest sense this endeavour could be called engineering. Another definition describes engineering as, “the art or science of making practical application of the knowledge of pure sciences, as physics or chemistry, as in the construction of engines, bridges, buildings, mines, ships, and chemical plants” (Dictionary.com, n.d.). This research is conducted within the context of engineering organisations. Engineering is a broad umbrella term under which more specific disciplines are found. These include, but are by no means limited to, electrical, mechanical, civil, aeronautical, chemical, computer and petrochemical engineering. It is this latter type of engineering, petrochemicals, specifically the Saudi petrochemical sector, that forms the context for the research reported in this thesis.

The world’s first oil well was drilled in Pennsylvania in 1859 but it was not for another eighty years that chemicals derived from petroleum were made, driven by needs arising from World War II (Petrochemicals Europe, n.d.). Ever since then petrochemicals have been used in the manufacture of a vast range of products including, adhesives, pain-relieving pharmaceuticals, paints, plastics, fibres, agrochemicals, cosmetics and many more besides (Petrochemicals Europe, n.d.). In the 1930s exploitation of Saudi oil reserves was undertaken by the then wholly American-owned Saudi Aramco. By 1950, recognising the importance of oil for the country's development, the monarch at the time King Abdulaziz, under threat of nationalisation, forced ARAMCO to agree a 50/50 profit split (Saudi Aramco, 2019). By 1976 the Saudi government had acquired all of ARAMCO's assets and from then on it would become the leading player in the Kingdom's oil and gas sector.

Saudi Arabia has been famously described as a nation addicted to oil (Kerr & Raval, 2016). National income data supports this characterisation; in 2016, 79% of exports were accounted for by oil, mineral fuels and distillation products (Trading Economics, 2018). The 2014 slump in global oil prices had exposed how dependent the government budget and the generous programmes, investments and benefits that flowed from it were on this single indicator. The social contract between those ruling the kingdom and its people has depended on these natural resources (De Bel-Air, 2015). The need to diversify the economy has long been understood by Saudi leaders. Already by the 1970s, Saudi ministers were making investments that would reduce the reliance on oil.

1.2.1 The development of the Petrochemical Sector & Saudi Vision 2030

It was Kuwait who opened the first Arab owned petrochemicals plant in the region in 1964, owned by Kuwait Chemical Fertilizer Company. Saudi Arabia then opened the Saudi Arabian Fertilizer Company SAFCO in 1969 and the country would come to dominate petrochemical manufacture in line with its dominant oil production (Kaaki, 2016). Petrochemicals producer Saudi Basic Industries Corp. (SABIC), was established in 1976 to alleviate the country's dependence on oil exports (Richardson, 1999). In 2019, Saudi ARAMCO acquired a 70% stake in SABIC (Saudi Aramco, 2019).

The Sadara Chemical Company was established in 2011 as a joint venture between Saudi Aramco and the Dow Chemical Company. The undertaking represented a US$20 billion investment in 26 manufacturing plants in the kingdom which together comprise the world's largest chemical complex (Sadara, 2019). The complex is located at Jubail on the eastern coast of Saudi Arabia as identified on Figure 1-1 below.

Today's petrochemical sector is characterised by rapidly increasing capacity and output. From 2007 to 2015 the sector's capacity grew from 51.2 million metric tons a year to 93.7 million mt/year – a rise of 83 percent in eight years (Mistry, 2017). As they grew, the industry's leading players are looking beyond Saudi Arabia and the Gulf Region for expansion. For example, SABIC has started making investments in the lucrative Chinese market (Global Times, 2019).

Energy analyst Jean-François Seznec (2017) explains why petrochemicals is one of the most strategically important sectors for Saudi Arabia,

> The Kingdom is taking the cards it has been dealt and is maximizing its natural advantages, namely low-cost energy, substantial mining resources, and plentiful capital. Thus, the industries downstream from oil and mining have become the main potential sources of income, pride, and hope for the economy of Saudi Arabia and those of the rest of the Gulf countries. (p. 2)

It is therefore appropriate that this study of the relationships between national culture, trust and leadership practices is set in Saudi Arabia's petrochemical sector.

1.2.2 Petrochemicals and Vision 2030

Many areas of Saudi life are viewed through the lens of the Saudi Vision 2030. This national strategic document describes the desired forward path of the kingdom and the government's policy framework for achieving this (Saudi Vision 2030, 2016). Analysts have appraised the role of the petrochemical sector in the context of Vision2030 and with diversification away from dependence on oil and gas exports, petrochemicals have been identified as one of the industries most likely to achieve this (Jawada, 2017). Technological innovation and improvements to infrastructure are prominent in Vision 2030 and are expected to boost the petrochemical sector. A direct reference to the sector identifies it as one of seven industries earmarked for focussed support which includes supporting Saudi petrochemical firms such as those identified earlier to gain both regional and international market share (Jawada, 2017). The importance assigned to petrochemicals is also a reflection of global long-term trends concerning demand for crude oil. As nations intensify their efforts to reduce emissions caused by transport and aviation, the petrochemical sector is viewed as the main source of new demand for crude oil in the decades to come (ICIS News, 2018).

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Figure 1-1: Map of Saudi Arabia showing Jubail and Yanbu

1.2.3 Human resources and the petrochemical sector

The diversification of the economy had long been spoken of as a key policy objective but this recent experience intensified government actions in this regard. Alongside and related to diversification was the objective of Saudisation of the Saudi workforce. This policy represented a process of increasing the capacity of the Saudi national workforce and reducing reliance on expatriates. The current Saudisation policy first emerged in 2011 and was known as *Nitaqat*. It started as a mainly voluntary policy but has since been increasingly prescribed. The kingdom had long relied on non-Saudi labour in many sectors of the economy. Of the 13 million-strong workforce in 2018, 76% were non-Saudis (General Authority for Statistics (GAS), 2018). This reliance was a major obstacle to the other objective of economic diversification. When the current overarching national strategic document Saudi Vision 2030 was published in April 2016 diversification and Saudisation were essential components. Promotion of the private sector was also emphasised. The reliance on oil was to be reduced by increasing the non-Oil proportion of exports to 50% (Saudi Vision 2030, 2016).

The Saudi government has recently escalated its measures to reduce reliance this reliance on non-Saudi workers. Ministries and government agencies have been instructed to cease employing non-Saudis by 2020 (Saudi Gazette, 2018). In the engineering sector, from 1st January 2018 there was a significant change made, to the regulations governing expats seeking to take up new assignments in Saudi Arabia. From that date is was no longer permissible to recruit engineers with less than five years' experience in their respective discipline. In addition to this stipulation the expats will need to take a test and attend an interview to establish their capabilities (Saudi Gazette, 2017). One of the reasons for this stringent approach appears to be the widespread use of fake certificates to secure employment (Harper, 2013).

Fees to be paid by both employees and employers were increased to make such employment less financially attractive for both (PwC, 2017). Media reports have suggested a significant effect of these measures with many expatriates leaving the country in 2017 and 2018. Government data showed nearly 700,000 expat workers had returned home between the beginning of 2017 and mid- 2018 (Al-Omran, 2018). The largest groups of expat workers are from Syria (23%), India (14%), Pakistan (10%) and Egypt (10%). These workers are commonly found in low-skilled employment including construction, hospitality and mining (Global Media Insights, 2018). The number of Westerners is approximately 120,000 but this smaller number is still highly significant as they are often found in highly skilled and managerial positions, including in the petrochemical sector (Global Media Insights, 2018). The Saudi Council of Engineers (SCE) reports that there are 1,775 expatriate registers chemical engineers and just 544 Saudis, 2,675 petroleum engineers but just 354 Saudis (SCE, 2014). It is in this high-level policy environment that the petrochemical engineering sector in Saudi Arabia operates. Notwithstanding the concerted government efforts, the engineering sector in Saudi Arabia is likely to feature multinational, multicultural workforces for the foreseeable future, a fact which supports the relevance of and need for the present study. Major Saudi petrochemical companies have become MNCs with substantial interests outside of the kingdom. For example, at SABIC, 36% of the global workforce is outside the MENA region. Of its global workforce only 7.5% are women with presumably a lower proportion in Saudi Arabia than in other regions (SABIC, 2017).

The Saudi Council of Engineers is the leading professional association for engineers in Saudi Arabia being established by Royal Decree in 2002. In June 2019 it reported having a total of 186,556 members of which less than one in five were Saudi citizens (SCE, 2019). While this may seem a low figure, the 2014 Annual Report of the SCE reported that only 6% of registered engineers were Saudis. All expat engineers must register with the SCE. These statistics demonstrate the reliance of Saudi engineering on expat engineers. However, it also reflects a general reliance on non-Saudis across the kingdom's whole workforce.

According to the Industrial Survey for 2017, there are 41 firms employing 250 people or more engaged in the manufacture of chemicals or chemical products. The total number of employees in the sector irrespective of firm size is recorded as 97,460 (GAS, 2017). The Saudi petrochemical industry is concentrated in two large industrial cities, Yanbu and Jubail. Figure 1-1 shows Yanbu on the Red Sea coast while Jubail is located some 1500- kilometre drive away on the Gulf coast. Saudi Arabia Basic Industries Corporation (SABIC) ranks as the second largest petrochemical company in the world (Chepkemoi, 2019) and is based in Riyadh. It currently employs over 35,000 people with operations in 50 countries. Its subsidiary The Saudi Iron and Steel Company operates from Jubail (SABIC, 2019). The 2017 Sustainability Report recorded that 65 percent of employees were from the Middle East and Africa, 15 percent from Europe, 9 percent Asia and 11 percent the Americas. Only 7.2% of the workforce are female (SABIC, 2017).

Saudi Aramco, the kingdom's oil and gas giant, is also now involved in the petrochemical sector through the Sadara Chemical Company, a joint venture between Aramco and U.S. petrochemical company Dow Chemicals. Sadara employs around 4000 people and their main operations are located in Jubail (Sadara, 2018). Aramco are also joint venture partners with the Japanese firm Sumitomo Chemical in the Rabigh Refining and Petrochemical Company which employs approximately 4,000 people and operates mainly in Rabigh on the Red Sea coast south of Yanbu (Petro Rabigh, 2018). Other significant businesses in the Saudi petrochemical sector are: Sipchem with more than 1100 employees and headquartered in Jubail; the Sahara Petrochemical Company (606 employees of which 72% Saudi nationals); Saudi Arabian Fertilizer Company (SAFCO) established in 1965 with its main operations in Jubail; and Saudi Kayan also based in the Jubail Industrial City, founded in 2007. The last two companies are affiliates of SABIC.

1.3 Problem statement and rationale for the research

At the broadest level this research is concerned with the practices of engineering leaders in Saudi Arabia. More specifically, it explores the effect of both culture and trust on the leadership practices of first line engineering managers employed at petrochemical companies in Saudi Arabia. The problem this research addresses is the potential for negative consequences to arise from cultural diversity in engineering workplaces and the need for positive leadership practices to counter this potential and to support a high trust environment. As Laroche (2011) states, "Managerial issues related to cross-cultural differences may yield tense relationships between managers and their direct reports. In these situations, culturally different managers and employees perceive these issues differently" (p. 15). Furthermore, there is also evidence that a well-functioning multi-cultural workforce in a high trust environment can be a major asset in terms of creativity and problem-solving (Aghazadeh, 2004; D'Netto & Sohal, 1999). Understanding how to achieve these benefits is therefore an important endeavour.

The Saudi context is a uniquely important one in that the country is the world's largest exporter of petroleum and approximately half of the country's GDP is derived from the oil industry alone (OPEC, 2016). Petrochemicals, another industrial sector included in this study is another vital industry making a major contribution to the country's export efforts accounting for two-thirds of Saudi Arabia's non-oil exports (McKinsey & Co., 2015). Clearly by focussing petrochemicals this study is taking as its context something of fundamental importance to Saudi Arabia and the wider world. Additionally, capacity within engineering management is vital with an ongoing 'Saudisation' process which aims to replace imported expatriate management with Saudi nationals. The Saudi Council of Engineers (SCE) has reported that in 2018 less than one in five engineers registered in the country were Saudi nationals. This suggests that for the foreseeable future multicultural workplaces are going to be a fact of life in the Saudi petrochemical sector. Hence, research efforts such as the present one, which seeks to understand the relationships between national culture, trust and leadership practices are fully justified.

What we know about this topic from the existing literature is that there is a potential conflict among engineering managers in regards to their leadership practices which arises from the fact that engineers root their career and practice mainly in their technical knowledge and skills and that as such they face a particular set of challenges when called upon to take up leadership roles (Bonasso, 2001; Cassin, 2003; Grasso & Martinelli, 2007; Hill et al., 2013; Pierson, 2013; Mawson, 2001; Russell & Yao, 1997; Vallero, 2008; Wakeman, 1997). We also know that national culture is understood to have an influence on leadership styles whatever the sector (Westwood & Posner, 1997) and that in Islamic countries leadership styles and management practices are influenced by religious values (Hunt & At-Twaijri, 1996; Latifi, 2006).

Turning to trust we know that it is an essential factor in organisational effectiveness and an important predictor of a range of outcomes vital to the success of the organisation (Costigan et al., 1998; Zalabak & Winograd, 2000.; Van Dyne et al., 2000; Aryee et al., 2002). For trust in supervisor we learn from social exchange theory that high trust is associated with a supervisor who is perceived as positive and predictable (Thau et al., 2009) and from empirical studies we know that trust in supervisor positively correlates with the attributes of (a) ability, (b) benevolence, and (c) integrity (Poon, 2006). Furthermore, the concept of two-dimensional trust in the supervisor has also been posited- cognitive trust and affective trust (Wang et al. 2010; Haynie et al., 2010). That this study concerns engineering managers is also significant because such managers face a particular challenge to balance their hard 'technical' skills with soft skills such as those associated with leadership (Farr & Brazil, 2009). These managers are likely to have defined themselves in terms of these technical skills and as middle managers are progressively adjusting to prioritising leadership skills. The absence of trust would have negative consequences for engineering-based organisations such as those included in this study based on the literature this may include lower quality communication, poorer performance, negative citizenship behaviour, weaker problem solving, less individual risk taking, and poorer cooperation (Moye & Henkin, 2006).

In addition to this, in socio-cultural terms Saudi Arabia represents an almost unique case where a combination of tribal traditions and religion firmly shape the national mind-set and individual behaviour including in the workplace (Almutairi et al., 2015). This influence must surely extend to trust relationships and the current study explores this relationship. The Saudi model of expatriate compound living is also different to most countries. The hosting of non-Saudi workers in compounds, largely sealed off from the local culture would seem to reduce assimilation and maintain provide a physical dimension to the cultural differences between the local employees and the expatriates.

In view of the important role Saudi engineering managers have to play in the current and future development of the country's economic capacity, building an understanding of trust relationships in a Saudi organisational context is an important scholarly endeavour. Researchers working in this field have yet to provide empirical evidence concerning the variables of follower trust in leader in relation to engineering middle managers' leadership practices. Furthermore, we do not fully understand the relationships between national culture, trust and leadership practices and there is no empirical evidence available from a Saudi engineering context. This research aims at addressing these gaps by examining the relationships between trust, culture and leadership practices. These gaps have helped inform the research questions presented in the next section.

1.4 Research aims and objectives

The researcher proceeded with this research having set the following objectives:

- To investigate the current leadership practices of engineer supervisors.

- To examine the influence of trust perception of both supervisors and employees in leaders on leadership practices of supervisors.
- To examine the individualism and collectivism effect on trust perception of supervisors and employees.
- To examine the individualism and collectivism effect on leadership practices of supervisors.
- To explore the key characteristics of trust building practices in a culturally diverse workplace that can enable engineers' supervisors to enhance their leadership practices. (Semi-structured interviews).

1.5 Limitations and delimitations

Research endeavour is not an unbounded activity, rather it set within parameters resulting from both limitations and delimitations. This section considers the main parameters of the present research study.

1.5.1 Limitations

All research has limitations, conditions, influences, compromises or shortcomings that are beyond the control of the researcher and which constrain methodological choices and the findings of the study. Some limitations are known from the outset and others can be identified once the research process is completed. They are important to state clearly as they may represent weaknesses within the research. Here the former category is considered, and in the final chapter, all limitations are evaluated.

Preliminary literature searches highlighted that while trust, culture and leadership were thriving research domains, examining the relationships between these concepts specifically in an engineering setting and in the Saudi Arabian context did not feature among existing literature. Although this supported the need for further research, it also meant the researcher needed to consider from scratch how best to approach the research problem and design the study.

Independent organisational research requiring access to employees invariably involves the researcher in working with members of the organisation often HRM staff in seeking permission for the research as a whole and the details of how it will be operationalised. This is often termed the use of gatekeepers (Singh & Wassenar, 2016). For the present research, it was clear that co-operation with gatekeepers would be an important feature of the research design. The research could anticipate that working with gatekeepers while maintaining the independence of the research would be a key feature of the process.

PhD candidates are normally restricted in terms of resources and time, and this too was known from the outset. The main consequences of this were the placing of a limit of the fieldwork period, which in turn restricted the number of interviews conducted.

1.5.2 Delimitations

Delimitations are choices made by the researcher, which are significant enough to be stated from the outset (Theofanidis & Fountouki, 2018). The delimitation process effectively begins as soon as the researcher takes the first step on the journey. Deciding which research problem to investigate represents a delimitation, as do deciding upon the setting and other contextual elements. Researcher delimitation involves evaluations of what is not relevant, not feasible and what is problematic. Delimitation of theoretical concepts to be applied to the research and the development of a conceptual framework also occurs at an early stage. The three main concepts/ variables included in this research are trust, culture and leadership. To this, we can add the additional factor of the engineering setting.

Not all theoretical approaches to trust could be represented in the research design, so one leading approach (McAllistar, 1995) which viewed trust as having two forms – affective and cognitive – was adopted. This approach is supported by a highly reliable instrument, McAllistar's affective-cognitive trust scale. The rationale for this choice is discussed in subsequent chapters.

Similarly, there are several highly regarded national cultural models that are widely used by researchers, including those conducting organisational research. Again, at an early stage a choice was required to identify the most appropriate model for the present study. One model, that of Hostede's cultural dimensions (Hofstede, 1980, 1984), was supported by data collected from each of the country's that would feature in the study, guiding the researcher's choice. Hofstede's model now comprises six cultural dimensions (Hofstede et al., 2010); however, just two of these were used as proxies for national culture – collectivism/individualism and power distance. The reason for this is that they feature strongly in trust and leadership practices literature and they are dimensions of sharp contrast between the nationalities included in the present study.

Regarding leadership and leadership practices further choices were made as to which theoretical approach to take. Regarding leadership theory, transformational leadership was selected due to the leading position it has held over a sustained period and its well-researched association with trust. It was further decided to represent leadership practices using the Leadership Practices Inventory (LPI) (Leadership Challenge, 2018) an extensively used, reliable instrument that was available in the Arabic language.

The engineering dimension differed from the other variables in the research in that a reliable instrument for measuring engineering culture and other aspects of engineering of relevance to the research could not be found. This was part of the reason for the choice of mixed methods which followed the belief that neither quantitative nor qualitative methods would satisfactorily address the research questions when used in isolation.

The research questions, which also act as a delimiting factor as they focus the mind of the researcher on addressing particular pre-identified aspects of the research problem, are presented in the next section.

1.6 Research questions

This thesis reports research on the relationships between trust, national culture and leadership practices in the context of engineering organisations in Saudi Arabia's petrochemical sector. However, for a researcher it is insufficient to merely establish the topic and then set off on the research journey. This is why it is established practice to set one or more research questions. The absence of research questions or poorly framed questions can lead to poor research (Bryman, 2008). The use of research questions applies to quantitative and qualitative research, and indeed to mixed methods studies such as the current one, without them the research can become too open-ended and generate an unmanageable amount of data (Bryman, 2008).

For these reasons, the following research questions inform this research:

RQ1. How does membership of the engineering profession influence issues of culture, trust and leadership

RQ2. How does national culture influence the relationship between trust and leadership practices?

RQ3. What is the influence of trust perception on leadership practices when leading a culturally diverse workforce in Saudi petrochemical companies?

RQ4. How are transformational leadership practices manifest in Saudi petrochemical engineering firms?

RQ5. What are the perceived advantages and challenges of a multicultural engineering workplace?

RQ6. How can Engineering organisations improve leader-follower trust in a multi-cultural workforce?

These questions will inform the research design as the researcher will consider which methodological approach and techniques are most likely to yield both reliable and illuminating answers. Furthermore, when the findings of the present study are evaluated in Chapter Seven, the discussion will be organised according to these questions.

1.7 Significance of the research

Understanding the relationships between culture, trust and leadership practices is an important scholarly endeavour. This is particularly true as globalised industries, including the Saudi petrochemical industry featured in this research, rely on multicultural workforces. Much research endeavour has examined the benefits and potential challenges associated with such workforces with strong evidence for both. Trust and leadership practices, as well as being related, are also understood to be factors in firm performance. The present study aims to add to the substantial literature on these three important concepts.

In terms of significance arising through originality, the context of the present study is notable as an underresearched one. The overwhelming majority of previous work on leadership and trust has been conducted in a western setting. When comparative studies have been undertaken, these have often included comparisons of the U.S. with East Asian countries such as China, Japan and Korea. The current study will be conducted in Saudi Arabia, a country which represents an almost unique case where a combination of tribal traditions and religion firmly shape the individuals' behaviour including in the workplace. Despite efforts to change, the Saudi economy remains highly reliant on non-Saudi workers and multi-cultural workplaces are very common, including in engineering organisations. Among the non-Saudi workers are a significant number of Western engineers who come to their roles from a highly contrasting cultural mileu (mainly the US and the UK). With much engineering work undertaken in collaborative project teams, understanding trust and leadership practices is especially important. In organisations where tasks are complex and technical, trust, including trust towards leaders, is essential for effective functioning in teams. The strategic importance of the petrochemical sector to Saudi Arabia's economic future has already be stated in this chapter, and also adds significance to the study. Saudi Arabia, and its petrochemical engineering sector, is by no means unique in featuring multi-national teams but there has been a considerable reliance on such teams. Understanding the particular dynamics of trust in these teams is, therefore, an important research aim.

To summarise, this research considers the relationships between trust, culture and leadership practices, each well-research fields, whether severally or conjointly. However, the significance of the research derives from the under-researched Saudi context which forms its setting and the addition of a professional culture dimension, specifically that of engineerning.

1.8 Summary of Methodology

The research reported in this thesis applied an explanatory sequential design in which the researcher applied mixed methods. Firstly, a quantitative survey study was conducted using existing instruments to gather data on trust and leadership practices at Saudi petrochemical companies. Two reliable and commonly used instruments, McAllister's trust scale and the Leadership Practices Inventory (LPI) were used in combination in an online survey. At the analysis stage, secondary data from the LPI global observers database and the Hofstede Insights dataset on national cultural dimensions were added. The second phase of the research comprised a qualitative interview study in which the researcher gathered data from eighteen leaders and followers employed in the same companies. The interview study enabled the researcher to clarify and explain the statistical results (Florczak, 2014). The findings of the two research phases are presented in Chapters Five and Six respectively and are then synthesised for the discussion of the research findings in Chapter Seven.

1.9 Structure of the thesis

Including this introductory chapter. the thesis is organised in to eight chapters.

Chapter Two presents the theoretical framework of the research which brings together theoretical constructs which aim to understand and explain trust, leadership and leadership practices and national culture. Each of these is defined based on the existing literature and the main theoretical approaches to each of the are discussed. The chapter ends with presentation of the conceptual framework to be applied to the research findings and a set of theoretical assumptions that will also underpin the research.

Chapter Three presents and discusses the empirical evidence on the relationships of interest and then based on this literature review formulates hypotheses to be tested in the quantitative study. The three concepts of trust, culture and leadership practices examined from a theoretical standpoint in the previous chapter are also the basis for this chapter's organisation. Trust antecedents and outcomes are identified in empirical studies and the different approaches to measuring trust are reviewed. The culture literature covers two proxies for culture – individualism-collectivism and power distance. The leadership content includes a systematic search of studies applying the Leadership Practices Inventory and a review of engineering leadership and leadership in the Saudi context. The chapter ends with the development and presentation of a set of hypotheses to be tested in a quantitative survey.

Chapter Four describes the methods used by the researcher including the rationale behind each choice made. The chapter starts with an explanation of the approach to knowledge the researcher adopted for this research.

Then the rationale for taking a mixed methods approach to the research design and the sequential nature of the research are explained. The chapter then moves on to a detailed explanation of how the research was operationalised, setting out exactly what the researcher did to carry out first the quantitative survey and then the qualitative interview study. The ethical considerations associated with the research are also covered.

Chapter Five presents the results of the quantitative study and tests each of the hypotheses set in Chapter three. First the sample is described statistically and then a series of group statistics and independent samples T-tests are presented to examine the relationships of interest and test the hypotheses first presented at the end of Chapter three. The chapter ends with a summary of the results.

Chapter Six presents the findings of the qualitative interview study conducted once the survey analysis had been completed. First the profiles of the interview participants are given and thereafter the chapter is thematically organised starting with findings related to the engineering profession and the transition to engineering manager. Trust in engineering leaders is the next theme and this is followed by the participants' perception of their or their immediate manager's leadership practices. The final section presents findings related to multi-cultural workplaces. A summary of the main findings completes the chapter**.**

Chapter Seven discusses and evaluates the research. The findings of the two sequential studies are synthesised for the purposes of evaluating the research and situating it within the corpus of existing literature on the relationships of interest. The chapter is organised based on the research questions presented in Chapter One and the discussion addresses these questions. It also makes reference to the theoretical framework developed in Chapter Two. Once again, the chapter is completed with a summary.

Chapter Eight, the final chapter, the researcher presents a summary of the main findings of the research and the contributions it has made empirically, theoretically, methodologically and practically. The limitations of the study are also discussed. Finally, the Chapter ends with two sets of recommendations, first for management practice and then for researchers active in this field of study.

Chapter 2 : THE THEORETICAL FRAMEWORK

2.1 Introduction

The purpose of this second chapter is to propose a theoretical framework in which the present study will be situated. It establishes the basis that has been laid by those working at a theoretical level in the fields of a) trust b) leadership and leadership practices and c) national culture. Of course, where these fields overlap or where theory proposes a relationship between them, this is of particular interest. Empirical studies and other literature applying these theories are not covered as they are deferred until the next chapter.

The chapter begins with trust, defining the construct and then discussing what theory has added to our understanding of it. After this, leadership is considered, focussing the theoretical underpinnings of the leading ways of characterising and measuring leadership, particularly leadership practices. Then, national culture and its influence on individual, organisational and societal behaviours is discussed with the greatest attention given to cultural dimensions theory. Finally, the researcher presents how this chapter and the theories and theoretical constructs within come together to form for a framework for the present research. The purpose of having such a framework and its later application is also explained.

2.2 Theoretical perspectives on trust

Much of the early work on trust focused on trust in interpersonal relations and the role of trust in society as a whole. Psychologists and psychoanalysts viewed trust as a component of a healthy mind and the absence of trust as a source of personal psychological problems. Erikson (1953) introduced the concept of ‘basic trust’ to describe this personality trait. Having this basic trust facilitated healthy family relationships and the development of healthy personalities in children. The importance of trust in society has long been emphasised. Rotter (1967) writing from the perspective of social learning theory exemplified this central role for trust in a properly functioning social organisation,

> One of the most salient factors in the effectiveness of our present complex social organization is the willingness of one or more individuals in a social unit to trust others. The efficiency, adjustment, and even survival of any social group depends upon the presence or absence of such trust. (p.651)

Since these early contributions, the concept of trust has received plentiful and diverse academic interest ranging from economics (e.g. Williamson, 1991), sociology (e.g. Lewis & Weigert, 1985), social psychology (Deutsch, 1973; Lindskold, 1978) and more applied disciplines such as marketing (e.g. Anderson and Weitz, 1989) and, as is the case of the present study, management (Gulati, 1995). Different levels of trust and trust relations have also developed into separate threads in the literature: Individual trust in personal relations (Good, 2000; Larzelere & Huston, 1980); organisational trust (Gilbert & Tang, 1988; Mayer & Davis, 1995); firm to firm trust (Gulati & Sytch, 2008; Zur et al., 2009); consumer trust (Gefen et al., 2003; Ratnasingham, 1998; Gefen, 2000); and trust in leadership (Dirks & Ferrin, 2002; Burke et al., 2004). It is the latter that the present study focuses on. Before examining the main theoretical approaches to trust it is necessary to consider the definitions attributed to this concept.

2.2.1 Defining trust

Anyone setting out to offer examples of definitions of trust could consider the words of Metlay (1999, p. 100) who declared, "…the notion of trust comes in so many flavors, packages, and subspecies that it seems to have been swallowed up in a conceptual quagmire." Notwithstanding this potential for confusion, some main defining themes have emerged.

Rotter (1967) placed emphasis on the reliability of interpersonal communications in his definition of interpersonal trust as "an expectancy held by an individual or a group that the word, promise, verbal or written statement of another individual or group can be relied upon" (p.651). Those conceptualizing trust as a psychological state explain that indicates willingness on behalf of the trustor (the one initiating the trust); Ellis & Shockley-Zalabak, 2001; Hoe, 2007; Perry & Mankin, 2007; Poon, 2006; Six, 2007; Tan & Tan, 2000; Williams, 2005; Wong et al., 2003). Along these lines, Zand (1996) describes it as "a willingness to increase your vulnerability to a person whose behaviour you cannot control in a situation in which your potential benefit is much greater than your potential loss if the other person abuses your vulnerability." It therefore involves a cost-benefit calculation of some kind and does not rely on any form of closeness or affection. Mayer et al. (1995) referred to trust as one party being willing to expose themselves to the consequences of the actions of another party. This willingness is based on a belief that the trusted party will undertake a particular action of importance to the trustor despite the fact that trustor may have no control or supervision of the trustee's actions. Similar to this, Robinson (1996) defined trust as an individual's "expectations, assumptions, or beliefs about the likelihood that another's future actions will be beneficial, favorable, or at least not detrimental to one's interests" (p. 576).

In addition to the 'willingness to rely' characteristic, another key aspect is that of positive expectations (Lewicki et al., 1998; Hagan & Choe, 1998; Das & Teng, 1998). Confident positive expectations are described as "a propensity to attribute virtuous intentions to, and a willingness to act on the basis of another's conduct" (Lewicki et al., 1998, p.439). Trust therefore is widely viewed as a rational choice behaviour based on these two main conditions, willing reliance and positive expectations. Barney and Hansen (1994) note that while trust is a characteristic of a relationship between exchange partners, trustworthiness is something attributable to individual partners in this relationship. To be trustworthy, a party must refrain from exploiting the vulnerabilities of the other party.

Two further aspects of trust that have been proposed in the literature are that trust is modified by time, repeated transactions build trust (Nooteboom, 1996) and trust increases the more trust is used (Hirschmann, 1984).

2.2.2 Theoretical approaches to trust

The range of theoretical approaches to trust can be divided into three groups: rational choice, psychological state and trust as a socio-cultural phenomenon. Each of these are now summarised.

2.2.2.1 Trust as rational action

The trust as rational action group contains two main theories: game theory and transaction cost economics. Game theory is applied to examine the dynamic of trust and lack of trust in the rational decision making of individuals. Perhaps its most well-known example is the 'Prisoners' Dilemma', often used to explain how the theory can be applied (Flood and Dresher, 1950). In this hypothetical game, featuring two individuals being interrogated for a crime and facing choices about cooperating with each other or acting in self-interest, it is shown that acting in self-interest produces a worse outcome than cooperating and yet despite this there is a tendency to act in self-interest (Axelrod, 1984).

Another rational action theory relevant to trust is Transaction Cost Economics (TCE). TCE sees the actors (trustor and trustee) as possessing two basic characteristics. Firstly, there actions are based on bounded rationality (Simon, 1982); bounded because there are limitations on our cognitive abilities, the information available to us and the time we have in which to act. Secondly, we have a natural propensity toward opportunistic behaviour which is the guileful pursuit of self-interest (Girmscheid & Brockmann, 2009). Some TCE proponents argue that the concept of trust has been too widely applied and that in most cases the more appropriate terms to use would be 'calculativeness' and 'risk'. Williamson (1993) further argues that trust should not be used in relations of economic transaction but purely in the domain of personal relationships. Similarly, March and Olsen (1989, p. 27) posit that "When trust is justified by expectations of positive reciprocal consequences, it is simply another version of economic exchange". Other authors writing under the TCE umbrella do promote the value of the construct of trust for economic transactions particularly in regard to understanding opportunistic behaviour in transactions (Zand, 1972; Chiles & McMackin, 1996).

The main critique of the rational action approach is what some see as the unwarranted prominence it gives to human rationality and our desire to continually engage in conscious calculations (Girmscheid & Brockmann, 2009). Boudon (2003) also highlighted the inability of rational action theory to explain the existence of non-commonplace beliefs, actions that are normative but have negative consequences for the actors (i.e. the preponderance of bad choices) or indeed behaviour prompted in the absence of any consequences whatsoever.

2.2.2.2 Trust as a psychological state

The trust as a psychological state perspective is mainly focussed on the processes of thought and feeling of the trustor toward the trustee (Morrow et al., 2004). Mayer et al. (1995) posit that trust should be viewed as a trustor personality trait termed ‘propensity to trust’. Schoorman et al. (2007) propose three factors every trustor considers in making the decision to trust or not - ability, benevolence and integrity. The first antecedent is the evaluation of the trustee’s ability to deliver what is expected and deliver on time. The second describes the extent to which the trustee is minded to do good for the trustor while at the same time pursuing their own self-interest. Thirdly, integrity represents the how likely the trustor thinks it is that the trustee will fulfil their commitments normally based on their track record (Schoorman et al., 2007).

There have also been attempts to understand trust using neuroimaging techniques to analyse brain activity in trust-based interactions finding that trust and distrust activity take place in separate brain areas, as distinct neurological processes. One interesting finding of this work was that distrust appeared to have a more affective emotional basis while trust was cognition based (Dimoka, 2010).

A potential weakness of the psychological state perspective is that it overlooks the significance of the specific context or environment by abstracting the trustor–trustee relationship. With this in mind, an additional approach needs to be considered.

2.2.2.3 Sociological and cultural approach

The rational action and psychological state approaches to trust are universal models designed to be applied irrespective of context. However, a significant body of work has recognised that trust processes and trust relations are influenced by social and cultural factors. As a sociological concept trust features in academic research from the 1960s onwards (Luhmann, 1968; Parsons, 1962).

For Parson's trust plays an important role in his normative open systems theory (Parsons, 1978). For trust to exist a system of shared norms and values must be in place as the basis for solidarity. Luhmann (1968) saw trust as "elementary fact of social life" without which an individual could not get through their day. For example, the traffic system where different actors (pedestrians, drivers, cyclists, police, etc.) interact while aiming for safe arrival at their destination. Traffic signals and road signs act to regulate the system but without having trust in other actors to follow these rules, the traffic would quickly descend into chaos (Girmscheid & Brockmann, 2010). Weber proposed that culture was a producer of social structure and social networks identifying culture as a means of making sense of day-to-day life (cited in Lewis, 2002).

Subsequently, culture was applied to economics and international business by Fukuyama (1995) who argued national cultures were high trust and low trust and that trust itself should be viewed as a cultural dimension. The United States, Germany and Japan, for example, were identified as high trust cultures explaining their economic success. The high trust/low trust dichotomy was subsequently applied to pairs or groups of countries in comparative research studies (Ahmed & Salas, 2008; Reeskens, 2013; Ward et al., 2014). One significant development based on Fukuyama's study was the radius of trust as a means going beyond propensity to trust/ cooperate to analysing who an individual or group would trust/ cooperate with (Reeskens, 2013). Reeskens found that those people self-reporting as 'trustors' were also more tolerant of those who were socially distant from them, through being a cultural minority or people of deviant behaviour, but they tended to withhold this tolerance from people with extreme political views.

Turning to the specific contrasts of interest to the present study, Bohnet et al. (2010) sought to develop understanding of the different nature of trust in Arab countries including Saudi Arabia to that in the United States. Confirming the most commonly agreed assumption on trust in Saudi Arabia, the authors posit that "In the tribal societies of the Middle East, trust interactions overwhelmingly take place within groups" (p. 153). They contrast the approaches take to opportunistic behaviour, or betrayal as they referred to it. In Arab countries the approach is preventative while in the United States it is one of mitigation. The ingroup trust in Arab countries relies on concern for reputation to deter breaches while in the United States formal institutional rules such as contract law, makes trust possible by acting as both a deterrence and a source of restoration (Bohnet et al., 2010).

In addition to trust theory emerging from the perspectives discussed above, another important aspect of the theoretical literature has been the attempts to distinguish different forms of trust. The most important among these are now discussed.

2.2.3 Cognitive and affective trust

McAllister (1995) stated that there are two principal forms of interpersonal trust: affect-based and cognitive-based trust. Cognitive trust is about reliability and dependability. These factors have to be met before a trust relationship can be developed (McAllister, 1995). Cognitive trust concerns the beliefs regarding other's ability and reliability to accomplish a task (Kanawattanachai & Yoo, 2007; Zhu & Akthar, 2013). Cognitive trust is therefore objective, arising from a rational evaluation based on performance (Erdem & Ozen, 2003). The second dimension of trust is affective trust which is emotion-based. Affective trust can be built when individuals express genuine care and concern in trust relationships (McAllister, 1995). It can be seen as a social exchange process and it shows a sense of obligation to reciprocate and reinforce emotional bonds between leaders and followers (Blau, 1964).

McAllister (1995) found evidence that his framework supported the distinction made between the two forms of trust (cognitive and affective), and he argued that each form should be understood. Also, Schaubroeck et al. (2011) stated that both affective and cognitive trust have been independently related to transformational leadership. These studies also explore the impact the two kinds of trust have on each other. McAllister (1995) states that some level of cognitive trust might be necessary for affective trust to develop. Webber (2008) contends that the binary cognitive-affective approach to trust ignores the importance of the time dimension (i.e. that trust develops and changes over time). Webber (2008) argues for research that examines the development of trust at progressive time points. She proposes the concept of 'early trust' as a third form, in place before cognitive and affective trust begin their separate development paths. This early trust may be based on familiarity (previous experiences of working together) or in the absence of this, reputation (Webber, 2008)

2.2.4 Weak, semi-strong and strong forms of trust

Barney and Hansen (1994) advance the idea of three types of trust which they describe as weak, semi-strong and strong. Weak form trust exists mainly as a result of an absence of opportunities for opportunism (of which more later) and where vulnerabilities do not feature prominently. Weak trust is not dependent on the establishment of relationship rules, for example through contracts. In contrast, semi-strong trust can arise in relationships where real vulnerabilities do exist but are closely governed. This governance includes cost sanctions in cases of opportunism which due to their punitive nature mean that it is in the parties' self-interest to act in a trustworthy manner. An example of this self-interest would be preservation of reputation. Finally, in strong trust vulnerabilities are present but opportunism is avoided not through governance but rather internalised codes of behaviour based on commonly held standards and principles. These guiding principles are not developed by the relationship but are brought to the relationship by the partners as a reflection of the organisational culture or indeed through the personal standards of significant individuals (Barney & Hansen, 1994). This kind of individual trustworthiness is likened to post-conventional morality under which standards of behaviour are internalized rather than being adopted to avoid the external costs of non-conformance. Instead the strong trust individual is guided by a desire to avoid internal costs such as guilt or the sense of personal failure (Barney & Hansen, 1994).

2.2.5 In-group out-group trust

A further way to categorise trust into type types is to use the in-group out-group dichotomy. Social psychology literature has long asserted that individuals behave differently to others perceived to be in the same group as them as they do with those outside the group (Brewer, 1979; Tajfel et al., 1979). A lot of this work was based on game theory including the trust game (Berg et al., 1995); however, results are not always aligned. Categorising yourself and others into ingroups and outgroups is a cognitive, affective and behavioural process which can involve comparison, competition and a depersonalisation of self in favour of the ingroup (Yuki et al., 2005). Theory proposes that this group behaviour and cognition is culturally determined. Group-based trust is a presumptive form of trust in that it assigns trustworthiness on the basis of group membership not on the basis of personal knowledge (Brewer, 1981). Moreover, group-based trust arises from the expectation of shared values an expectation derived from a shared national culture but what if there is no shared national culture or indeed what if there are instead highly contrasting cultures? If in-group trust is assumed, then what of trust of out-group members. Using the 'willingness' measure, it is a logical assumption that an individual is more willing to trust another where there is a perception that they share a set of values and norms derived from national culture, including trust in leadership. In a study using World Values Survey data, Delhey and Welzel (2012) found that 95 per cent of respondents across 50 countries trusted ingroup members more than outgroup members.

Not all literature emphasises the pre-eminence of group membership in determining trust behaviour. Hancock and Dunham (2001), for example, argue that individuation is the first point of reference when forming an expectation of reciprocity. In other words, whenever possible expectations are based on the idiosyncratic qualities of the trustee based on the personal experiences and/ or knowledge of the trustor. Only in the absence of this specific evaluation does ingroup membership play a role (Tanis & Postmes, 2005). Individuation cues can be significant even if they are superficial; for example, in Tanis and Postmes, 2005 even names and portrait photographs were important. However, they also found that in the absence of such cues group membership was very influential in predicting trust. This aligns with Postmes et al. (1998) who find that as personal knowledge of the individual reduces, the importance of group membership and social identity increases.

Much of the work on the influence of ingroups and outgroups has focused on East Asian countries such as China and Japan (Yuki et al., 2005; Wang & Yamagishi, 2005) and tends to contrast collectivist cultures with individualist ones. Triandis (1995) saw the existence and nature of ingroups as a key area of contrast between collectivist and individualist cultures. In an individualist culture there is likely to be just one ingroup for an individual to consider (i.e. the immediate family) whereas in a collectivist culture an individual could be a member of multiple ingroups at the same time which may include work colleagues, peers from university, the immediate and extended families, religious (i.e. mosque-based) ingroups etc. This leads to a further contrast whereby in an individualist country values and behaviour towards others tends to be universal but in collectivist societies may differ greatly dependent on whether or not the other person is an ingroup member (Gudykunst & Ting-Toomey, 1988).

The ingroup-outgroup construct is significant to the present study because Saudi Arabia is assumed to have a culture in which the in-group out-group dichotomy is highly prevalent, due to it being a highly collectivist country and also because of the importance of *wasta*, a form of social capital, in Saudi society. It also raises questions relevant to the present study of cross- cultural workplaces where there is clear potential for an ingroup-outgroup effect. Organisation level challenges arising from multi-cultural workforces are clarified by Williams (2001, p. 377) who states "… it is often difficult to develop trust and cooperation across group boundaries, because people frequently perceive individuals from other groups as potential adversaries with conflicting goals, beliefs, or styles of interacting". Empirical studies of ingroup-outgroup trust are reviewed in Chapter Three. The World Values Survey data used by Delhey and Welzel (2012) in their ingroup outgroup study did not include a Saudi subsample; however, as Figure 2-1 shows there were Egyptian, Jordanian and Moroccan subsamples from which we can infer where Saudi Arabia would have been located – in the high ingroup trust, low outgroup trust quadrant.

It should be considered that trust within the ingroup and between leader and follower may not be evenly distributed despite sharing national cultural backgrounds. The existence of *wasta* may support uneven distribution of trust. This contention can be based on studies into the parallel concept of *guanxi* in China. Zhang et al. (2013) defined *guanxi* as,

> … a personal relationship that is driven by personal interests as well as needs to belong, can be built on either relationship by birth or blood (e.g., relatives and neighbors) or through social interactions and acquaintance, is maintained and reinforced through longterm reciprocal exchanges, and can be transferred through a third party as a referral. (p. 660)

Their qualitative study found that supervisors consciously aim to build a guanxi-based relationship with their followers on an individual basis, particularly in the absence of formal institutional support. It is a particulalry significant phenomenon for those with longer service. *Guanxi* is associated with Chinese collectivist settings (Brew and David, 2004). *Guanxi* has been positively associated with firm performance in China and also linked to the country's phenomenal and consistent record of economic growth (Luo, 2000).

It is reasonable to consider that wasta may have a similar role in the Saudi collectivist setting and may be a significant part of in-group trust and a point of difference in multicultural workplaces.

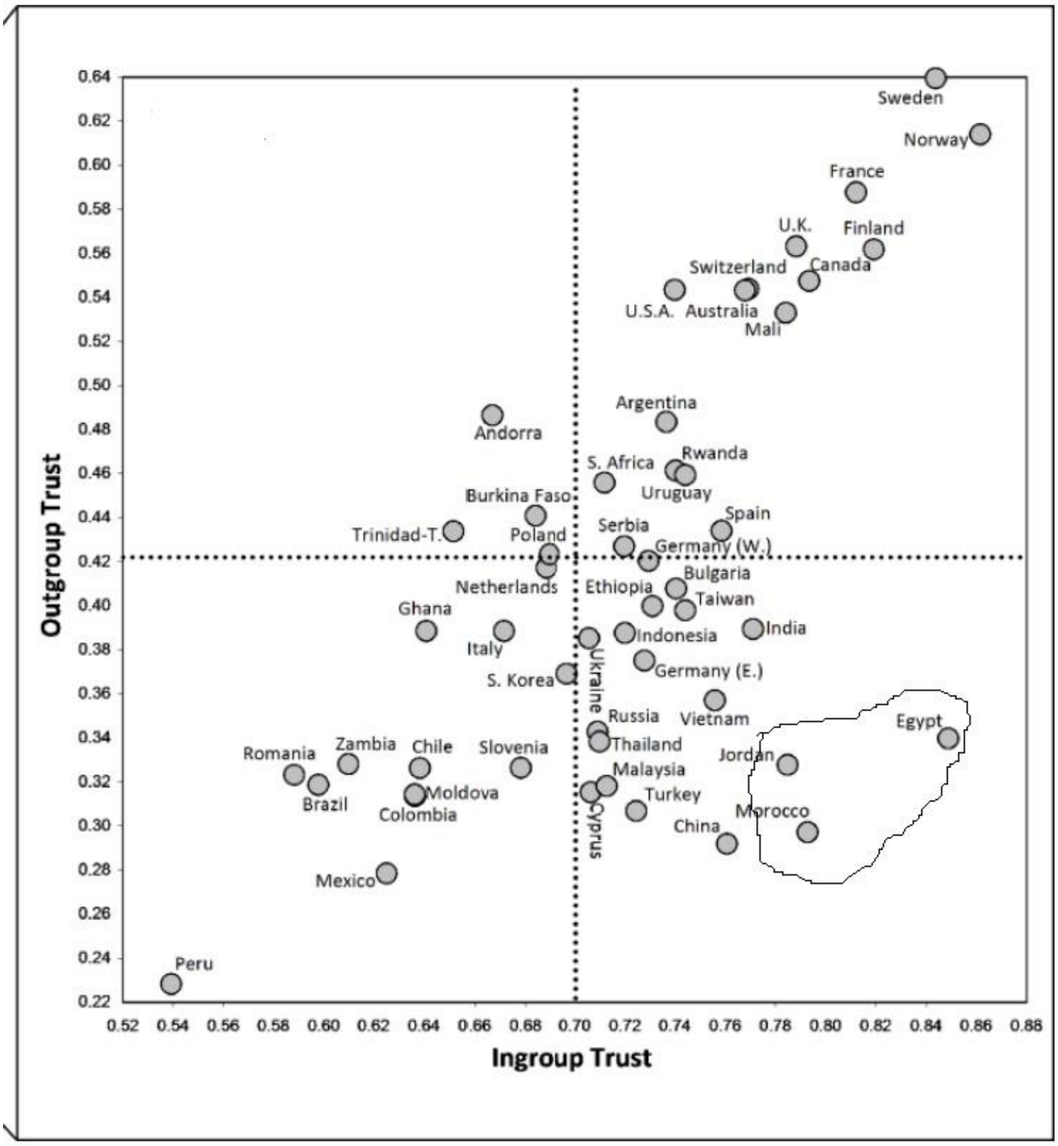

Figure 2-1: Ingroup - outgroup trust by country

Source: Delhey and Welzel, 2012 p.59

Consideration of ingroup-outgroup trust leads to two questions of importance to the present study. Are there ingroups and outgroups within a multicultural workplace such as a Saudi petrochemical firm? And secondly, to what extent is there a professional ingroup of engineers that transcends national culture? Giles and Giles (2012) raise one avenue for exploring this as being the use of language, specifically labels, to identify ingroups and outgroups, making qualitative inquiry a potentially fruitful approach. Is, for example, 'engineer' used as an ingroup label, or 'expat' used as an outgroup identifier? This will be returned to later in the thesis.

2.2.6 Trust and trustworthiness

The present study examines the widely researched concept of trust. However, there is sometimes confusion between trust and trustworthiness so it is important to distinguish between the two. For the purposes of this research, trust is a characteristic or trait exhibited by a truster (Kiyonari et al., 2006) based on their willingness to be be vulnerable to the actions of the trustee (Zand, 1996). Trustworthiness, a trait or characteristic of the trustee, either assigned by trustors or self-assigned, is not measured in this study.

2.2.8 Understanding culture and trust

Trust accompanies exchange in many different forms and empirical evidence such as that reviewed in the following chapter, supports a highly positive influence on outcomes of all kinds. The way trust influences these outcomes and the way in which trust itself is developed within individuals and organisations is understood to be impacted by national culture (Doney et al., 1998). The development of trust is not a uniform, universal process, “whether and how trust is established depend upon the societal norms and values that guide people behaviour and beliefs” (p.601). The “collective programming” of which Hofstede (1980) writes produces different values and norms from one country to the next but whatever the set of informal understandings is, individuals share in common being influenced by them when making trust decisions (Doney et al., 1998).

Yamagishi (2011, p.1) asserted the thesis that “the collectivist society produces security but destroys trust” in justifying his standpoint the author describes such a society as one in which the individual group member cooperates mainly among other in-group members at the expense of out-group members, those people beyond the boundaries of their group. This superficially counterintuitive assertion is based on Yamagishi’s (2011) notion that collectivism removes the need to develop trust but instead provides security within the in-group. If this thesis has merit, then it raises important questions of out-group co-operation such as that which is necessary in multi-cultural organisations and culturally diverse workplaces such as those considered in the present study.

In their attempt to understand differential levels of private investment in Gulf countries compared to the West, Bohnet et al. (2010) propose the differing reference points of trustworthiness as a plausible answer to why private investment is lower in the Gulf. Large scale survey evidence points to major differences between historically Islamic societies and others, particularly the Protestant rooted societies of the West. While these religiously based values may be softening in impact, they are still highly influential (Ingelhart & Welzel, 2005).

It is understood that trust develops and is perceived differently in every culture. According to Bjerke and Al-Meer (1993), interpersonal trust is at the core of Saudi culture. This is reflected in attitudes to contracts and agreements. While the spoken commitment is highly valued, a written contract is seen as just paper without value. This is in great contrast to Western societies where paperwork is seen as appropriate in most situations and verbal agreements are just a prelude to written and signed documentation (Fadol et al. 2013; Yavas, 1994). This contrast clearly has ramifications in the cross-cultural workplace.

As trust theory has developed so has academic interest in outcomes associated with trust or lack of it and also the antecedents of trust. As this work is generally of an empirical nature it is covered in chapter three.

2.3 Cultural theory and measuring culture

2.3.1 Defining culture

A search for definitions of culture amongst the theoretical literature quickly yields plentiful results from multiple disciplines. Defining culture has been pursued as least since the 1870s when English anthropologist, Edmund Tylor, (1958 [1871], p.1) framed it as "…that complex whole which includes knowledge, beliefs, arts, morals, law, customs, and any other capabilities and habits acquired by [a human] as a member of society" (p.1). Indeed, by the middle of the 20th century Kroeber and Kluckholm (1952) had already identified 152 definitions of culture in the literature.

From psychology Hofstede (1991, p.5) refers to culture as "… the collective programming of the mind which distinguishes the members of one group or category of people from another" from the same discipline Bruner (1993, p. 516) calls it "… a way of knowing, of construing the world and others." From anthropology Geertz (1973, p.89) defines culture as "… an historically transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic forms by means of which men communicate, perpetuate, and develop their knowledge about and their attitudes toward life". From marketing, De Mooij (2013, p.56) succinctly offers "…the glue that binds a group together". Behavioural scientist McCraken (1986, p. 72) draws on a lens metaphor, "First, culture is the 'lens' through which the individual views phenomena; as such, it determines how the phenomena will be apprehended … culture is the 'blueprint' of human activity, determining the co-ordinates of social action and productive activity, and specifying the behaviours and objects that issue from both". For Schein (1990), culture is "what a group learns over a period of time as that group solves its problems of survival in an external environment and its problems of internal integration" (p. 111).

The above definitions view culture mostly at a national level. However, others exist more at the level of organisation. In a definition that resonates with the present study due to its inclusion of trust Fairholm (1994, p.38) describes culture as a "character of commitment and order in a social organization that allows people to trust each other enough to work together." Fairholm attributes the development of trust to the organisation's founders and those who follow in positions of leadership. If an organisation lacks a unified trust culture, he argues, leadership is impossible and that for leaders to unlock follower talent creativity and commitment they must be induced, through trust, to behave in the way necessary to get things done. Culture is manifest in "assumptions, symbols, languages, beliefs, visions, ideologies and myths" (Fairholm, 1994, p.38).

The cultural effect being examined in the present study is from national culture. It should, however, be recognised that this is not the only component of the values and behaviours of either leaders or followers. It is acknowledged that there are other influences at play. Laroche (2011) proposed that there are three levels on which an individuals' behaviour are built (see Figure 2-2). The first level comprises commonly held and assumed humanity related motivations such as the need for food and shelter. The middle level is membership of a group culture, which in the present study is national culture. The top level is the individual personality which is a "unique set of mental programs" (Laroche, 2011, p. 2) based on individual experiences.

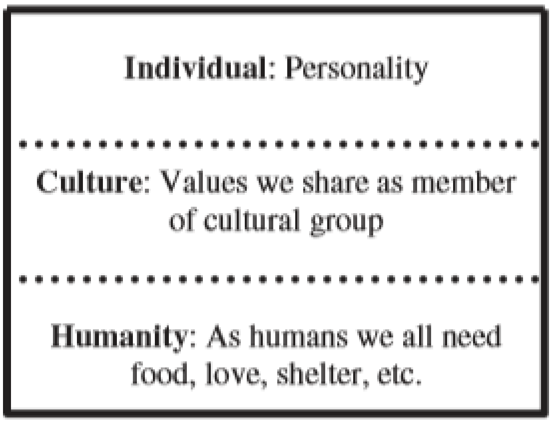

Figure 2-2: The three levels on which individuals' actions and words are built

Source: Laroche (2011, p15)

2.3.2 Measuring and comparing national cultures

Academic interest in culture naturally extends beyond its definition. One main thread of theoretical development has been the construction of models mainly for the purposes of comparing different national cultures. Here five such models are discussed.

2.3.2.1 Hofstede's cultural dimensions

Dutch social psychologist, Geert Hofstede, has made a major contribution to the study of culture. A former IBM employee his theories grew from an initial questionnaire-based study of that multinational's global workforce based in more than 50 countries, the initial data was collected between 1967 and 1973 (Hofstede, 1984). From this research Hofstede proposed a four-dimensional model of cultural differences, those being Individualism, Power Distance, Uncertainty Avoidance and Masculinity (Hofstede, 1980). Each dimension is "an aspect of a culture that can be measured relative to other cultures" (Hofstede, 2011, p.7).

As other researchers joined Hofstede in developing his original work, a further dimension 'Long-term orientation' was added to the original four (Hofstede & Bond, 1988) giving the model shown in Figure 2-3.

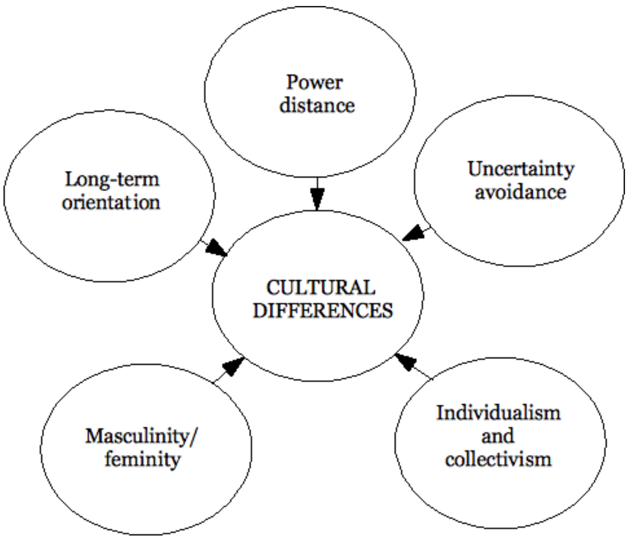

Figure 2-3: The 5-D model of cultural differences

The most recent addition to the dimensional model is Indulgence – Restraint. The term was coined by Michael Minkov who worked with Hofstede on the third edition of *Cultures and Organizations: Software of the Mind* (Hofstede et al., 2010).

For Hofstede, national cultures could only be measured in relative terms as no absolute measures exist. His work applies scores on a scale of 0 to 100 using questionnaire survey with sets of items covering each dimension (Hofstede, 1984).

Individualism versus collectivism (IDV)

These long-used terms were adopted by Hofstede to express a society's expectations as to a person's responsibilities within that society. In an individualist society these responsibilities extended only to the individual themselves and their immediate family and the bonds between individuals are loose. In the collectivist version there are strong and lifelong bonds between individuals in the same in-group (Hofstede, 2015). These in groups often extend into the extended family, the community or the tribe. Collectivist societies are "We" societies and individualist societies are "I" societies. It would be wrong, however, to interpret collectivist societies as inclusive. In fact, Hofstede emphasises that such societies are, in fact, exclusionist in nature. Individuals are viewed as either part of an in-group or part of an out-group. Members of an out-group are excluded. Competition also exists at the group level rather than between individuals. In contrast, the individualist society is characterised by universalism with each person seen as an individual rather than being associated with a group. Competition here occurs at the level of individual (Hofstede, 2015). For its own preservation, the in-group in a collectivist society must maintain harmony, even if in reality this harmony is only superficial. In an individualist society the opposite is true, and confrontation is viewed as a source of growth and strength.

Significantly for the present study, Hofstede argues that in a collectivist society tasks are approached primarily from the point of the relationship, and the task itself comes second. On the other hand, in an individualist society the task comes first and the relationship(s) between the parties involved is secondary. Also, with this dimension Hofstede refers to low and high context communication (Hofstede, 2014a). High context communication features in collectivist society and is where many things are obvious or 'go without saying'. These are things that are taken for granted as they are embedded in national culture. This shortens and simplifies communication. Conversely, individualist societies are associated with low context communication wherein everything requires detailed agreement in which everything is specified. Here communication takes longer (Hofstede, 2014a).

Triandis (2018, p. 2) defines individualism as "a social pattern that consists of loosely linked individuals who view themselves as independent of collectives; are primarily motivated by their own preferences, needs, rights, and the contracts they have established with others; give priority to their personal goals over the goals of others; and emphasize rational analyses of the advantages and disadvantages to associating with others."

Power Distance (PD)

Hofstede borrowed the term power distance from the work of social behaviourist (Blumer, 1969). For Hofstede, PD represents the way in which inevitable power inequalities are perceived and dealt with in a particular society. A high PD society is one in which an attitude of acceptance of such inequalities prevails among those without power. Hofstede argues that this value is learned through the child-adult relationship. A low PD country is dominated by the perception that power inequalities are wrong and should be corrected. While hierarchies exist, this is not due to the innate superiority of those with power and that individuals with power are interchangeable on the basis of merit. In high PD societies the less powerful acknowledge a superiority of the powerful and hold no expectation they too could be powerful (Hofstede, 2014b). An organization operating in high PD society is likely to be one where a hierarchical structure is seen as normal and where there is a low expectation for decision-making input from below with the opposite being the case in a low scoring society. Power distance has been identified as a highly influential dimension for international management context (Pheng Low & Shi, 2001) suggesting its significance to the present study.

Uncertainty Avoidance (UA)

Originally used in the context of firm comparisons, Hofstede applied UA to differentiate at the societal level. A high UA society is one in which individuals experience feelings of threat from ambiguous and unknown situations and crucially it is believed that such uncertainty is something that should be proactively pushed against. Hofstede points out that this is not the same as risk avoidance. In societies with a low UA this uncertainty is accepted and not actively resisted; instead uncertainty is viewed as just part of life's normal course. Symptoms of high UA include greater stress levels and an enhanced propensity to vent aggression, what is different represents danger. Such a society demands rules for the avoidance of uncertainty. In low UA societies where uncertainty is accepted there is an unwelcoming attitude to rules and what rules there are viewed as breakable should circumstances require this (Hofstede, 2014c).

Masculinity versus Femininity (MAS)

One of the original four dimensions of Hofstede's earlier work, MAS was first identified from the original IBM studies (Hofstede, 1984). Hofstede later described high masculinity societies as those in which gender roles are perceived one the one hand as being concerned with being strong and assertive and focussed on material success for males and being oriented toward quality of life issues for females. Contrastingly, in a feminine society this separation is weak or altogether absent. In a feminine society it is also for men to be concerned with quality of life and to exhibit qualities of tenderness. The difference also expresses itself in terms of work-life balance. In a feminine society such a balance is sought and the neglect of work for family reasons is acceptable. In a masculine society such an excuse is not acceptable and work is viewed as coming first (Hofstede, 2014d). This dimension is the only gender-influenced one, meaning that it is dependent on whether the data is collected from males and females, the other five are gender neutral in this regard.

Long-term versus short-term orientation (LTO)

LTO, the fifth dimension, was added by Hofstede in 1991 (Hofstede, 1991) as a result of the 23-country Chinese Values Survey (Hofstede & Bond, 1988). The data on which this dimension is based was later expanded in 2010 with data from the World Values Survey which appeared to confirm the existence of this dimension (Hofstede & Minkov, 2010). A society with a long-term orientation promotes pragmatic virtues giving particular status to future rewards, including perseverance, thrift and adaptability. In opposition to this, a short-term oriented society is one in which the relationship of the past to the present, national pride and the meeting of present social obligations and the saving of face are all important. Furthermore, a long-term oriented society views good and evil as relative concepts capable of changing over time while they are fixed and absolute according to long-term oriented societies. Superiority is achieved in a long-term society through the ability to adapt to changing circumstances while in the short-term society constancy is a positive characteristic of an individual (Hofstede, 2014e).

Indulgence versus restraint (IVR)

Hofstede describes the most recently added dimension as being designed to represent certain values uncovered in the World Values Survey and was coined by colleague researcher Michael Minkov (Hofstede & Minkov, 2010). It is mainly concerned with subjective feelings of happiness or lack of them and the degree to which control over one's own life is perceived. In an indulgent society, individuals are freer to fulfil their basic human desires leading to enjoyment and 'fun'. In contrast, restraint societies put strict social norms in place to prevent this kind of gratification. Individuals in indulgent societies perceive themselves to be happy and healthy while their restrained counterparts feel less so and feel they lack agency. Indulgent societies have a prominent leisure ethics while restraint societies have a stronger work ethic (Hofstede, 2014f).

2.3.2.2 *Hofstede and organisational culture*

Hofstede's work is best known for its focus on the national level of culture but grew out of the study of an organisation, IBM. Despite his societal-level focus he did give consideration to other levels including organisational culture. One example of this was a study undertaken at ten Dutch and Danish companies and based on this Hofstede proposed that organisational culture comprised of "symbols, rituals and heroes" which combined to form a set of "practices" (Hofstede, 1994, p.386). These practices exist at a superficial level, though within the same national culture they are sufficient to differentiate organisations, cross cultural organisational differences are much more likely explained by national culture. National cultural values are viewed as far more fundamental and are already formed from family, school, and life experiences by the time an individual enters an organisation (Hofstede, 2011).

By the time Hofstede came to publish the second edition of *Culture's Consequences* he was able to append a listing of more than 400 independently undertaken empirical studies each confirming his dimensional theory in settings other than his original setting, IBM (Hofstede, 2001).

Hofstede's work is promoted today through his academic website and the tools developed are presented under the Hofstede Insights name (Hofstede Insights, n.d.). One of these tools enables countries to be compared across these six dimensions. For the present study the researcher used the country comparison tool to illustrate the differences between Saudi Arabia and the United States. The results are shown in Figure 2-4.

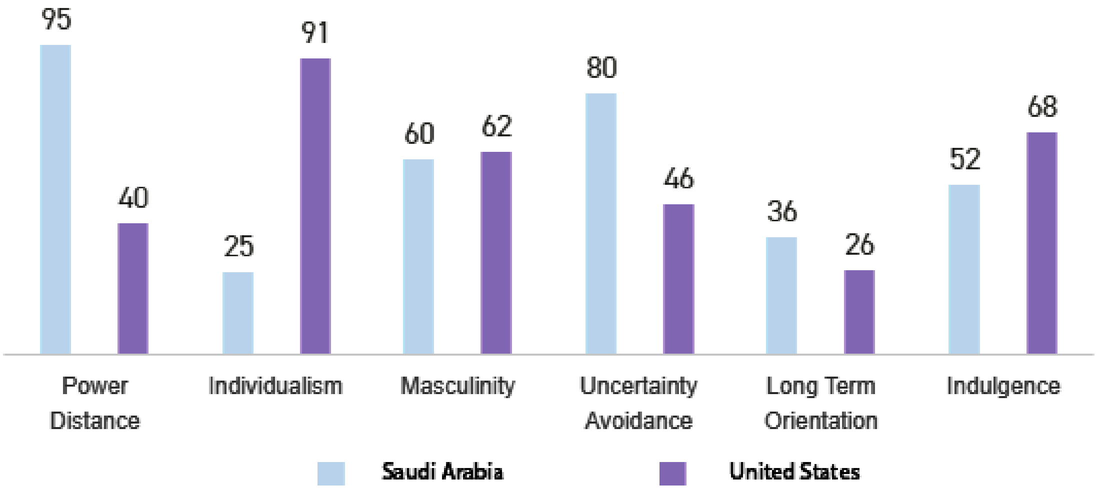

Figure 2-4: A comparison of Saudi Arabia and the United States using the 6-D model

Source: Hofstede Insights (n.d.)

Hofstede is at pains to point out that most countries do not sit at either end of these dimension but somewhere in between. One way to characterise the level of influence culture has on the daily lives of individuals is the low-high context construct. Ting-Toomey (1988) proposed that an individual in a low-context country experiences low demands on their behaviours from culture and feel less constraints. In contrast, in a high-context country, individuals' daily lives do feature cultural constraints and demands, experiencing what Chiu et al. (1998, p.11) call "tremendous tensions". Gudykunst et al. (1988) interpreted the high-low context construct as being essentially the same as being essentially the same as the individualist-collectivist dimension. Indeed, where high-context countries are listed they tend to match lists of collectivist countries (Chiu et al., 1998). On this basis, Saudi Arabia can be assumed to be a high-context country.

The high-low context construct is also closely related to communication. In high-context cultures such as Saudi Arabia and many Asian countries, nonverbal cues and implicit communication are important as is trust in interpersonal relationships (Halverson, 1993). In low-context countries information needs to be explicitly spelt out. Hence in low-context countries like the United States, Australia and parts of Europe written documentation is highly valued (Halverson, 1993). This distinction also sounds like the dimension of uncertainty avoidance.

While constructs such as individualism and collectivism long predate Hofstede's seminal work Culture's Consequences (Hofstede, 1980), its significance is based on proposing overarching patterns of cultural differences that has underpinned decades of comparative cross-cultural research. However, Hofstede's dimensions are not the only dimensional construct offered for comparing national cultures. Four further models aimed at measuring and comparing national cultures are now considered.

2.3.2.3 Schwartz and the Theory of Basic Human Values

Social psychologist, Shalom Schwartz proposes the Theory of Basic Human Values which included work on a theory of seven cultural value orientations (Schwartz, 2008). Like Hofstede, Schwartz based his theory on large quantities of empirical data, an aggregation of studies conducted in countries across the globe undertaken from 1988 to 2010. The fundamental assumption Schwartz makes is that the most significant aspect of any culture is the dominant values which determine what is viewed as good and bad. These cultural ideals are a "rich complex of meanings, beliefs, practices, symbols, norms, and values" (Schwartz, 2008, p.138).

Schwartz identifies three pairs of cultural values: Embeddedness-Autonomy (Autonomy being divided into two – affective and intellectual), Mastery-Harmony, Hierarchy-Egalitarianism (Schwartz, 2008). Some similarities to Hofstede's dimensions emerge. Embeddedness reflects a high priority on maintaining the social order, is conservative and upholds traditions; such cultures value obedience and security. Conversely, high autonomy countries feature individual control over life choices. This autonomy comes in two forms. Firstly, affective autonomy is the seeking of personal pleasure without constraint or penalty. Intellectual autonomy is the independent pursuit of thoughts and ideas whether they be political, theoretical, creative or any other (Schwartz, 2008).

Mastery is found in societies which value the pursuit of achievement and success through personal endeavour even at the expense of others. Qualities such as competence, drive, ambition, courage and independence are promoted in such a society. On the other hand, a harmony-based society there is less emphasis on personal achievement and more on satisfaction with life as it is and the well-being of the group not the individual. This pairing has echoes of Hofstede's individualist-collectivist dimension.

In the third pairing, Hierarchy reflects societies in which there is a clear social order and in which those at the bottom of the hierarchy are accepting of their position exercising self-control. In contrast, an egalitarian society promotes the value that all members are equal and that each member should be concerned for the welfare of all others (Schwartz, 2008).

Schwartz (2008) describes the social, economic and political outcomes associated with a country's situation regarding his three pairings. He argues that an enhanced economic level results from high autonomy but not embeddedness and high egalitarianism but not hierarchy. Furthermore, democracy is associated with autonomy and egalitarianism while embeddedness and hierarchy, are linked with less democracy and increased corruption. In terms of economic systems, a country which emphasises mastery and hierarchy have more competitive economic systems while those emphasising harmony and egalitarianism are more collaborative in nature. For Schwartz, (2008) family size is also relevant because large and extended families promote values of embeddedness, hierarchy, and mastery values which then reciprocate by promoting larger families. While smaller families tend to be associated with rising economic level this is because the growth of such families has altered cultural values at the societal level.

However, for the purposes of the present study the absence of data for Saudi Arabia is a deficiency in terms of its application here. However, with Egypt and Yemen appearing in the high embeddedness corner of the map, it is reasonable to assume that Saudi Arabia would also feature in this area. By contrast the US is most influenced by the Mastery value. Where countries are located on Schwartz's cultural values map can be seen in Figure 2-5.

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Figure 2-5: Countries mapped according to Schwartz's Cultural Values

Source: Schwartz, 2008 p.558

Another notable finding from Schwartz's analysis is the distance between certain countries which are sometimes lumped together as 'Westernised'. In particular Figure 2-5 shows substantial differences between the positions of the US and European nations such as Germany, France and Italy. It also shows a distinct 'Anglophone' grouping.

2.3.2.4 Trompenaars' and Hampden-Turner's cultural factors

Continuing the pattern, Trompenaars' and Hampden-Turner's (1997) cultural factors are based on large-scale survey data with tens of thousands of respondents in dozens of countries. The surveys were administered at corporate workplaces by participating companies and their research and data collection took place over 15-year period. Theirs is a practice-oriented approach aimed at guiding organisations toward the recognition and then resolution of cultural differences for the improved performance of the organisation. There are seven dimensions to this model (see Figure 2-6). The first five dimensions concern human interaction, the sixth covers the human view of time and the seventh human views of the environment.

Universalism (vs. Particularism)	What is more important, rules or relationships?
Individualism (vs. Collectivism)	Do we function in group or as individuals?
Neutral (vs. Emotional)	Do we display our emotions?
Specific (vs. Diffuse)	How separate we keep our private and working lives?
Achievement (vs. Ascription)	Do we have to prove ourselves to receive status, or is it given to us?
Sequential (vs. Synchronic)	Do we do things one at a time, or several things at once?
Internal Control (vs. External)	Do we control our environment, or are we controlled by it?

Figure 2-6: Trompenaars' and Hampden-Turner's 7 cultural factors

Source: Trompenaars and Hampden-Turner (1997)

Universalism/particularism opposes rules and relationships. In a high universalism culture, the emphasis is on rules, standards, values and behaviour codes and personal relationships play a lesser role. Business is conducted based on what is written down and what is written down is viewed as ‘cast in stone’. The particularistic society pays greater attention to personal relationships and friendships when evaluating what is right or wrong. Contracts are there to be changed and variation is a positive thing allowing actions to follow local circumstances (Trompenaars & Hampden-Turner, 1997).

Individualism/collectivism is the dimension along with the relative significance of the individual versus the group is measured. As with Hofstede and others this is the ‘We’ or ‘I’ dimension. At the societal level the emphasis in individualist societies is for members to take care of themselves first whereas a collectivist society views individual needs being fulfilled through first serving the best interests of the group. In organisational terms, an individualist organisation would feature more instances of members taking personal responsibility for actions and decisions and achievements are viewed similarly as those of individuals. In contrast, the collectivist organisation sees individuals defer to group decisions and share in group achievements (Trompenaars & Hampden-Turner, 1997).

Neutral/ Emotional (Affective) is a dimension not featured in Hofstede's work and concerns if and how emotions are displayed by individual members of a society. In a neutral society there is less overt demonstration of what individuals think and feel thanks to deliberate restraint that only occasionally breaks down. Associated characteristics are a lack of physical contact or gesturing and a monotonous delivery of written texts. On the other hand, affective societies feature pronounced non-verbal displays of emotion unrestrained by inhibition and considered admirable by society. Written statements are often delivered in dramatic fashion (Trompenaars & Hampden-Turner, 1997).

The fourth dimension is that of **Specific/ Diffuse** which distinguishes societies based on the degree to which relationships (mainly work relationships) extend to multiple life domains. Put simply, how much do members keep their work and personal lives separate. In a specific-oriented society there tends to be a clear division between work relationships and those in the personal domain and relationships are well-defined for their purpose and extent. In contrast, in a diffuse society the different domains are seen as interconnected and relationships including authority hierarchies extend out from work into non-work situations (Trompenaars & Hampden-Turner, 1997).

The **Achievement/ascription** dimension measures the extent to which a society attributes status or whether authority and status has to be earned. It resembles Hofstede's power-distance dimension. Achievement societies are merit based and attribute status to those who have achieved and are characterised by accomplishment-based titles, the earning of respect based on achievement, and organisations where age and gender diversity at senior levels results from merit-based promotion. In contrast, ascription societies base status on factors related to social position, age, gender, wealth and other non-achievement-based factors. These societies and organisations within them are characterised by widespread use of titles based on non-merit criteria, respect for the hierarchy is expected and organisations tend to be led by older males promoted based on their seniority (Trompenaars & Hampden-Turner, 1997).

The sixth dimension is **Sequential/ Synchronic** (or time orientation). In contemporary language this could be called the 'multitasking' dimension as it reflects the degree to which members of a society undertake tasks one at a time or concurrently. Sequential societies have members with a preference for doing one at a time and for adhering to schedules and plans. In synchronic societies, people see time as flexible and are used to multitasking. Schedules are followed less rigidly, and current tasks are selected through prioritisation. Another time-oriented aspect of this dimension concerned attitudes to past, present and future time. A society with a past orientation views everything through the lens of tradition and defers to ancestors, predecessors and age. There is a yearning for a 'golden age', and history and origins are prominent subjects. The present oriented society pays little attention to the past or future and emphasises the enjoyment of the now. They are characterised by good planning but poor execution. The only impact that matters is the impact on today. Thirdly, the future oriented society has little interest in the past and believes in spending the present on endeavours that will improve the future. Society discusses future prospects, strategizing and aspirations; there is a focus on youth.

Internal control/External control is the final dimension. It measures the degree to which members of a society believe they can control their environment. Internal societies believe that the expertise exists in society to control the environment provided this expertise is deployed properly and matched by effort. Such societies are more change resistant. The external society sees no point in attempts to control the environment which it views as organic. Instead there is emphasis on seeking to live in harmony with nature. There is a relaxed attitude to change and adaptability is promoted.

Trompenaars and Hampden-Turner (1997) point out that within a culture there are wide variations among individuals and groups. However, this spread is around an average and it is the average that is used to characterise the culture. However, this important act is not reflected in commonly held perceptions because "it is differences rather than sameness which we notice" (p.26) this is the basis of stereotyping where by a national culture and its member individuals are viewed through the lens of what is extreme rather than more average and moderate. Secondly, this focus on the 'different' becomes translated into what is wrong with the other culture – difference is viewed as wrong and the familiar is seen as being right.

Hofstede (1996) was rather damning in his critique of Trompenaars and Hampden-Turner's work referring to it as "a fast food approach to intercultural diversity and communication" (1997, p.198) motivated by a desire to say what the customer wants to hear. In response the researchers preface the second edition of their book *Riding the Waves of Culture* with the point that Hofstede's model was 25 years old and was limited to plotting differences (Trompenaars and Hampden-Turner, 1997) whereas they were developing a model of practical use within organisations through application of a process of reconciliation of differences.

2.3.2.5 Global Leadership and Organisational Behaviour Leadership (GLOBE)

With clear roots in the work of Hofstede, GLOBE (Global Leadership and Organisational Behaviour Leadership) is a research project which as the title suggests aims to understand the influence of particular cultural variables on leadership and organizational processes. As such it is of relevance and interest to the present study. The specific extension of Hofstede's work was the addition of two variables Human Orientation and Performance Orientation. There is also a specific dimension covering gender equality which for some represents a gap in Hofstede's 6-dimensional model. The main study on which the Globe models are based gathered data from 17,300 middle managers in 951 organisations located in 62 different countries (House & Javidan, 2004).

The GLOBE project proposes two separate models: one nine-dimensional model of cultural values and practices from the 2004 study (see Table 2-1) and the other a six-dimensional model of leader attributes and behaviours from a later study published in 2014. Focussing on the differences with Hofstede's work, the GLOBE model has a pair of dimensions recording what a society or collective rewards individuals for – performance or humane behaviour.

Table 2-1: The nine cultural dimensions of the Globe Project

Performance Orientation	**Assertiveness**	**Future Orientation**
The extent that a collective encourages and rewards group members for excellence and performance improvement and is expected to do so.	The extent that individuals show assertiveness, confrontation, and aggression in their relationship with others and are expected to do so.	The degree that individuals engage (and should engage) in future-oriented behaviours including planning, investing in the future, and delaying gratification and are expected to do so.
Humane Orientation	**Institutional Collectivism**	**In-Group Collectivism**
The extent that a collective rewards and encourages individuals for being kind to others, fair, altruistic, generous, caring, and are expected to do so.	The extent that organisational and societal institutional practice encourages and rewards collective distribution of resources and collective action and are expected to do so.	The extent that individuals express pride, loyalty, and cohesiveness in their organisations or families and are expected to do so.
Gender Egalitarianism	**Power Distance**	**Uncertainty Avoidance:**
The extent that a collective minimizes gender inequality and is expected to do so.	The degree that the community accepts and endorses authority, power differences, and status privileges.	The degree that a society, organisation, or group is dependent on social norms, rules, and procedures to mitigate the unpredictability of future events. The stronger the desire to avoid uncertainty, the more people

		seek orderliness, consistency, structure, formal procedures, and laws to cover daily situations.

GLOBE project studies group countries into clusters for analysis and found that societies within these clusters shared particularly higher or lower scores on certain dimensions and based on this a range of assumptions could be made about these cultures (House et al., 2004; Chhokar et al., 2007).

Although the GLOBE project is clearly rooted in Hofstede's work it may have a claim to produce more reliable findings because these findings arise from the combined work of many researchers working autonomously across the globe. However, for the purposes of the current study GLOBE has a significant drawback in that no data were collected for Saudi Arabia.

2.3.2.6 Ingelhart and the World Values Survey

Like Hofstede's work, Ingelhart (1992; 2007) used large scale surveys (the World Values Survey) has a simple two-dimensional model in which countries are situated between two sets of poles one *Traditional-secular rational orientation* towards authority and the other *survival-self-expression* values. One of the outputs of this work is a cultural map showing the clusters of country's formed by analysis along these two dimensions. As further data is added to the World Values Survey with map has evolved and its most recent version (2014) is shown as

Figure 2-7.

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Figure 2-7:The World Values Survey cultural map of the world

Source: World Values Survey (2017)

Figure 2-7 above indicates an African-Islamic cluster though the absence of specific data for Saudi Arabia means its position on the map can only be inferred. In general, Islamic societies score highly on traditional and survival values. In traditional societies, religion has a prominent place and there is a strong belief that authority should be respected (a possible similarity with Hofstede's power distance). Furthermore, children should be taught to obey and national pride is a positive virtue. Attitudes on social issues such as abortion and divorce are highly conservative. High survival societies prioritize economic security over self-expression (Collectivist over Individualist) and, of close relevance to the present study, there is higher agreement to the statement "You have to be very careful about trusting people" (p.14). Indeed, in Ingelhart's analysis expressed on a global cultural map, Saudi Arabia lies closest to Catholic developing economies Brazil and Argentina (2007, p.33).

Another important part of Inglehart's position is that alongside cultural heritage, economic development plays a leading role in shaping value systems. Neither culture nor economic development alone provide a satisfactory explanation of value systems but taken together they may. In particular, Inglehart emphasises that self-expression values emerge through socio economic development which "… brings rising levels of existential security (especially in its post-industrial phase), which leads to an increasing emphasis on individualism, autonomy and self-expression." (p.23). In addition to the possible similarity already mentioned between Inglehart's 'traditional' and Hofstede's power distance Inglehart himself signals a closeness between self-expression values and the individualism dimension and also Schwartz's (1992) autonomy dimension.

2.3.3 National culture challenged

The use of the models described above is commonplace and has come to underpin cross cultural research for the last few decades. However, these models and the very concept of national culture has not gone without critique. Some authors have questioned the validity of national borders as containers for these national cultures, arguing that the fact that multiple cultures can co-exist within such borders or that single cultures can cross borders means that these lines on a map are, on a cultural level, arbitrary (Tung, 2008; House & Javidan, 2004; Lenartowicz & Roth, 2001). The nation state may also be too temporary to represent a theoretical unit as the many examples of countries dividing or disappearing altogether demonstrates (Levy et al., 2007). Even in a region like the Middle East which may have some appearance of homogeneity in some regards, Baskerville (2003) points to the existence of 35 distinct cultures in the 14 countries of the region. Focussing only on the individualism-collectivism dimension, Vandello and Cohen (1999) designed an instrument to measure this variable and applied it to all 50 US states. Their results showed a wide disparity in scores with Hawaii and the Deep South strongly collectivist and Mountain West and Great Plains states such as Montana and Oregon being individualist. Beyond the US others have questioned whether Western-based cultural models can be readily transferred to non-Western contexts. K. Lee et al. (2014) acknowledge the strong foundation that the Hofstede and GLOBE approaches give to cross-cultural research but also caution that, "assuming cultural generalizability of U.S.-derived models across cultures may limit our explanations of cross-cultural leadership" (p. 708).

Mindful of these criticisms and challenging evidence, Minkov and Hofstede (2012) carried out intra-country research covering 299 regions in 28 countries. Using data from the World Values Survey, the researchers performed cluster analyses on countries and regions in East and Southeast Asian, sub-Saharan, Latin America and 'Anglo' countries. In their analysis they found that overwhelmingly (on around 9 times out of 10), regions formed homogenous national clusters in each of the four groupings. This, they argued, substantially refuted the arguments against national culture (Minkov & Hofstede, 2012).

Another theoretical approach which runs counter to the work of Hofstede and colleagues is that of convergence theory. Under this theory, humankind is following a trend of universalization towards homogenized values and associated practices which apply in any national setting. This trend is borne on the growing wings of globalisation and the networked society (Strange, 1996; Castells and Blackwell, 1998; Berger and Dore, 1996). Instead of capital flowing though the globalised financial system convergence theorists saw the flow as cultural norms and values permeating the globe and penetrating national borders. In some ways this convergence supports neo-classical economic theory which holds that economic systems tend to evolve in a way that optimises efficiency (Ratliff, 2004).

Wibbeke and McArthur (2013) accept the premise of cultural dimensions and the validity of Hofstede's work but put the emphasis on using them to guide the formulation of leadership strategies for effective management in a globalised world. Wibbeke's (2009) "Geoleadership model" put forward a set of seven leadership strategies that she posited would be effective in addressing the contemporary challenges of the global cross-cultural business environment, and specifically in managing workforces with arguing that today "The challenge is how to manage our multiple simultaneous cultural identities" (p.2). Leaders must go beyond language and develop deep understandings of how things are done in different cultures such as how negotiations are undertaken (Wibbeke & McArthur, 2013). While Wibbeke (2009) recognises national culture as an important factor, the proposition that the same set of strategies can be put into practice across all national cultures will always be problematic.

Another part of the universalizing versus localizing discourse on cultural values (convergence-divergence) concerns management development and education. In particular, many current and future Saudi managers go to Western countries to receive their university education and professional training and then introduce these 'outside' values on returning to the Kingdom. Even those staying in Saudi Arabia are exposed during higher education. For example, the Saudi Electronic University is almost entirely reliant on Western partners to provide the content of its blended learning courses (SEU, 2018). Further, multinational firms and their Western expatriate personnel, often operating in the oil and petrochemical sectors, import their values to Saudi Arabia (Hunt & At-Twaijri, 1996). For both these reasons, levels of exposure to contrasting cultures has increased in recent decades with a particular increase in the exposure of Saudi managers to the values and practices of Western management (particularly the US and the UK). This, however, is far from saying that national cultural differences have disappeared, or even reduced, and the overwhelming weight of empirical studies supports the ongoing existence of contrasting values and practices (Glaister & Buckley, 1999; Hofstede, 1980; Inglehart & Baker, 2000; Schwartz, 2008).

A substantial amount of the literature on culture of leadership avoids the national level and focuses at the organisational level including the leader's role in creating this culture. For example, Schein (1992) argued that what differentiated a leader from a manager, or an administrator was the leader's consideration of culture. Indeed, more than that "leaders create culture" (p. 209) by imposing their own assumptions and values on the organisation. However, there are important limitations to this thesis. Firstly, it is only applicable to top leadership as room for creating culture lower down the organisation would be minimal. Secondly, the culture creation aspect of leadership may apply only to the founding and pioneering leadership. In mature organisations a newly entering leader is more likely to adjust themselves to the existing culture than create a new one (Pennington et al., 2003).

The critique of using national culture as a unit of analysis is duly noted. Nevertheless, national culture is applied in the current study as a theoretical perspective from which to analyse trust between leaders and their followers in Saudi engineering organisations. This is justified by the weight of evidence found in the literature and discussed in Chapter Three. National cultural values have been proven resilient in the face of modernisation, especially when those values have their roots in centuries old traditions (Inglehart & Baker, 2000; Schwartz, 2008). An earlier literature review undertaken by Kirkman et al (2006) convincingly demonstrates the success with which national culture has been applied as a factor in cross-cultural research including organisational research.

2.3.4 Culture and leadership

Another important question for this present study in terms of theoretical assumptions concerns the relationship between national culture and leadership practices (to which we could add styles, behaviours and expectations). There are distinctly opposing positions on this question. On the one hand, House et al. (2004, p. 49) based on the work of the GLOBE project posit, "what is expected of leadership, what leaders may or not may do, and the status and influence bestowed upon them vary considerably as a result of the cultural forces in the countries or regions in which the leaders function." This is in line with Fiedler and Chemers (1974) and also Fairholm (1994, p.41) who summarised "The importance of culture in determining the leader's style is critical".

However, according to one of the authors of The Five Practices of Exemplary Leadership it is not where the leader comes from that matters in terms of leadership effectiveness but how the leader behaves, or more specifically, the degree to which they use the five exemplary leadership practices (Kouzes & Posner, 2011). Posner (2012) undertook a study to examine how national culture may impact how leaders behave and how it might influence a leader's effectiveness. The countries were Ethiopia, India, Pakistan, and the Philippines and the participants were leaders in healthcare and their constituents. Posner does not argue that there are no differences from one country to another in the use of the five leadership practices and confirms that the actual frequency of leadership practices can vary from one culture to another across cultural settings but instead emphasises that "How leaders behaved made a difference, regardless of culture (country)". Put simply, leadership practices are a more powerful factor and supersede national culture in importance when considering leadership effectiveness (Posner, 2012). Posner's (2012) study is limited by the small number of countries included and while there are some high contrasts along certain dimensions (such as Pakistan's very low individualism score or the Philippines' very high power distance score (Hofstede Insights, 2018)) it would be ambitious to generalise the findings. It is also limited to healthcare leaders which may also affect generalisation. To qualify this stance, Posner also recognised the role of culture when stating, "How subordinates and co-workers are treated, deference to higher authority, risk-taking, and celebration and the like in one cultural context are likely to vary in another cultural setting" (Posner, 2011, p. 9).

Meyer (2017) sought to map leadership practices according to cultural differences measured along just two dimensions – attitudes towards authority and attitudes towards decision-making. Of relevance to the present study, Meyer (2017) reports some counterintuitive findings. He states that "hierarchies and decision-making methods are not always correlated" as countries with hierarchical structures and high inequality of power are not always those making top down decisions. In the US, individual decisiveness is such a valued characteristic in a leader that despite an egalitarian business culture and its promotion of input, decisions are still made by individual managers. Figure 2-8 illustrates this point with a country such as the US understood to have egalitarian values in the workplace but still appearing well into the top down half.

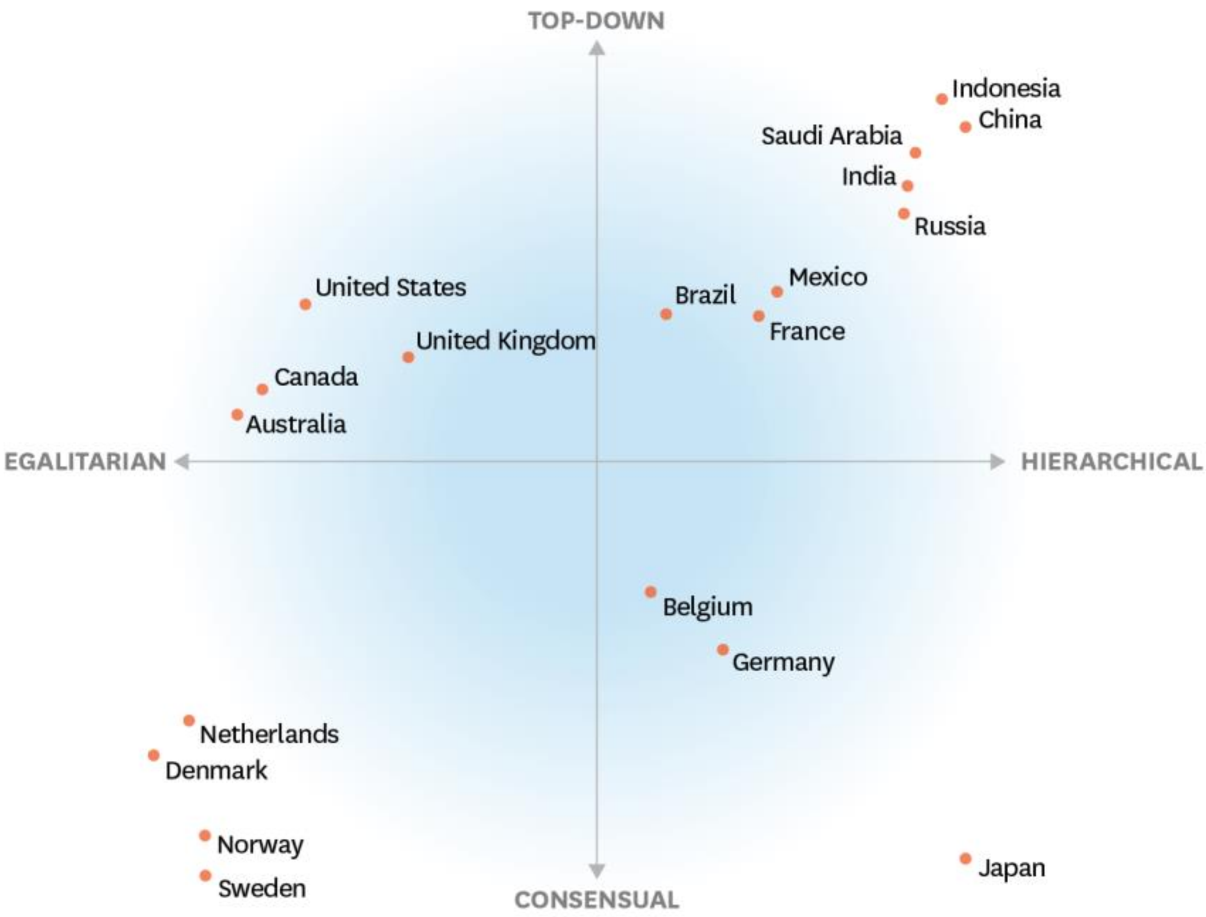


Figure 2-8: Meyer's mapping of leadership cultures

Source: Meyer, 2017

2.3.4.1 Leadership Dimensions: Culturally Endorsed Leadership Theory (GLOBE)

As signposted earlier, the GLOBE Project studied not only national culture but also leadership attributes. The aim of the researchers was to empirically demonstrate that leadership theory can exist at a group level and they hypothesised that a society or an organisation associates with a particular set of beliefs about leadership. The researchers established a model of six "culturally endorsed leadership theory dimensions," described as "… summary indices of the characteristics, skills, and abilities culturally perceived to contribute to, or inhibit, outstanding leadership. They can be thought of as being somewhat similar to what laypersons refer to as leadership styles…" (House et al., 2004, p. 675). Their hypothesis is evidenced by the data they collected over an 11-year period.

Table 2-2: The six culturally endorsed leadership theory dimensions

CHARISMATIC / VALUE-BASED: “reflects the ability to inspire, to motivate, and to expect high performance outcomes from others on the basis of firmly held core values.”	**TEAM ORIENTED:** reflects “effective team building and implementation of a common purpose or goal among team members.”	**PARTICIPATIVE:** “reflects the degree to which managers involve others in making and implementing decisions.”
HUMANE ORIENTED: “reflects supportive and considerate leadership, but also includes compassion and generosity.”	**SELF-PROTECTIVE:** “From a Western perspective, this newly defined leadership dimension focuses on ensuring the safety and security of the individual or group member.”	**AUTONOMOUS:** “This newly defined leadership dimension has not previously appeared in the literature. [It] refers to independent and individualistic leadership.”

Source and all direct quotes: House et al., 2004, p.675

Before reaching the findings on the six dimensions, the researchers first identified three sets of leader attributes. One set contained 22 universally positive attributes, those endorsed in all cultures. Another contained 8 universally negative attributes, not favoured in any culture. The third set contained 35 culturally contingent attributes which were viewed as positive in some cultures and negative in others (House et al., 2004).

Most of this discussion of culture and leadership has focussed on national culture and it is this level of culture that this research uses in its theoretical framework. This, however, does not preclude the possibility that in the same national culture there is scope for different organisational cultures. The concept of corporate culture and its potential as a positive force has been a popular one in Western countries. Management ‘gurus’ such as Tom Peters and Robert Waterman authors of the best-selling *In Search of Excellence* called for the creation of strong corporate cultures which instil beliefs and shape the norms of employees towards the company’s in ways that benefits it. Employees become emotionally attached to the company and its goals as corporate culture becomes internalized. Surlemont refers to this as “normative control as the basis for individual motivation” Surlemont, 1999, p.819 while Kunda writes of an “attempt to elicit and direct the required efforts of members by controlling the underlying experiences, thoughts, and feelings that guide their actions" (Kunda, 1999, p. 11). However, and crucially Peters and Waterman emphasise that this strong corporate culture should not come at the expense of individualism.

2.4 Leadership definition and key theories

The aims of this section are two-fold. Firstly, there is a brief discussion of the definition of leadership. Secondly, there is a chronologically ordered review of the main theoretical leadership constructs.

2.4.1 Defining leadership

Unsurprisingly, there is no one single definition of leadership that has been universally accepted; something amply demonstrated by Rost (1993) who found 221 different conceptions and definitions of leadership drawn from 587 different publications. According to Stogdill (1974, p.7), "There are almost as many definitions of leadership as there are persons who have attempted to define the concept" and that was apparent already more than 40 years ago. Humphrey (2002) defined leadership as "a process of social interaction where performance outcomes are strongly influenced by the leader's ability to influence the behaviour of their followers" (p. 493). Bolden (2004) states that some have defined leadership as a social process, in which the relationships between a set of people is developed, and some other define leadership in terms of people's personal traits or characteristics. Gill (2006) reminds us that leadership has been variously defined in terms of traits, process, skills, competency, a relationship and a construct. This varied and pluralistic approach to studying leadership led Bass (2008) to suggest that "the search for the one and only proper in true definition of leadership seems to be fruitless" and that "the choice of an appropriate definition should depend on the methodological and substantive aspects of leadership in which one is interested" (p. 23). It may be that the lack of agreed definition reflects the complexity of the concept itself. Northouse (2010) would agree with this after describing leadership as "one of the most complex process in a dynamic environment" and defines it as "a process whereby an individual influences a group of individuals to achieve a common goal" (p. 3). Gill (2006) reminds us that leadership has been variously defined in terms of traits, process, skills, competency, a relationship and a construct. According to Turner and Muller (2005) during the last sixty years, five critical approaches to leadership have been developed: the trait approach, the behavioural-style approach, the contingency approach, the transformational approach and the transactional approach. However, this might not be the full story because as Yukl reminds us, the leadership theories developed during the last century have undergone a major shift in focus- from leader, to situational and context, to leader-followers, to leader-context.

While it is important to recognise the breadth of interpretations of leadership in the literature, searching for and identifying a specific definition for the current study is unnecessary as it is engineering managers' leadership practices that is the variable of interest.

2.4.2 Theoretical conceptualisation of leadership

Perhaps the key word in Northouse's definition is 'process' because the academic debate on the definition of leadership has largely centred on the trait v process discussion. The trait side of the debate is characterised by the idea of the 'born leader' and "emphasizes leaders' attributes such as personality, motives, values, and skills. Underlying this approach was the assumption that some people are natural leaders, endowed with certain traits not possessed by other people" (Yukl, 2006, p. 13). In the middle of the 19th century the Great Man Theory rose to prominence made popular by the work of Scottish philosopher and historian Thomas Carlyle (1841). He argued "That great men should rule and that others should revere them". Heroes were the new divinity. However, Great Man Theory was rejected by Herbert Spencer who argued that rather than doing what they were born to do, these heroes where only products of the prevailing social conditions. He also suggested that Great Man theory had found acceptance because its biographical explanations of history and phenomena were attractive in their simplicity (Spencer, 1892).

If Great Man Theory was a mainly biographical approach to understanding leadership it's re-emergence as trait theory in the 1930s and 1940s was mainly propounded by psychologists espousing the idea that leaders possessed innately certain traits in their psychological make up that predisposed them to leadership (Sheldon, 1942; Stoghill, 1948). The theory was associated with the emerging discipline of psychometrics. However, attempts to match the traits identified to those possessed by actual leaders have been unfruitful and it has since been concluded that this theory is "not an effective method for determining the successful characteristics of a leader" (Gehring, 2007, p. 44).

Next came the behavioural theories of the 1940s and 50s, largely in reaction to trait theory and firmly on the side of leaders being 'made'. Instead of mental and physical attributes these theorists studied behaviours and particularly situation-based behavioural responses that if learned and correctly deployed meant that anyone could be a leader (Hemphill, 1949). This work involved the development of the Leaders Behavior Description Questionnaire and a dual component approach to leadership that Hemphill termed as Consideration and Initiating Structure which later evolved into people oriented and task oriented (Hemphill & Coons, 1957). The questionnaire became a widely used instrument as it was developed over subsequent decades (Hemphill & Coons, 1957; Stoghill et al., 1963). Another study at the

University of Michigan became best known for introducing the concept of participative leadership (McGregor, 1960) as a development of the earlier concept of democratic leadership (Nelson, 1949).

The next significant addition to leadership theory was Contingency Theory (Fiedler, 1958; Vroom and Yetton, 1973; Hersey, 1984). This theory (or rather group of theories) held that rather than focusing on what style was universally the most effective, leadership efficacy was contingent on the situation. The concept of leadership style is not part of this perspective. Instead of a leader imposing their style irrespective of the current situation they must inevitably adjust. Contingency theories seem somewhat vague and difficult to apply.

Servant leadership, a term coined by Greenleaf (1970), has many of the components of transformational leadership. Van Dierendonck (2011) characterised servant leadership as transformational leadership with added social responsibility supporting a point made earlier by Graham (1991). Leadership is viewed as involving both leaders and followers and unlike other approaches it places emphasis on the needs of the latter (Patterson, 2003).

An authentic leadership style is one in which the leader is using their real self, acting in ways consistent with who they really are. Authentic leadership is linked to emotional intelligence (Miao et al., 2018). Gardner et al. (2005) argue that in the authentic leadership relationship the leader helps the follower become “more self-aware and establish an authentic and positive relationship” (p. 359).

Leader-Member Exchange Theory (LMX) is not a new theory, in fact it first emerged in the mid-1970s (Dansereau et al., 1975; Graen & Cashman, 1975; Graen, 1976). LMX is a relationship-based approach to leadership and for leadership to be effective the relationship between leader and follower must be a ‘mature’ one. A mature relationship is characterised by one-to-one partnerships between the leader and each follower a partnership that each subordinate is offered (Graen & Uhl-Bien, 1995).

Situational leadership theory, as proposed by Hersey and Blanchard (1972), stipulates that the most effective form of leadership depends on the subordinate concerned. Specifically, it depends on the twin variables of subordinate commitment and competence which combined are referred to as subordinate maturity. They identify four levels of maturity: very low, moderately low, moderately high and very high. To match each of these respectively, they advocated four styles of supervision: telling, selling, participating and delegating. In essence, a leader should choose their style in accordance with the follower’s readiness for self-direction.

Path-Goal theory is another conceptualisation of leadership which dates back to the early 1970s (House, 1971). In common with Situational Leadership and Leader-Member Exchange Theory, this theory is set at the level of dyadic supervisor-subordinate relationships and focusses in particular on what motivates and satisfies subordinates. It views the leaders role as "increasing personal payoffs to subordinates for work-goal attainment and making the path to these payoffs easier to travel by clarifying it, reducing roadblocks and pitfalls, and increasing the opportunities for personal satisfaction en route" (House, 1971, p. 324). When a leader conducts this role effectively, the subordinate will find the leader's behaviour motivational and a source of satisfaction. As the earlier quote suggests, clearing the path to goal attainment is also an essential part of leadership under this approach.

In summary format, Table 2-3 below illustrates the various leadership approaches mentioned previously, and provides an analysis of all its critical values and behaviours, which can then be understood and compared to each other. This provides us with clear insight into how leadership is complex, different, and changeable over years, situations and places, which increases the continued importance and growth of leadership-focused research.

Table 2-3: Summary of main theoretical approaches to leadership

Leadership approach	**Key authors**	**Values and characteristics**
Trait	Sheldon, 1942; Stoghill, 1948).	Leadership is an innate attribute that people are born with (leaders were born, not made)
Behavioural style Contingency	Hemphill, 1957; Stoghill et al., 1963)	Based on the actions of a leader, not their personal traits. What leaders do and how they achieve it. Task- and relationship-focused behaviour
Contingency	(Fiedler, 1958; Vroom and Yetton, 1973; Hersey, 1984)	Focuses on situational and/or contextual aspects instead of personal traits or behaviour
Transactional	(Weber, 1947; Fleishman, 1953; Bass, 1981)	Transactional leaders practice management-by-expectation (MBE) and contingent reward (CR). Incentivising followers. Relations are transaction-based
Servant leadership	Greenleaf 1970; Van Dierendonck, 2011; Graham, 1991; Patterson, 2003.	Functional attributes: honesty, vision, trust, integrity, and service, modelling, pioneering, appreciation of others, empowerment. Accompanying attributes: Communication, delegation competence, credibility,

		stewardship, visibility, persuasion, influence, listening, teaching, encouragement. Emphasis on personal growth of followers.
Authentic leadership	George, 2003; Gardner et al., 2005.	Refers to the ownership of one's personal experiences, whether they are thoughts, emotions, needs, wants, preferences or beliefs; processes captured by the injunction to know oneself, further implying that one acts in accordance with the true self, expressing oneself in ways that are consistent with genuine feelings and inner thoughts.
Leader-Member Exchange Theory (LMX) (or Vertical Dyad Linkage Theory).	Dansereau, Graen, & Haga, 1975; Graen & Uhl-Bien, 1995.	Focuses on how managers develop relationships with team members (both good and bad). Views leadership as a process that is centered on the interactions between leaders and followers.
Path-Goal theory	House, 1971	Under the Path-goal model a leader acts according to the expectations of employees and the prevailing situation. Based on motivation theory.
Situational Leadership theory	Hersey and Blanchard, 1972; Hersey and Blanchard, 1982.	Leadership is dependent on the situation and focuses on the relationship between leaders and followers.

There is no shortage of leadership theories and Table 2-3 is not intended as exhaustive. Moreover, Aseri (2015) cautions that "these [leadership] theories do not provide a comprehensive and complete understanding of leadership, but they do, each in its own way, offer important insights into leadership's role and characteristics" (p.32). Also, researchers must recognise the time, situations, context and the theoretical foundation upon which each theory has been developed.

One key leadership theory is absent from this discussion so far – transformational leadership theory. This is because this theory requires discussion in greater depth as it is the leadership theory underpinning the present study. Therefore, a separate section is now devoted to this perspective.

2.4.3 Transformational Leadership and the LPI

In addition to the nine theoretical approaches to leadership identified in Table 2-3, another important theory requires particular attention due to its importance to the present research.

According to Gillespie and Mann (2004), transformational leadership is “arguably the dominant model of effective leadership” (p. 589). Transformational leadership theory is an umbrella (Bryman, 1992) under which visionary leadership (Kouzes and Posner, 1987) and charismatic leadership (Conger and Kanungo, 1988) theories sit. In general terms, transformational leaders act mutually with their followers appealing to their basic interests and motivating and inspiring them towards a particular goal (Bensimon et al., 1989). A transformation leader’s followers are likely to show respect, loyalty and commitment and admiration beyond what would normally be expected in a leader-follower relationship (Yukl, 2002).

An advantage of transformational leadership theory is that instead of focussing at the apex of an organisational structure as many other leadership theories do, the work of Kouzes and Posner (1987) and Bass (1985) has general relevance further down the structure to supervisors, lower and middle management. Visionary leadership theory was advanced by Kouzes and Posner (1987) as a way of understanding the relationship between leadership practices and performance. For Kouzes and Posner (2003) the increasingly competitive and dynamic business environment meant that leaders who were appreciative and caring of their followers were more likely to bring long-term success because these attributes would be most likely to encourage followers to achieve their goals. Furthermore, they saw leadership and vision as synonymous with a leader’s key purpose being to convert vision into action.

Importantly, for the present study the literature also supports a strong relationship between trust and transformational leadership practices (Bass, 1985; Bass & Avolio, 1994; Dirks & Ferrin, 2002; Goodwin et al., 2012). Within this research there is a range of interpretations of this relationship. For some trust is just one of a number of positive outcomes of the deployment of such leadership practices (e.g., Avolio et al., 2004). Elsewhere trust is viewed as having a more complex role either as a moderator or a mediator of the relationship between transformational leadership and other outcomes (Neeraj, 2009; Jung & Avolio, 2000; Goodwin et al., 2012).

According to Pounder (2008) how transformational leaders and followers are interlinked was determined by three factors. Firstly, the extent to which the leader was able to engender extra effort from the followers. Second, how followers perceived the leader’s effectiveness. Third, the degree of follower satisfaction in the leader. In order to apply and develop transformational leadership theory a research instrument, the leadership practices inventory (LPI) (Kouzes & Posner, 1990) was developed. This instrument is discussed in the following section.

2.4.3.1 The leadership practices inventory (LPI)

Transformational leadership theory underpins the survey instrument known as the Leadership Practices Index (LPI) that will be used in the present study. It was in the early 1980s that Kouzes and Posner began work on their contribution to leadership theory. In particular, their work was aimed at shifting the focus from psychological approaches to leadership to what leaders actually did, and what the effects of these practices were (Kouzes & Posner, 1990). They challenged contingency theory as they identified five exemplary leadership practices that were universally applicable for effective leadership. In terms of the traditional division between leadership theories, Kouzes and Posner (1990) saw leaders as made not born. Leadership was learned, and the authors sought to understand how the two types of personality they focussed on – introvert and extrovert – can use their respective traits to develop into leaders through this learning. Part of the popularity of their work and the LPI instrument was that measuring only objective performance criteria (i.e. sales results, profitability, staff turnover, market share etc.) failed to demonstrate a causal link between management practices and outcome. By adding subjective criteria, the link between practices and results (cause and effect), could be inferred and those with a strong positive relationship could be encouraged (Hartman, 1999).

Kouzes and Posner (2012) defined leadership as a set of observable behaviours that those in leadership positions could be trained to perform. It is these authors who developed the Leadership Practices Inventory one of the three instruments to be used in the current study which they first published in 1987. Underpinning their construct is the assumption that leadership is something which can be learned and that anyone can participate in organisational leadership whatever the level. Through their work and the analysis of large quantities of data they arrive at a set of five exemplary leadership practices that leaders employ when they are at their most effective (Kouzes & Posner, 2012) as presented in Figure 2-9.

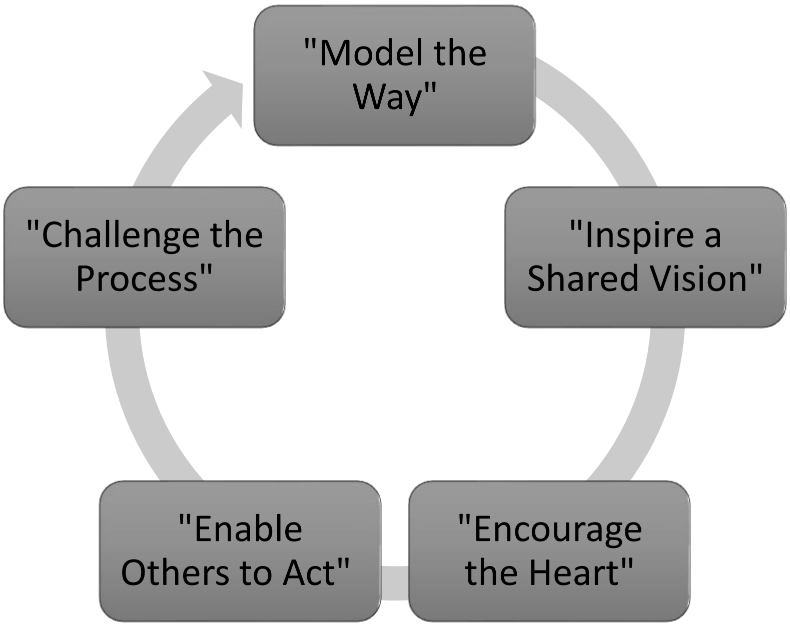


Figure 2-9: The Five Leadership Practices

Source: Kouzes & Posner, 2012

Through their work and the analysis of large quantities of data they arrive at a set of five exemplary leadership practices that leaders employ when they are at their most effective. This are now briefly described based on Kouzes and Posner (2012, p. 36):

- **Model the Way:** the leader finds their voice and affirms shared ideals; they lead by example through actions aligned to these shared values.
- **Inspire a Shared Vision:** the leader imagines exciting and fulfilling future opportunities and enlists others to that vision through shared aspirations.
- **Challenge the Process:** the leader proactively looks for means of improvement however small; they take risks and experiment learning from each experience.
- **Enable Others to Act:** the leader fosters collaboration through trust and relationship building and strengthens others by developing their competencies and their self-determination**.**
- **Encourage the Heart:** the leader gives their recognition for contributions of others and for excellence; both victories and values are celebrated through creation of a community spirit.

For each of these five behaviours there are six statements designed to measure the extent of their presence in the subjects.

In the introduction of their 2017 edition of *The Leadership Challenge Workbook* Kouzes and Posner (2017, p.5) declare that “leadership is everyone’s business” a statement and an approach that helps explain the vast global readership their work has attracted and the extent to which their LPI has been applied in organisations around the world. It has been used across many disciplines and in many types of organisations both public and private sector. It is now commonly part of so-called 360^{o} evaluation, a widely used process for assessment and feedback involving input from a wider range of sources/ stakeholders than previously has been the norm (Kouzes & Posner, 2017). It facilitates feedback on technical, strategic, operational and relational skill types and is considered more effective than a standard manager-subordinate performance appraisal. Typically, for each Self report there are 3 to 5 ‘others’ or observers (Hartman, 1999; Bowles & Bowles, 2000). The observers can be superiors, peers, subordinates, suppliers, among others. According to the Leadership Challenge website over 500 research papers and theses have used the LPI as part of their data collection (Leadership Challenge, 2018).

Transformational leadership was chosen as the main theorised leadership style for a number of reasons. These include the status of transformational leadership as the dominant leadership theory over a sustained period, the substantial and wide ranging body of research that have applied it, and the availability of a reliable instrument (the LPI) associated with transformational leadership practices. Two further advantages are that the LPI instrument has already been translated into Arabic and the vast body of LPI-based research has facilitated the creation and publication of normative data based on observers scoring of 128,000 leaders across the globe, which enables comparitive analysis.

For researchers, the LPI is considered a reliable instrument and its popularity facilitates comparisons and promotes methodological certainties. In the following chapter, this assertion is supported by a review of empirical studies that have applied the LPI.

2.6 Summary and theoretical assumptions

This chapter has described and discussed three strands of theory relevant to the present study: trust, national culture and leadership. In some ways the development of theory in these areas supports Hebb (1969, p.21) when he wrote “A good theory is one that holds together long enough to get you a better theory.” Nevertheless, a theoretical framework and the set of assumptions it represents performs several important functions (Abend, 2013). This is important because “it is a widespread belief that empirical sociological research should be driven or informed by 'theory.'” (Abend, 2013, p.173). Trust, national culture, and leadership have proven to be fertile domains for theory development and no single chapter on all three could claim to be comprehensive. Nevertheless, there is sufficient grounds to establish a set of theoretical assumptions that will inform the rest of this thesis.

With the theoretical literature reviewed both a conceptual framework and a set of theoretical assumptions can be now be presented. The framework is shown as Figure 2-10.

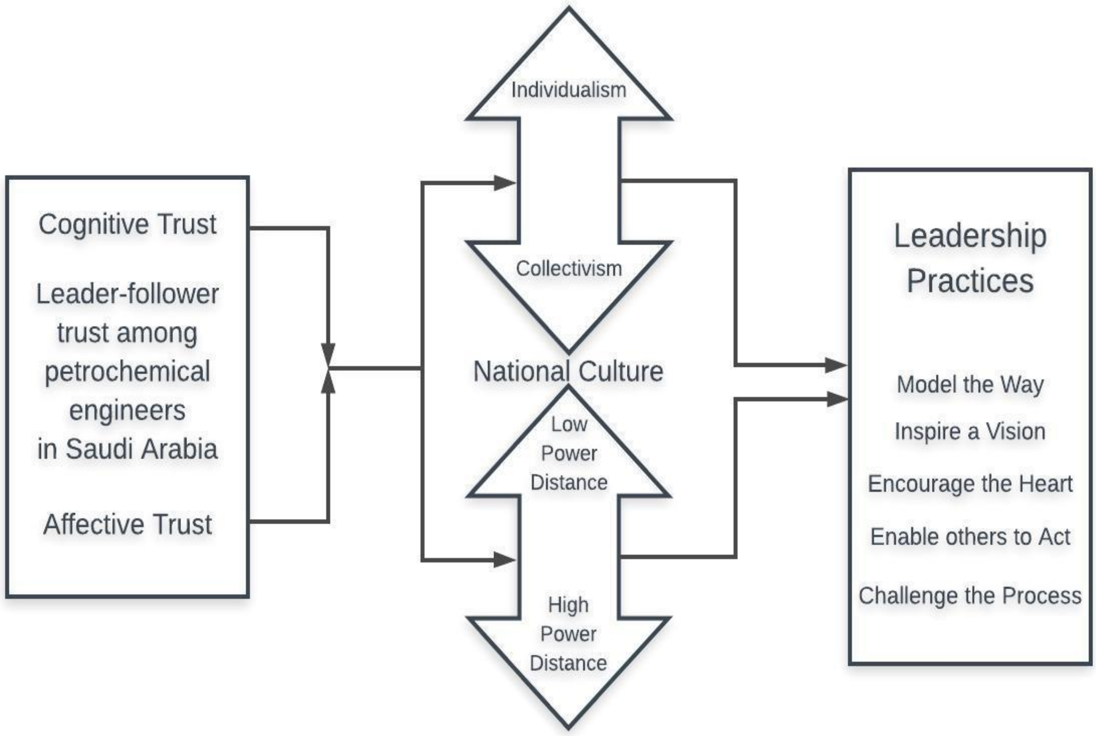


Figure 2-10: The conceptual framework applied to this research

2.6.1 Theoretical Assumptions

As a result of this review of theoretical approaches relevant to the present study, a set of theoretical assumptions can be taken forward, as follows:

- National culture is a justified unit of analyses and theoretical models such as Hofstede's dimensions (Hofstede, 1980) are successfully applied for cross cultural comparisons.
- Trust development is stimulated or inhibited by values and norms which differ from one national culture to another (Doney et al., 1989).
    - The collectivist/ individualist dimension is significant in determining trust development in engineering leadership.
    - The power distance dimension is significant in determining trust development in engineering leadership.
- Leadership practices can be measured and compared (Kouzes & Posner, 2009).

- Based on leadership literature, trust has been associated more with transformational leadership than any other leadership theory (Dirks & Ferrin, 2002).
- Engineering as a profession and the context of the present study has a distinct 'professional' culture that impacts leadership practices and leader-follower trust relationships.
- Saudi Arabia as the setting for the present study has a distinct culture that impacts leadership practices, trust development in leadership, and ingroup-outgroup trust.

The conceptual framework (Figure 2-10) enables the researcher to depict the relationships of interest in the current research. Together with the above-stated theoretical assumptions derived from a review of theoretical literature it will guide the researcher in designing and operationalising the present study and, in particular, in evaluating its findings.

In the following chapter, the extant literature on the relationships of interest in the present study is reviewed. While this chapter has discussed theory the next aims to establish the empirical evidence for these relationships in order to develop hypotheses for the present study.

Chapter 3 : A REVIEW OF LITERATURE

3.1 Introduction

The previous chapter presented the key theories of interest to the present study in order to develop a theoretical framework. The aim of this chapter is to review the empirical evidence that has flowed forth from and helped develop these theories. A further aim is to develop hypotheses to be tested by the researcher as the study is operationalised. The chapter beings with an overview of the review methodology and scope. The rest of the chapter is organised into sections and subsections based on the variables and relationships of interest. This starts with trust at its various levels, national, organisational and interpersonal, with a particular focus on leader-follower trust in the workplace. Following this, the relationships between culture, trust and leadership are examined. This review is divided into the two dimensions of culture of interest in the present study: individualism-collectivism and power distance. The third main review section discusses extant literature, particularly empirical studies, that applies and reports findings on the Leadership Practices Inventory (Kouzes & Posner, 1995). The final section considers the engineering context and reviews studies which were found to be relevant to trust, national culture and transformational leadership. The chapter is then summarised.

3.2 Review methods and scope

To meet its aims, this chapter needs to review the existing literature on multiple variables and relationships. It would not be possible to do this with a single literature search protocol. Hence, the review applies multiple search protocols but applies them in a consistent and systematic way. For each relationship of interest, a systematic review with supplemental hand searches including a snowballing technique was applied. Keyword searches were conducted using Aston University's online library. Search results were then abstract screened for relevance. The reference lists of the screened studies were also hand searched and relevant studies were added to the final list.

The scope of the review was broad in temporal and geographic terms. This is because the key concepts involved such as trust, culture and leadership are not viewed as rapidly changing and cross-cultural research such as the present study requires a broad geographic approach. Only those studies offering empirical evidence on one of the constructs or relationships of interest passed screening. However, metanalytical research was reviewed for its ability to offer broad-based evidence. With multiple relationships required to be covered in the review and with each of these requiring their own search terms, the review is presented in overview format. The literature is synthesised narratively at the conceptual-thematic level with the main objective being to accurately represent the empirical evidence available on the relationships and constructs of interest. In the order they are presented these are (1) Trust at three levels (national, organisational and leader-follower) including outcomes; (2) Culture, trust and leadership (divided between individualism-collectivism, and power distance; (3) Leadership practices (studies applying the LPI instrument).

3.3 Trust antecedents and outcomes

In chapter two the theoretical approaches to trust and the diverse disciplines from which trust as a concept was addressed were described and discussed. The aim of this section is look at some of the empirical literature that has been based on these theories. The review is divided into the different levels of trust: national, organisational and leader-follower trust. Of particular interest are studies examining the antecedents of trust and the outcomes of the presence or absence of trust.

3.3.1 National level trust

At the national level, trust is normally viewed as generalised social trust (Delhey & Newton, 2005) or trust in strangers (Fukuyama, 1995). Research has aimed to apply and develop the thesis that countries can be categorised and compared along trust lines in a similar way they are on other cultural dimensions, such as those proposed by Hofstede (1980).

Fukuyama (1995) proposed trust should be viewed as a cultural dimension in its own right, rather than a symptom of other dimensions such as IDV or PD. He characterises national cultures as low trust or high trust based on the propensity of individuals to trust strangers and argues that while small-scale enterprise may function well in low trust countries, high trust is necessary for the success of large-scale organisations, the government and ultimately the economy as a whole. Japan, the US and Germany, economically successful countries on the world stage, could attribute their success in large measure to high trust. Trust at the national level is associated with low corruption, higher wealth and more developed (Fukuyama, 1995). To test Fukuyama’s thesis, the high trust- low-trust dimension has been applied in comparative studies.

Generalised social trust is defined as “the belief that others will not deliberately or knowingly do us harm, if they can avoid it, and will look after our interests, if this is possible” (Delhey & Newton, 2005, p. 311). Delhey and Newton (2005) compared this form of trust across 60 countries, using World Values Survey (WVS) data. The question asked to measure generalised social trust is: ‘Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?’. Their analysis showed that only six countries qualified as high trust: Norway, Sweden and Denmark, the Netherlands, Canada, and China. Most developed OECD and Western countries were placed into the medium trust category alongside India. The remaining 37 countries were low trust and included most Eastern Europe, South America, and Africa. The authors described several countries including Turkey, Brazil, the Philippines and Macedonia as effectively ‘no-trust’ countries (Delhey & Newton, 2005). Religious tradition remains a strong (usually the strongest) predictor of social trust with Protestantism associated with high social trust. Wealth and good governance was also significant followed by economic egalitarianism (Delhey & Newton, 2005).

Ahmed and Salas (2008) compared India with Sweden using a public goods game (a derivative of game theory). Briefly, the game comprised individual decisions on how much of an endowment they keep for themselves and how much they donate to a public pot. It is seen as measuring trust because in the absence of certainty players must evaluate how much they trust other players to pursue the public good. Under Fukuyama’s definition, Sweden is high trust and India low trust. The experiment found that Swedish participants contributed significantly more to the pool than their Indian counterparts. However, and as the authors acknowledge, Sweden is a high welfare provision country, in contrast to India and this may be a powerful factor behind their findings.

Using data from the European Values Study (EVS) for 29 countries, Reeskens (2013) found that there was a greater propensity to trust cultural outgroups in economically prosperous countries, egalitarian countries and democratic countries. The same applies to tolerance of groups with deviant behaviours; the higher the GDP per capita the greater the tolerance (Reeskens, 2013). Ward et al. (2014) studied six Asia-Pacific countries (Australia, South Korea, Hong Kong, Thailand and Taiwan) to compare trust in individuals and various groups. Wide variations were found; for example, trust in foreigners was recorded at 85.2% in Australia but just 28.2% in Japan and 20.8% in Thailand. Trust in family, by contrast, was universally high. Overall, the lowest trust was reserved for ‘strangers’. From their analysis, the authors identified three categories of country by trust: high trust (Australia), medium trust (Hong Kong and Taiwan); and low trust (Japan and Thailand). Other variables were also found to mediate trust for Ward et al. (2014) albeit not consistently across all countries. In different countries different subpopulations exhibited different trends. The findings are not fully aligned with Fukuyama (1995); for example, trust in family appears to be universal in this study and beyond the influence of nation state or cultural norms. For Fukuyama (1995), trust was more of a zero-sum with Confucianist societies trusting families at the expense of lesser known groups such as strangers.

3.3.1.1 Ingroup outgroup trust

The twin concepts of ingroup and outgroup trusts were discussed in Chapter Two and were found to be relevant to the current study as Saudi culture was understood to promote the former but not the latter.

In the empirical literature on trust different countries have been shown to from different levels of each. Asking the widely-used outgroup (or ‘general others’) trust measure, “Do you think you can put your trust in most people, or do you think it is always best to be on your guard?”, Hayashi et al. (1982) found that Americans were far more likely (47%) to respond positively than Japanese respondents (26%). Similarly, Delhey and Newton (2005) conducted a comparative study of Koreans and Danes which showed the Danish respondents reported higher general others trust than their Korean counterparts. A study based on World Values Survey data found that while Chinese and Americans varied little in trust of different named referent groups there was a great difference in trust of strangers with 10% of Chinese recording this trust but 50% of Americans (Buchan et al., 2002). Clearly, a common theme of these comparative studies is that outgroup trust appears lower in collectivist societies and that ingroup trust is dominant in such societies. As Saudi Arabia is a collectivist society (Triandis, 1995; Hofstede, 2001) it would seem a safe assumption that a difference between ingroup and outgroup trust would be found there too. It would, however, be wrong to simply characterise ingroup trust as a solely collectivist concept and outgroup trust as an individualist concept. Firstly, ingroup bias has been found among both individualistic groups (Brewer & Chen 2007) and collectivist ones (Leung & Bond, 1984) suggesting either group can label others as outgroup. Hui and Triandis (1986) posited that as individualists are more self-centred that will logically be less concerned with others *per se.* On collectivists, Schwartz (1990) argued that as they demonstrate less concern for strangers and their welfare, they compensate by focussing on the interests of their ingroup. In sum, the bias toward ingroup members may be general.

As with organisations, nations cannot themselves trust, only their individual citizens. However, the literature has successfully measured and compared aggregate trust and proposed a range of outcomes. Another important aspect of the literature is that trust may be viewed as a cultural dimension in its own right rather than an outcome or symptom of other cultural orientations.

3.3.1.2 Instrumental and relational trust

A further means of classifying forms of trust is between relational and instrumental trust (Tyler and Degoey, 1996). Instrumental trust is based on self-interest. A belief that by giving trust to another person one would receive a positive outcome. Instrumental trusting is a means to an end. For relational trust, hoped-for outcomes are less important. Instead, the way an individual believes they are being treated within the group is the influencing factor (Kerkhof et al., 2003).

3.3.2 Organisational level trust

Of course, organisations cannot trust, only those individuals within it can (Dyer and Chu, 2010). The outcomes, however, manifest at the organisational level. For example, trust leads to positive OCBs in the individual (Podsakoff et al., 1996; Van Dyne et al., 2000) and when positive OCBs become the norm across the organisation there are a range of positive outcomes. This link between individual trust, positive OCBs and organisational outcomes is encapsulated in Organ's (1997, p. 86) definition as, "…individual behaviour that is discretionary not directly or explicitly recognised by the formal reward system and that in the aggregate promotes the effective functioning of the organization". Furthermore, while not capable of trust an organization can develop a reputation for trustworthiness which can influence the way it is perceived by individuals both internal (employees) and external (e.g. customers, suppliers, general public) to the organisation (Dyer & Chu, 2010).

At an organisational level, trust is a source of competitive advantage, according to Barney and Hansen (1994). Likewise, competitiveness needs managers and employees able to build external trusting relationships with their partners while internal trust is a requisite for building value (Huff & Kelley, 2005). Trust is a "remarkably efficient lubricant to economic exchange [that] reduces complex realities far more quickly and economically than prediction, authority, or bargaining" (Powell, 1990, p. 305).

One concept often used in the context of trust in the employment relationship is that of the 'psychological contract'. In earlier work on this concept the contract was mainly viewed in terms of a set of expectations that an employee has of the organisation it works for (Kotter, 1973). In what it perhaps the seminal work on the psychological contract, Rousseau (1989) argued that the contract forms when an individual perceives that their contributions imply a need for reciprocity on behalf of their employing organisation and expects this reciprocity to transpire. She posited that the psychological contract influences both job attitudes and job performance (Rousseau, 1995). More recently, Guest (2016) has allowed for the existence of such a contract between employee and manager as agent of the organisation. Rooted in exchange theory, the psychological contract is reliant on trust both for its initial formation and its ongoing maintenance. As Coyle et al. (2004, p.7) explain, “one party needs to trust the other to discharge future obligations (i.e. to reciprocate) in the initial stages of the exchange and it is the regular discharge of obligations that promotes trust in the relationship”. Of particular interest is what causes breach of the psychological contract and what are the consequences of such a breach. Contract breach is associated with higher turnover, poorer job performance, and lower trust; however, its effect on trust is determined by the circumstances of the breach and how it is communicated (Guest, 2016).

3.3.3 Leader-follower trust and its antecedents

Leaders at whatever level play a dominant role in determining the trust culture among individuals, in teams and at the organisational level (McAllister, 1995; Shaw, 1997). Whether first line supervisors, middle managers or top leadership, trust in leaders is a ‘glue’ that holds organisations together (Covey & Merrill, 2006). As Hui, Lee, and Rousseau, (2004, p. 238) explain, “The relationship with one’s supervisor . . . may anchor the relationship with the organization and one’s willingness to contribute to it”. In the present study’s engineering context, leader-inspired trust may be especially valuable as the tasks are complex, sometimes unstructured, and the project-based work requires greater interdependence, information sharing and cooperation (Creed & Miles, 1996; Zand, 1972). Fairholm (1994, preface) goes further by arguing that “Without a unified trust culture, leadership as it is now defined is impossible” and continuing that “Gaining the use of follower talent, time and creativity means leaders must induce them to want to do what needs to be done”.

Vulnerability is a concept that often appears in efforts to define trust, including those discussed in Chapter Two. Vulnerability has itself been defined in a number of fields. From the social sciences Chambers (2006) defines vulnerability as, “exposure to contingencies and stress, and difficulty in coping with them. Vulnerability has thus two sides: an external side of risks, shocks and stress to which an individual or household is subject; and an internal side which is defencelessness, meaning a lack of means to cope without damaging loss” (p. 33).

Leader-follower relationships feature an imbalance of power with the follower being vulnerable to the actions of the leader (Nienaber et al., 2015). In their theoretical model based on a systematic literature review, Nienaber et al. (2015) situate the individual characteristics of the trustor including their propensity to trust, alongside the characteristics of the specific situation as the two starting inputs in the process of trust development (see Figure 3-1).

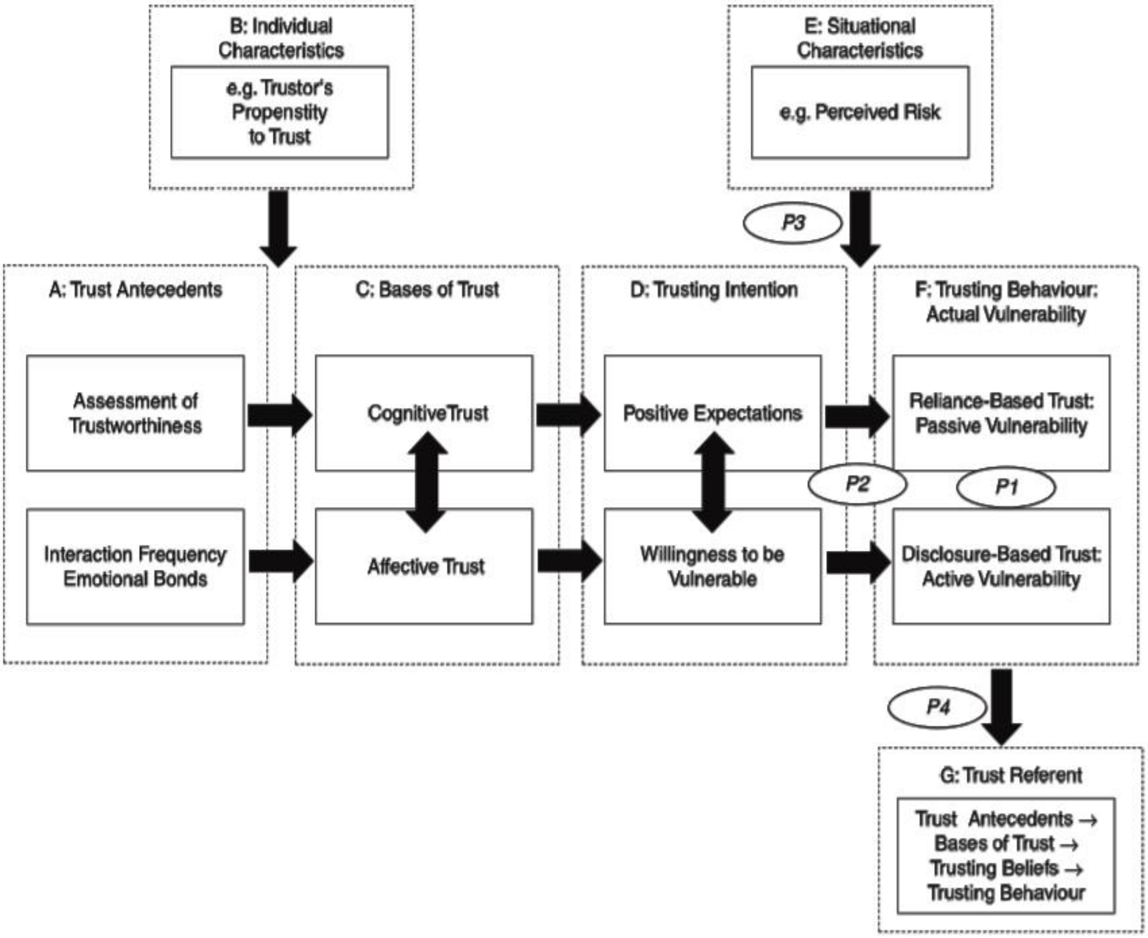


Figure 3-1: Nienabar et al.'s theoretical framework of trust and vulnerability

Source: Nienaber et al. 2015, p. 573.

Another aspect of trust research concerns the antecedents of trust, the conditions required for trust to develop. As discussed in Chapter two trust is often viewed as being either cognitive or affective. The antecedents for each type are also considered to be different (Nienaber et al., 2015). Trust theory discussed in the previous chapter tends to view trust as having two forms -cognitive and affective. Antecedents of trust also follow this division (McAllister, 1995). However, research focus has been placed overwhelmingly on antecedents to cognitive trust (Dirks & Ferrin, 2002). An important antecedent of the first type of trust is perceptions of the leader's character and ability (Dirks & Ferrin, 2002; Mayer et al., 1995). Of particular interest to researchers has been the quality of benevolence, which has been described as not exploiting a trustee's vulnerability (Bews & Rossouw, 2002). Benevolence entails refraining from using hierarchical differences or follower dependency to take advantage of followers. Similarly, characteristics of perceived justice (Colquitt & Rodell, 2011) and fair treatment (Yang & Mossholder, 2010) are also associated in the literature with leader benevolence. In addition to benevolence, integrity is cited as a further characteristic likely to promote trust and is manifest in the principles and values of the leader/ trustee. Hence, in a model proposed by Colquitt and Rodell (2011) trustworthiness is a composite of ability, benevolence and integrity but this alone in not enough to establish willingness to trust. For this, four forms of justice also need to be perceived: procedural, distributive, interpersonal and informational justice. The evaluation of these factors is viewed as a cognitive process as followers carefully consider their willingness to be vulnerable in the light of perceived cognitive assurance (Colquitt & Rodell, 2011; Yang et al., 2009).

Turning to affective trust, the kind that is based on emotional bonds, the literature is sparser in its examination of antecedents. Citizenship behaviours, where individuals go beyond their formal duties in helping the team effort is also a source of binding and hence affective trust (Organ, 1988). In line with this, Webber's (2008) longitudinal study of trust in student project teams suggests that affective trust in individual team members develops through citizenship behaviours including a willingness to help other team members while cognitive trust was performance based.

In a Chinese study of trust in leaders, Chen et al. (2014) surveyed a large sample (n=614) of supervisor–subordinate dyads at Chinese firms. In particular, they investigated paternalistic leadership and three aspects of it: authoritarianism, benevolence and morality examining the effects of these leadership traits on follower performance which they divided into in-role performance and extra-role performance. While both benevolence and morality encouraged trust and was positively related to both in-role and extra-role performance, authoritarianism was negatively related to extra role performance. Significantly, the authors suggest that for cultural reasons (the Chinese respect of hierarchy) the preservation of harmony is viewed as a duty and that this duty preserves trust in leaders. Nevertheless, concerning extra-role performance, authoritarian behaviours still appear to have a negative effect despite the duty of trust (Chen et al., 2014).

The concept of authentic leadership and its role as a trust antecedent has also attracted interest (Luthans & Avolio, 2003; Kernis, 2003; Gardner et al., 2005). A leader should aim for a personal state of authenticity which involves "the unobstructed operation of one's true, or core, self in one's daily enterprise" (Kernis, 2003, p.1). Covey and Merrill (2006) propose that authentic concern is a management trait related to higher trust as it generates reciprocation. In their study, Wang and Hsieh (2013, p.621) found that only "consistency between words and actions" (i.e. authentic leadership) was positively related to employee trust in supervisor.

Furthermore, the authentic leader then extends this authenticity to their relations with followers. These relationships are then characterised as transparent, open and trusting as well as providing guidance towards valuable objectives and emphasising follower development (Gardner et al., 2005). Clearly, there are commonalities here with transformational leadership practices discussed further in the following section.

3.3.3.1 Trust and transformational leadership

The relationships between transformational leadership, trust, follower performance and organisational outcomes has attracted much research interest (Burke et al., 2007; Judge & Piccolo, 2004; Lowe et al., 1996; Avolio et al., 2004; Walumbwa & Hartnell, 2011). Transformational leadership is proposed as an antecedent of follower trust. Theory posits that transformational leaders engage in positive leadership practices including being supportive, respectful and encouraging towards them (Dirks & Ferrin, 2002; Jung & Avolio, 2000). This higher level of trust results in followers who are more committed to on-time completion of their tasks and more likely to voluntarily behave in ways that help the organisation beyond their formal duties (Burke et al., 2007). A meta-analysis by Dirks and Ferrin (2002) uncovered a range of positive outcomes from trust in leadership covering both attitudes and performance. Being one of the first such meta-analyses of trust in leadership and such a wide range of outcomes, they found three particularly significant antecedents of trust: perceived organisational support, perceived interactional, and of particular relevance to the present study – transformational leadership.

With more recent theoretical contributions emphasising the two types of trust, cognitive and affective, Zhu et al. (2103) examine whether the effect of transformational leadership on trust related to both forms, or just one. Their study of 318 supervisor–subordinate dyads at a Chinese garment factory finds that while transformational leadership is associated with increase cognitive and affective trust, it is the affective element that is related to increased follower organisational commitment, enhanced performance and OCBs. Cognitive-based trust may lack influence on these positive outcomes because of a tendency to free ride, especially in large teams (Zhu et al., 2103).

Researchers have collectively developed a broad base of positive outcomes of trust in leaders, sometimes but not always in the context of transformational leadership. Mayer et al. (1995) argue that in situations where followers have trust in their leaders to possess the requisite integrity, benevolence and ability, they would feel be less apprehensive about engaging in more deeply trusting relationships, such as sharing sensitive information. At the organisational level, trust in the leader has been associated with outcomes such as employee satisfaction, effort and performance, organisational citizenship behaviour, teamwork and collaboration leadership effectiveness, human resource management, and success in negotiations (Olekalns & Smith, 2007). At a national level trust in leaders is viewed as a driving force in organisational change and survival, entrepreneurship, strategic alliances, mergers and acquisitions, and even the heath of the economy at a national level (Fukuyama, 1995; Fulmer & Gelfand, 2012). Followers trust their leader when they come to see him/her as a reliable and stable person (Peterson et al., 2003).

Trust therefore exists at multiple levels. In the present study, which examines the trust in immediate leaders/ supervisors it is individual level trust that is of interest. It is at this level of analysis that the study operates rather that higher levels which consider collectively shared trust within a particular unit which may be a team or a whole organisation (Fulmer & Gelfand, 2012).

3.3.4 Trust and positive outcomes

Trust has become a popular concept among researchers being used to predict a whole range of outcomes at multiple levels, individual, organisational and societal. These are invariably positive; there is little question in the literature that trust is anything but a beneficial even requisite state for a myriad of positive outcomes. Indeed, Dyer and Chu (2010, p.28) likened trust to apple pie and motherhood as "one of life's indisputable wholesome ideals". Trust has emerged as a prominent construct in research predicting individual-level outcomes such as job satisfaction, organizational citizenship behaviours, organizational commitment, turnover, and job performance (Deluga, 1995; Dirks & Ferrin, 2001; Flaherty & Pappas, 2000; Robinson, 1996). Moreover, trust has also been positively associated with revenue and profit at the organizational level of analysis (Davis et al., 2000; Simons & McLean Parks, 2002). As trust has been associated with this diverse and impressive array of outcomes, commensurate vigour has gone into specifying the variables that may generate trust as well (Butler, 1991; Dirks & Ferrin, 2001; Mayer, Davis, & Schoorman, 1995; Whitener et al.,1998).

Trust has been associated with national economic success (Fukuyama, 1995). Knack and Keefer (1997) even quantified this relationship, finding that when national trust increases by a standard deviation of one an increase in economic growth of one-half of a standard deviation is predicted. Additionally, trust has been shown to have an important relationship with transformational leadership practices. Goodwin et al. (2011) set two alternate hypotheses in their American study of 100 leaders and 209 of their followers. One hypothesis positioned trust as a mediator of transformational leadership practices and the other as a moderator of the same. They examined the relationships with three outcome variables: organisational citizenship behaviours, performance and affective commitment. After analysis, the moderating relationship hypothesis was rejected. However, the mediation hypothesis was entirely supported by the results indicating that trust is not simply an outcome of transformational leadership but is instead the basis for its influence on these individual level outcomes when each is considered within the same paradigm (Goodwin et al., 2011).

3.3.5 Measuring trust

With trust emerging as such an important construct, interest in how it should be measured grew in tandem. One of the earliest attempts came in the form of the American General Social Survey (GSS) survey item asking ‘‘Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?’’, an item also adopted in other national surveys such as those conducted by the UK’s Office of National Statistics (ONS, 2017). However, this single item approach has been criticised for being too abstract, vague and problematic when interpreting results (Glaeser et al., 2000).

Game theory has been used to explain the dynamics of trust and trustworthiness in rational human decision-making. It has been applied through experimental designs based on gaming trust. The most prominent example of these games is the ‘Prisoners’ Dilemma (Luce and Raiffa, 1957). Glaeser et al. (2000) adopted a different approach including a survey with multiple trust related questions and a two-part trust game. Bohnet et al. (2010) used a binary choice game to compare willingness to trust among Americans and Arab countries including Saudi Arabia. They found that elasticity of trust in the face of punishment for betrayal differed significantly. One question raised by this style of experimental measurement of trust is that it assumes that trust and cooperation are effectively the same thing which is highly questionable (Hardin, 2003). Another criticism is that the rational choice approach inherent in game theory exaggerates human rationality and the individual’s inclination to process conscious calculations (Girmscheid & Brockmann, 2009).

Perhaps the dominant means of measuring trust in empirical research is the use of a multi-item survey instrument. There is no shortage of survey instruments aimed at measuring trust. In their review of such instruments, Dietz and Den Hartog (2006) evaluate 14 of them, finding strengths and weaknesses in each. These scales measure different forms and relationships of trust. One of the earliest was Rotter’s (1967) scale of trust in interpersonal relations.

One of the leading instruments for measuring interpersonal trust including leader-follower trust is McAllister’s (1995) which has been both modified and translated into multiple languages including Korean and Chinese (Kim, 2005; Wang & Hsieh, 2013) but not yet, to the researcher’s knowledge into Arabic. As stated in Chapter two, McAllister (1995) asserted that the two main forms of trust were cognitive and affective. He reflected this in the design of his 11-item instrument which included six items measuring cognitive trust and five measuring affective trust. Respondents gave their response on a seven-point Likert scale, from strongly agree (1) to strongly disagree (7) in respect of a specific peer (See Appendix 2). The sample for his original study comprised current and former MBA students, employed in various business sectors. In addition to trust items McAllister (1995) added items measuring Need-based monitoring, Affiliative citizenship behaviour, Assistance-oriented citizenship behaviour, and Monitoring and defensive behaviour. Subsequent studies modified the trust component of McAllister's survey. Erdem and Oden (2003) modified it to measure team trust. Washington (2013) used a modified version to study trust between project managers and their clients. For Zur et al. (2009) a modified version was used to collect data on the relationships between Australian exporters and their overseas customers. Chua et al. (2008) selected just two items from each of the two (cognitive and affective) trust scales for their study of American managers' professional networks.

The modifications can involve deletion of items, additions, translation and changes to the Likert scale used.

3.4 Culture, leadership and trust

This section comprises three subsections. Firstly, the literature mainly focussed on individualism-collectivism (IDV) is reviewed. Secondly, extant power-distance studies are discussed. Thirdly, literature where both these dimensions feature equally prominently are reviewed. The reasons for combining discussion of some of the literature is that high PD is closely associated with low IDV and separating out the effect of each is problematical for many studies. This is demonstrated by the high correlation (0.67) between the two dimensions in Hofstede's original study (Hofstede, 1980). Many studies, like the present one, examine relationships for both dimensions in the same paper. So, while Hofstede may argue that they are distinct concepts, and that the correlation vanishes when controlled for economic wealth (Hofstede, 1985), for the purposes of this literature review some mixing of the two dimensions is inevitable to avoid reviewing many studies twice.

3.4.1 Individualism-collectivism, trust and leadership

To restate the discussion in the previous chapter, Hofstede describes collectivism as representing "a preference for a tightly knit social framework in which individuals can expect their relatives, clan, or other in-group to look after them, in exchange for unquestioning loyalty". He contrasts this with individualism which he saw as "…a preference for a loosely knit social framework in a society in which individuals are supposed to take care of themselves and their immediate families only" (Hofstede, 1985, pp. 347-8). Researchers have found the IDV dimension particularly useful in a wide range of fields. Here our interest is in its relationship with trust and leadership. Significantly, IDV has been identified as the most important cultural variable in determining an employee's trust in management (Huang & de Vliert, 2006). This supports the literature that proposes that individuals in some national cultures are more likely to trust than those in other cultures and that this can hold true even when that trust is not reciprocated (Luhmann, 2018; Tyler & Kramer, 1996).

Fulmer and Ostroff (2017) studied the effect of employee vertical collectivism on trust in direct leader and top leader among serving US military. Vertical collectivism refers to 'sticking together' attitudes as opposed to 'us and them'. Perhaps unsurprisingly, bearing in mind the setting, vertical collectivism was high (4.50 on a 5-point scale). Individuals' trust in top leaders was more influenced by direct leaders' procedural justice when they had low vertical collectivism. Fulmer and Ostroff conclude that trust trickles upward and that "individuals' trust in direct leaders inspires trust in top leaders" (2017, p.653); furthermore, this trickle up is facilitated by direct leaders who adhere to procedural justice.

Job formalization is a term referring to the creation of a predictable employment relationship through the setting of rules, regulations and procedures (Xu & de Vliert, 2006) analysed data from 160,577 employees in 46 countries to examine the relationship between job formalization, IDV and trust in management, making this one of the largest studies of this cultural dimension in an organisational context.

With a sample of 501 Indian managerial-level employees, Agarwal (2014) investigates the effect of individualism-collectivism on responses to psychological contract breach on organisational trust and the moderating effect of individual level trust on these responses. Rather than attributing low or high IDV based on national culture, this is an example of a study which allows for and collects data for individuals with the same national culture, on the assumption that significantly different individual values can be found. A 16-item scale of IDV devised by Ramamoorthy and Flood (2004) was used and it was found that perceived breach of psychological contract reduces trust in organisation. While both individualists and collectivists respond negatively to perceived breach, the reaction is significantly stronger among those reporting collectivist values.

While most studies measure the level of trust, van Hoorn (2015) considers the radius of trust – how far trust radiates outward from an individual – and the IDV cultural dimension. A large-scale sample using World Values Survey data and Hofstede's (2001) measure of IDV found that individualism is associated with a broader radius of trust, whereas collectivism is associated with a narrower radius of trust. Consequently, as indicated earlier in this chapter, individualists' exhibit outgroup trust while collectivists exhibit ingroup trust.

Hence the majority finding in the literature is for a negative relationship between trust and individualism and a positive one between trust and collectivism. Exemplifying this literature, Doney et al. (1998) reason that as collectivists have group beliefs and values and pursue collective interests, they are unlikely to engage in opportunistic behaviours. Collectivists are not oriented toward self-interest whereas individualist trustees are less likely to act in the best interests of a trustor. However, there is also literature which suggests a more complex relationship.

3.4.1.1 The alternative hypothesis

A note of caution should be added concerning the assumption that collectivists trust more than individualists. Contrary evidence, that high IDV is positively related to propensity to trust, has been offered. As part of a study of individualism-collectivism and social capital, Allik and Realo (2004) included a survey item with the statement “most people can be trusted” thus measuring general interpersonal trust. They found that high IDV countries (and US states) reported higher interpersonal trust than low IDV counterparts. Similar evidence comes from Huff and Kelley (2003). More recently, Beilmann et al. (2018) examined the same relationship but also included the individual level. With a large sample of 54,673 individuals from 29 European countries, the researchers find that the positive relationship between generalised social trust and social capital as a whole and individualism holds true at the individual level. They conclude that “people who emphasize independent thought, action, and readiness to change are not only more willing to believe that most people can be trusted and are honest” (Beilmann et al., 2018, p.656).

Huff and Kelley (2005) find that collectivism may inhibit external trust relations while individualism may support them. For the bank managers in their study those from the USA showed a far higher propensity to trust than their counterparts in Asia. However, internal organisational trust was higher in the collectivist countries particularly for smaller organisations (Huff & Kelley, 2005). The authors also hypothesise that individualists may be quicker to trust externally but may also withdraw from a trust relationship more quickly should they perceive that it is no longer in their self-interest. Collectivists may be slow to trust but once established the trust relationship may be more enduring (Huff & Kelley (2005). Huff and Kelley (2005) ask whether collectivism is a handicap to a global organisation needing to reach out beyond traditional ingroups. While they suggest Asian companies may aim to be more trusting externally, they also recognise how ingrained such a cultural orientation is. Fukuyama (1995) was unequivocal in identifying this low external trust as the explanation for lack of international success for countries such as China. However, Fukuyama did not equate collectivism with low trust instead proposing that trust itself should be viewed as a cultural dimension. Fukuyama (1995) highlights that Japan and the US are both high trust countries but Japan is collectivist and the US individualist. Likewise, China and Italy are both low trust countries, but the former is collectivist and the latter individualist.

Torres and Bligh (2012) consider the concept of leader-follower distance. This distance occurs along three dimensions, physical distance, social distance and frequency of interaction. Among the relationships studies was that between IDV and trust in leaders as well as examining whether the IDV variable acts the same for trust in organisational leaders as it does for immediate leader (supervisor). The distance dimensions did not correlate consistently. Social distance showed a negative correlation to trust in both immediate leaders and organisational leader. Hence social closeness leads to enhanced trust. The other two dimensions physical and interaction showed no significant correlation. Having predicted that collectivism would be associated with lower trust in leaders the researchers found no evidence to support this and suggested that the 'collectivism' concept may be too broad and would benefit from being broken down, at least into ingroup and outgroup forms (Torres & Bligh, 2012).

In concluding, it is clear from this review that the relationship between IDV and trust is multi-dimensional, and that the literature does not support a single explanation of this relationship. In particular, ingroup (internal) trust and outgroup (external) seems a valid division in considering the relationship with IDV. The next section turns to the power distance dimension and its relationship to trust and other variables pertinent to the present study.

3.4.2 Power distance trust and leadership

Whatever the culture, leadership is associated with status, power and disproportionate influence (Dickson et al., 2003). Power distance, a cultural dimension first explained in Chapter Two is therefore closely associated with leadership. In a hierarchical culture, organisations are more likely to reflect hierarchy in their structure and practices. The autocratic leadership practices in high PD countries would be unremarkable, even expected whereas in a low PD culture they would be deemed unacceptable. Similarly, for followers, expressing contrary views to those of leaders would be unacceptable behaviour in high PD countries but normally seen as a desirable behaviour in low PD ones (Adsit et al., 1997).

If power distance was a construct applied mainly at a national level to describe one of the dominant cultural values shared by most nationals in a given country, then power distance orientation (PDO) was a term introduced to specifically refer to individual level PD. In a workplace setting, PDO refers to the degree to which employees agree that it is appropriate for their supervisors to hold the power to guide their actions and behaviour. Likewise, it refers to the appropriateness of the employee questioning the decisions and authority of the supervisor (Graham et al, 2018). Power distance is an important cultural dimension as reflected by its prominence in cross cultural research including organisational and leadership literature. According to Hofstede PD refers to the "different solutions to the basic problem of human inequality" (Hofstede, 2001, p. 29). The aim of this subsection is to review existing literature that considers the effect of high or low power distance on a range of organisational variables including innovation, organisational citizenship behaviours, trust, and leadership practices. The review is divided into three: national-level findings, organisation-level findings and leader-level findings.

In today's globalised business world multicultural workforces and cross-cultural organisations such as international joint ventures are increasingly common. In a discussion of power distance, this raises the question of what happens when one half of the employee-supervisor relationship has a different PD orientation to the other. It was this question of compatibility that Graham et al. (2018) examined in their US study of employees and supervisors at physical therapy clinics. Levels of reported conflict were greatest in a dyad where a high PDO supervisor supervised a low PDO employee. Conversely, when the supervisor is low PDO and the employee is high PDO the lowest level of conflict is reported. Hence not all PDO incongruence increases conflict. The authors postulate that authoritarian behaviours of high PDO supervisors may cause the raised conflict levels (Graham et al., 2018).

Hu et al. (2017) considered PD and its relation to creativity at a team level in their Chinese study. Humility of the leader was analysed alongside the PD expectations of team members. The positive effect of humble leadership on team creativity was mediated by team level PD. Significantly, this study measured team PD for 72 teams in the same country and found significant differences in reported team PD some high and some low. This reminds us that Hofstede's national level dimensions are loose aggregations that do not recognise variations at other levels. Furthermore, the results of this study suggest the role of humility may have been underestimated in leadership theory and is not considered a transformational leadership practice are identified by the LPI.

There have also been leadership practices studies at the national level. Fikrit Pasa (2000) studied influencing behaviour in Turkey using content analyses of influence incidents for a sample of 24 managers and then a survey using the Influence Behavior Questionnaire (IBQ) with 336 respondents. The findings supported the view that the effectiveness of these influencing behaviours vary from one country to another. In particular, in a high PD, low IDV culture such as Turkey (and also Saudi Arabia) influencing behaviours of rationalizing and involving and pressure are the preferred types (Fikrit Pasa, 2000).

Afza (2005) studied small manufacturing companies in India to examine the effect of hierarchy-based power on motivation. India scores highly for PD and is considered by the authors to be a socio-culturally unique country. The sample of 353 employees working at 25 firms. Respondents were surveyed using items to evaluate the French et al. (1959) bases of supervisory power (Coercive, Reward, Legitimate, Expert and Referent). A regression analysis was performed. In terms of the most relevant finding to the present study, some results were not consistent with the expectations arising from the high PD nature of the culture. As examples, performance-contingent coercive power failed to have any significant effect, but legitimate and expert power bases positively influenced behavioural compliance. This leads the authors to postulate that small businesses, their leaders and employees, may give rise to certain short-term survival-based behaviours, prioritising these over more positive long-term leadership behaviours (Afza, 2005).

Alves et al. (2006) consider the concept of self-leadership in non-US cultures. In particular, they examine whether self-leadership can co-exist with high PD as the former implies a significant degree of autonomy and input into goal setting and decision making. Their analysis concludes that self-leadership practices are more culturally contingent on high PD countries and more restricted to the symbolic rather than the material.

The effect of transformational leadership behaviour on organisational culture was examined by Aydogdu and Asikgil (2011). Their correlational analysis took the components of organisational culture to be Hofstede's first five dimensions and so included PD. Transformational leadership was measured not by the LPI but by the Multifactor Leadership Questionnaire (MLQ) proposed by Avolio and Bass (2004). Results showed a positive and significant correlation between transformational leadership and PD. However, the relationship was also positive and significant for the other four dimensions. The authors conclude that the effect of transformational leadership on organisational culture is highly positive and that such leaders should have the qualities of charisma, intellect, good communication and be a source of inspiration (Aydogdu & Asikgil, 2011).

Anning-Dorson (2018) studies the relationship between innovation and competitive advantage and organisational leadership in two high PD countries India and Ghana. He finds that in a high PD context innovation leadership is required to match the firm's strategy to it environment to achieve competitive advantage.

Euwema et al. (2007) examined the relationship between societal culture and group organizational citizenship behaviour (GOCB) as well as the mediating influence of societal culture on the use of directive and supportive leadership behaviour. As with the present study, these authors selected the dimensions of IDV and PD as measures of culture. This large-scale study collected data from 33 different cultures with 20,336 managers and 95,893 subordinates. The study found that culture (as represented by IDV and PD) did have a moderating role on the relation between managerial behaviour and GOCB. A positive relationship was found between supportive leadership and GOCB; a negative relationship was found between directive leadership and GOCB (Euwema et al., 2007).

Some meta-analytic research into cultural values and the leader-follower relationship, the outcomes of leadership and the antecedents of leadership support an important relationship (Dulebohn et al., 2011; Kirkman et al., 2006; Rockstuhl et al., 2012). However, House et al. (2004) found generalised non-culture dependent leadership behaviours in their 62 country GLOBE studies. Dulebohn et al. (2011) specifically identified PD and IDV as influencing leader-follower relationships. There are also questions over the utility of country level cultural values when there is evidence of substantial individual variation within countries (Kirkman et al., 2009).

Ghosh (2011) raises an important question based on the assumption that high PD is a negative value for organisational health as it discourages participation and hence results in an inefficient use of human resources. As high PD is associated with collectivism, he questions whether it is possible to create low PD organisations within collectivist societies or whether high PD can be made to work. This is a question that is highly pertinent to the present study as engineering is a profession that requires high levels of participation and collaboration, but Saudi Arabia is a highly collectivist society. Ghosh (2011) points to evidence that in some high PD cultures empowering individual employees reduces their performance rather than enhancing it and there is other evidence to support this (Wells et al., 2010). Writing in an Indian context but drawing on evidence from further afield, Ghosh concludes that High PD can be made to work effectively so long as it is not in an authoritarian for of PD. Instead he argues for a functional type of PD involving the nurturing of employees and self-efficacy based relationships. Whether these conclusions can be generalised to the Saudi context is debateable.

3.4.3 Leadership in culturally diverse workplaces

Before globalisation was transforming the nature of many organisations and their workforces, Hall (1976) recognised the challenges that introducing cultural minorities into the workforce would have. The leader's aim should be to integrate these new and diverse cultural contexts into the organisational culture in order to build cooperative relationships. Globalization and the increasingly common occurrence of cultural diversity in the workplace has added a new dimension to leadership. Leaders of cross-cultural teams and departments require additional skills compared to those in a monocultural environment. A substantial literature has evolved examining these issues and proposing how managers should respond to these new challenges.

To understand why these extra challenges arise we can consider research which shows that leadership practices effective and valued in one country may not be successful or acceptable in another. One of the most commonly referred to cultural dimensions influencing leadership practices and their effectiveness is power distance as discussed earlier in this chapter. In a multi-cultural workplace, a leader must adjust their practices and interactions to reflect the different expectations of their followers. On the other hand, there are believed to be some practices that appear effective and accepted across many cultures. Some literature suggests some leadership traits and practices can be effective across contrasting cultures. For example, charisma, contingent reward and supportiveness were found to be effective in diverse cultures including Taiwan, South Korea, Japan the United States and Mexico (Dorfman et al., 1997). Similarly, extroversion proved to be an effective trait in China, the US and Thailand which neuroticism proved ineffective in all three. While research based on the GLOBE project, first discussed in Chapter Two, did find universally valued leadership practices, these were outnumbered by those identified as being culturally contingent meaning that culture is indeed a major factor in determining the effectiveness and acceptability of leadership practices and by extension confirms the challenges faced by leaders in a cross cultural environment.

Byrd (2007) states that to be effective in today’s global business world a leader should be understanding and respecting of cultural differences and be able to adjust their style and practices according to the cultural make up of their teams and the backgrounds of individual team members. A further argument is made for the important role human resource professionals play in developing these abilities among managers (Byrd, 2007). Okoro (2012) argues that effective leadership of multicultural workforces has become the key to global business success. For Nguyen and Umemoto (2009) being effective in this regard requires leaders to signal to individual employees that their cultural values are recognised and valued in an unbiased way. Leaders must also understand that the expectations of employees will vary from one country to another as does the interpretation of what constitutes leadership competence (Kowske & Anthony, 2007).

Parvis (2003) states that all leaders from supervisors to senior organisational leadership should act as role models to employees on diversity issues. Communication and especially active listening are highlighted as the key skills required to perform this role modelling effectively.

According to Chandler (2017) large organisations face particular challenges from a culturally diverse workforce. Due to their size there is a potential for organisational subcultures to emerge with a tendency for the organisation to become disorganised as a result. Management is generally viewed as the dominant culture within an organisation and subcultures are defined as “a subset of an organisation’s members who interact regularly with one another, identify themselves as a distinct group within the organisation, share a set of problems and routinely take action on the basis of collective understandings unique to the group (Chandler, 2017). Tomek (2011) highlights religious observance as one of the areas of cultural difference that leaders need to be aware of.

Referring to culturally diverse teams of engineers, Gwynne (2009) describes the potential for cultural disagreements. To counter these, he proposes training to build understanding of the world views prevalent under other cultures and an environment where differences are acknowledged and discussed in the open. The author also prioritises the importance of bridging the language gap in multinational teams, through, for example, common language groups and the use of bilinguals in communication roles (Gwynne, 2009).

Laroche (2012) argues that while those working in the technical professions like engineering are trained to be focussed on hard information, technical data and facts in an entirely objective way the influence of culture is greater than many may realise. Laroche (2012) also argued that some people are affected by issues related to cultural diversity more than others. Those most affected, he argues, are expats who will experience cultural differences more than locals, leaders who need to influence others towards work objectives, and those members of global teams where the team’s work takes place at different locations around the world. This latter group, geographically dispersed groups present additional leadership challenges. Thamhain (2012) argues leaders of such teams should emphasise common values and goals above cultural differences as a way of unifying the team.

3.4.3.1 Cultural intelligence

In line with the academic interest in both social intelligence and emotional intelligence, cultural intelligence has emerged as a concept used by cross-cultural researchers. The concept is used as the basis for an explanation of why some individuals perform better across different cultural environments (Earley & Ang, 2003). Nguyen (2010) explains how through measuring cultural intelligence, which he describes as a “dynamic competency” (p.5), it is possible to predict how well an expatriate will perform when assigned to a new cultural context. The literature identifies cultural intelligence as a competency that can be learned and developed over time.

The cognitive component refers to the individual's ability to process social information and act upon it in cross-cultural interactions. The motivational facet is based on the premise that cultural intelligence motivates adaptation to a new cultural context and relates to a person's self-concept. This self-concept itself comprises three self-motives: self-consistency, self-enhancement and self-efficacy. Thirdly, cultural intelligence has a behavioural component. This means " … having in one's behavioural repertoire responses needed for a given situation" (Earley & Ang, 2003, p. 81).

A significant body of empirical work has applied the concept of cultural intelligence in studies which combine a cultural intelligence instrument with further instruments to measure dependent variables, often job performance (Ang et al., 2004; Ang et al., 2007; Che Rose et al., 2010; Lee & Sukoco, 2010; Sri Ramalu et al., 2012). The evidence points to a positive correlation between level of cultural intelligence and job performance. We can conclude from this that some expats arriving for their assignment in a new cultural context, such as Americans arriving at Saudi petrochemical firms, are predisposed to perform better than others due to their level of cultural intelligence and also infers that expats with experience of multiple cultural contexts through previous assignments are more likely to succeed.

3.4.4 Cross-cultural adjustment

In cross-cultural workplaces it is not only leadership which helps determine trust relations, commitment and overall effectiveness. From the 1980s and 90s and the emergence of more and more MNCs with cross-cultural workforces, the study of expat adjustment and drawn the attention of researchers. The question of expat adjustment to culturally unfamiliar environments is considered highly significant to organisational performance (Van Vianen et al., 2004). When an expat fails to adjust, they experience high levels of stress and a desire to return to their home country often leading to the curtailment of their assignment (Khalil et al., 2016). Hence, lack of adjustment has negative consequences for the expat and for the organisation.

Black (1988) defined cross-cultural adjustment as the extent to which an expat is psychologically comfortable with different aspects of the host country he/she is now working in. It has been suggested that there are three dimensions to this adjustment: the level of psychological comfort with the general environment (healthcare, diet, climate etc.); with relations with host country nationals; and with work (work practices, performance expectations, leadership etc.). Once a satisfactory level of comfort has been reached for each of these three, an expat is able to function effectively and derive satisfaction from their work (Brislin, 1981; Black, 1988). Peltokorpi and Froese (2009) state that the adjustment is a process of uncertainty reduction through the learning and imitation of locally appropriate behaviours while reaching a state of harmony with the local culture. The expat alters their behaviour to fit with the rules and norms of the host country and failure to do so can result in dissatisfaction and poor work performance (Naumann, 1993) and also lead to an early end to the assignment (Harzing, 1995). In contrast, a properly adjusted expat will have assimilated some aspects of the host country culture with their original home country culture (Kim and Ruben, 1988). A successful adjustment process leads to enhanced performance and satisfaction (Black and Stephens, 1989).

Using Schwartz's (1992) Scale of Basic Values, Van Vianen et al. (2004) measured the congruence between expat employees' values and those of the host country and then examined whether these correlated with levels of adjustment. The 'fit' in values was found to be an important determinant of attitudes. In Saudi Arabia, it could be argued that the least degree of fit is between the host country and female expats.

Closely linked to the issue of expat adjustment is the phenomenon of question of compound living. This is a significant one for the present study as most expat engineering professionals live in such company-provided accommodation. These compounds are based on a belief in the need to spatially segregate groups from different cultural backgrounds (Glasze, 2006). Following the discovery of oil in the 1930s, the desire to exploit this resource led to the establishment of camps for foreign workers in the 1940s. By the 1970s compounds for expat professionals and their families started appearing (Glasze, 2006). Indeed, any company employing more than 50 foreign employees was required to provide accommodation. The nature of this accommodation depended on the particular group of foreigners involved whether low skilled, technical staff or professionals with the latter group often bringing their families and staying in detached houses in gated communities (Glasze, 2006). It is very rare for a Saudi national to live in such accommodation. While workplace relations are of necessity cross-cultural, the effect of compound living is that social relations among expats are almost exclusively focussed on their own ethnic group (Glasze, 2006). The effect of compounds in Saudi Arabia, is found in the literature to be as a barrier to the forming of social bonds with host country nationals and deters expats from learning the language and customs of the kingdom (Naithani & Jha, 2010; Jackson & Manderscheid, 2015). Despite this, expats favour such arrangements as do the Saudi authorities.

Khalil et al. (2016) explored the experiences of then such expats using qualitative methods. Among the barriers to adjustment, the expats identified, lack of leisure and entertainment opportunities, the perceived attitudes of the local population to expats, lack of pre-departure training and communication difficulties. On the positive side, support from within the expat community and the provision of housing helped with adjustment (Khalil et al., 2016). On the question of housing provision, as this is usually in expat compounds it could be argued that this not easing adjustment but lessening the need for it as the expat has less need to adjust through interaction with the host country environment. By contrast, Jackson and Manderscheid (2015) had a sample that was almost all male better reflecting the expat community in Saudi Arabia. Again, using qualitative methods they interviewed American expats who had been working in Saudi Arabia for between three and 21 years. There were commonalities between the two studies on the effect of compounds. They were valued as a shield from the cultural expectations of the host country and for offering security and personal safety. However, their part in preventing interaction and full adjustment was also recognised by participants (Jackson & Manderscheid, 2015).

In addition to the work conducted on expat adjustment, there is an expanding literature on the concept of multiculturals. Rather than focussing on the challenges of working in a multicultural environment, this literature emphasises the contribution of multicultural individuals. A multicultural is someone "who [has] internalized two cultures to the extent that both cultures are alive inside of them" (Hong et al., 2000, p.710). They have “internalized more than one culture", leaving them with multiple meaning systems (Benet-Martinez et al., 2002, p. 493) and have the ability to maintain their original cultural heritage while at the same time adopting additional cultural identities (Tadmor et al., 2009). The main proposition in this literature is that multiculturals are a significant asset to an organisation particularly when the individual is a leader in a diverse workplace.

Having discussed the challenges of leadership in cross-cultural workplaces and the question of expat adjustment to host cultures, the next section shifts focus to one specific instrument and its application in empirical studies, namely the leadership practices inventory.

3.4.3.1 Educating engineers for multicultural workplaces

Engineering education is closely linked to the question of an engineering culture and, in particular, the challenges of working in multicultural teams and workplaces. Murphy and Coyle (2012) recognise the role of engineering education in creating the image of the engineer as a pure technicist,

> It is also sometimes argued that engineers, by their education, are blinkered to examine only the technical problem before them and consequently do not see other contextual dimensions, such as societal dimensions, and so whilst they may have optimal solutions, they are only optimal with respect to the technical factors they take into account. p.350.

On the basis of a convergence toward global engineering competencies, Patil et al. (2008) advocate that wherever in the world they are engineering graduates should enter the profession with a set of global attributes though would be sought after by employers wherever they are in the world. They argue that to meet the needs of the 21st century's "global, multicultural, multilingual" engineering profession common standards of graduate accreditation should be introduced. In contrast, Lucena and Downey (2000) recognise divergence and argue that 'engineering cultures' should be part of engineering students' formal education because although the American form of engineering is dominant, US graduates are increasingly likely to experience diverse and different engineering cultures during their career. They recommend that students become familiar with alternative approaches to engineering "so they can recognize, understand, respect, and possibly even value perspectives other than their own" (Lucena & Downey, 2000, p.1).

Recognising that today's engineers are likely to have to work in international teams of culturally diverse members the IEEE (2015) recommend adjusting formal engineering education to include, "conflict and negotiation skills, broad historical and culture awareness and increase sensitivity to issues of closeness and trust" (p. 862). Okoro (2012) argues that it is incumbent upon organisations to train their managers undertaking out of country assignments cross-cultural business etiquette to improve their interpersonal relationships once they arrive. Tung (1981) describes this training as way of boosting a person's ability to handle an unfamiliar environment and to perform well in it. A number of studies have offered evidence for the effectiveness of cross-cultural training in developing the competencies and cross-cultural skills that the expat will need (Black and Mendenhall, 1990; Mendenhall et al., 1987; Tung, 1981). The trained expat is more likely to conduct themselves with self-confidence and is better prepared for unsupervised working (Gutterridge et al.,1993).

Cross-cultural training provision has become a significant industry in many countries. It is insightful to consider the content of cross-cultural training courses offered to expats about to take up assignments in Saudi Arabia. One provider includes in its modules training on building relationships based on trust and confidence, the importance of verbal communication, the central role played by religion in daily life, the strictly separated roles of men and women, the fundamental respect for hierarchies and authority, and Saudi attitudes to risk and uncertainty (Akteos, 2019).

3.5 The leadership practices inventory

Research by Beer et al. (1990), Denison (1990), Schein (1985), and Ulrich et al. (1993), has found that as well as supporting high performance, key leadership practices were also linked to cultural values. Leadership practices and cultural values are interwoven and inseparable. Leaders should "…set the direction, reinforce the values, and raise the consciousness of the organization to what it must be rather than what it has been" (Gordon, 1985, p. 104). Transformational leadership theorists propose that visionary leadership is related to a range of positive outcomes and to develop understanding of this many researchers have turned to the Leadership Practices Inventory (Kouzes & Posner, 1995) as part of the instrumentation for their studies. The aim of this section is to explore through the literature how the LPI has been used to understand the relationship between leadership practices and a wide range of other variables with many different samples and contexts. A secondary aim is to understand how other researchers have evaluated the use of the LPI as an instrument so that this can be carried forward to the research design and operationalising of the present study.

A total of 61 studies resulted from the leadership practices search and these were screened for relevance based on their abstracts. In particular, student leadership practices inventory studies were excluded. The remaining 23 were fully reviewed and their references were used to snowball the search. This section now discusses these studies followed by a tabular summary. As the LPI is an important instrument in the present study methodological findings are also discussed.

Using the LPI as the dependent variable, Hartman (1999) also used a personality instrument the Personality Factor Questionnaire (16PF) developed by Cattell in the 1940s. Forty-six senior managers at US companies self-reported and each had four or five observers. Those rating as effective leaders on the LPI were found to possess the personality trait of warmth. Warmth also acted as a swing variable in that some other traits were associated with being either very effective or very ineffective, with which it was being determined by their possession of the warmth trait. For example, a leader who was controlling would be very effective if they had warmth but very ineffective if they had no warmth (Hartman, 1999).

Bowles and Bowles (2000) aimed to compare the effectiveness of two groups of English nursing leaders in order to evaluate the potential value of an innovation in nursing management development. The results did show a difference in how respective observers perceived the two groups, with the observers of those managers who had gone through the development scheme being more positively rated on the LPI, thus providing some support for the scheme. The study also produced some relevant methodological findings. The authors described the LPI as "attractive and easy to complete but […] lengthy, running to four pages and contains terminology that may be unfamiliar …". This led to concerns about its viability as a postal questionnaire and indeed a pilot generated unacceptable response levels. Their answer was to also pilot a telephone structured interview in which the exact wording of the

LPI was followed but the interviewer was able to clarify and explain any uncertainties. Due to the superior results the main survey was conducted with structured telephone interviews (Bowles & Bowles, 2000).

For Ridgeway (2001) the LPI was used to examine the relationship between transformational leadership practices and organisational culture measure using the Organizational Culture Profile (OCP) (O'Reilly et al., 1991). The comparison was between high and mixed performance firms. The key findings were that leadership practices did not significantly differentiate high and mixed performance firms but that organisational cultural values did significantly differentiate firms with high and mixed performance (Ridgeway, 2001). The reliability of the study may have been undermined by the absence of observer LPI, rely solely on the self-reports of managers.

Carless (2001) set out to test the discriminant validity of the LPI. In other words, to examine whether the tool was effective in discriminating between the five exemplary leadership practices (see Figure 2-9 in Chapter Two) or whether it was in fact only assessing the over-arching construct of transformational leadership. Their data, collected from 1400 subordinates of lower and middle managers in an international banking organisation in Australia, revealed consistently high correlations between the five behaviours which they concluded pointed to weak discriminant validity. There were, however, no other studies found that added to this proposition and no self-report LPI data was collected.

Brown and Pozner 2001 examined the relationship between learning and leadership. To do this they deployed the leadership practices inventory (LPI) and the learning tactics inventory (LTI). Their sample of 312 managers were all enrolled in some kind of management course. Hypothesizing that better learners have better management practices, the results indeed showed that managers reporting high use of the desirable learning tactics also reported applying exemplary leadership practises (Brown & Pozner, 2001). Additionally, no gender-based differences were revealed by either instrument. However, only self-reports were used and it is possible that some managers are more willing to ascribe themselves positive practices whether it be for learning or for managing.

As with the present study, Kakar et al. (2002) looked for a culture effect when studying 23 firms based in India but which had a hybrid character part Indian values and part Western values. The LPI was completed by 16 medium- to large-scale company CEOs (self-reports) and 104 subordinates (observer reports). The collected data was then combined with data already collected from American managers by Kouzes and Posner (1995) for comparative analysis. For four out of five practices the Indian CEOs scored more highly than the American norm. Only for Encouraging the heart did they score lower. In seeking to explain these higher scores, Kakar et al. (2002) consider possible cultural influences on the way the instrument is responded to. For example, they question whether in a high power distance context such as India observers may be reluctant to give negative responses out of fear. They also question whether the cultural tendency to idealise the leader, the "automatic reverence for superiors" (p.246), and it is this latter possibility that is deemed a factor in their results.

The context for Sumner et al. (2006) was the IT sector in the US and specifically project teams working within it. Their aim was to cast light on the relationship between project leadership and project success. They used the LPI to investigate whether those managing successful IT projects exhibited positive leadership behaviours to a greater extent that those leading less successful projects, measuring these behaviours with both the self-reported LPI and the observer LPI. The subjects were 57 IT project managers and the finding were interesting in that the self-reported LPI showed no significant relationship between project success and positive leadership behaviours but also that the observer data did. In fact, a relationship between positive behaviours and project success was seen across all five behaviours measured by the LPI (Sumner et al., 2006). This raises important issues for researchers using the LPI instrument. For example, it questions the utility of aggregating self and observer data. This was also an example of a study in which the observers were selected and communicated with by the leader subject rather than the researchers which may have the potential to bias the results.

In a cross-cultural study of three contrasting countries – the United States, Slovenia and Nigeria, Zagorsek et al. (2006) examined the relationship between national culture and leadership practices, making their study highly relevant to the present one. A further similarity is that these researchers also use Hofstede's dimensions to examine the nature of the cultural differences between the aforementioned three countries. For each country the subjects were MBA students. The results indicate that leadership practices are relatively similar despite contrasting cultures leading the authors to conclude that the influence of culture on leadership practices may be reducing. However, the study also found that gender differences in leadership practices did seem to be culturally contingent (Zagorsek et al., 2006). This study raises some significant methodological issues. Firstly, the researchers needed to create a Slovenian version of the LPI through a translation-back translation process. There was no indication that this was perceived as a reliability issue, however, the possibility of bilinguals (in the Nigerian sample) responding differently according to which language was being used was raised (Zagorsek et al. (2006) Secondly, these researchers only used self-reported LPI data which may be problematic for a cross-cultural studies should culture influence the likelihood of social desirability bias. They conclude that a 360 approach including observer data would be preferable. Thirdly, the reliability of some scales in a high contrast country such as Nigeria questions the international universality of the LPI, something that requires further research (Zagorsek et al., 2006).

The subjects in Slattery and Sumner (2007) were 151 'rising stars' of the construction industry in the U.S. There were two groups of observers, immediate supervisors and senior managers. The two questions they aimed to address were which of the five behaviours were most valued by the supervisors and whether the subjects have self-awareness of the behaviours attributed to them by their senior managers. They found that senior managers favoured visible and tangible characteristics (ENAB, MOD) above more intangible ones (INS, ENC). Furthermore, supervisors shared this preference for the concrete management skills above emotional ones. Additionally, the ranking of the five leadership practices were consistent across senior managers, supervisors and the rising stars themselves, although there were significant differences in mean scores with the rising stars self-reporting consistently lower scores that both observer groups. Of particular relevance to the present study, this study focused on a specific business sector, construction, so the leadership practices ratings could be attributed to the nature of the sector. From their results, Slattery and Sumner (2007) found that these construction rising stars perceived themselves to be weaker in 'soft skills' when compared to the means from the population leadership assessment data.

Lee and Cummings 2008 examined the relationship between leadership practices and work life balance and burnout among healthcare managers; they did so using LPI observer data with no self-reporting. The LPI was used alongside two other instruments - the Maslach Burnout Inventory, and the Areas of Worklife Survey. This study focussed on just two LPI behaviours (INS and ENAB) related to emotionally intelligent leadership and hypothesised that there would be a significant relationship between healthcare directors use of these behaviours and the community, sense of congruence and cynicism among healthcare managers reporting to them. They found that INS was not a predictor of community but ENAB was. They also found that neither INS nor ENAB significantly predicted sense of congruence. Thirdly, they reported no significant relationships between these leadership practices and cynicism. They conclude that when found in leaders ENAB may have the most significant influence on the work life of subordinates.

Herbst and Maree (2008) used the LPI with two other instruments in their examination of the relationships between thinking styles, emotional intelligence and leadership practices. Their subjects were 138 managers at a higher education institution in South Africa. The study enabled the researchers to propose what thinking styles and emotional intelligence were associated with transformational leadership. The particular relevance of this study to the present one is its examination of the relationships between three variables. In the present study the three variables are national culture, trust and leadership practices. A subsequent study of 137 managers examined the relationship between self-perception accuracy and leadership effectiveness using both self-reported and observer data (Herbst & Conradie, 2011). This study found statistically significant differences between how higher education managers perceived their leadership practices and how they were perceived by subordinates.

In another study aimed at assessing the efficacy of a leadership development program in the U.S., Leigh et al. (2010) collected LPI data from 27 program participants, identified by senior managers for their leadership potential. Further data was collected from another group of 25 who resembled the profile of the program participants with the important exception that they were not enrolled. The self-reported data collected at two time points showed that the program participants reported an increase use of four of the five practices (INS, MOD, ENC and CP). The non-participant group reported no increase in the use of any of the five practices leading the researcher to conclude that the leadership program was effective in increasing the use of transformational leadership practices.

Raskovic (2013) conducted a cross cultural study aimed at comparing the level of the culture effect on leadership practices in Slovenia and Portugal. The sample comprised of 211 part-time working MBA students. Rather than being two highly contrasting countries GLOBE project data showed that for power distance, uncertainty avoidance and individualism/ collectivism the two countries scored similarly in practices if not in values. Hence the expectation was that there would be little difference in the culture effect size on leadership practices. The standard self-reported LPI was used but translated into the two respective languages. Raskovic found that for four of the five practices (ENAB, MOD, INS, CP) there was a negligible effect size and for one (ENC) there was a small to moderate effect size. The author suggests the lack of difference may point towards the universalist thesis of management practices and away from the cultural contingency view, although this seems to contradict his assertion of the relative similarity of the two cultures. A further point made by the author is that as the data had been collected in 2007 before the global financial crisis there was the possibility that leadership practices may have changed in response to the crisis (Raskovic, 2013) raising the possibility that leadership practices change over time or in response to events.

Another study in the leadership development programme evaluation group of LPI studies is that of Martin et al. (2014) who collected data at three timepoints from 14 ward leaders giving 42 self-report questionnaires. In addition, 420 observer questionnaires were collected again from the three timepoints. Leaders recruited their own observers, 10 each; however, observer responses were returned directly to the researchers in a sealed envelope. The main finding was that for two practices (INS, CP) significant rises in mean ratings were recorded both from self-reported and observer data (Martin et al., 2014). The study is methodologically notable for the high ratio of observers to leaders at 10 to 1. This study is also noteworthy as an example of the LPI being used in a mixed methods design as it is in the present study. However, with such a small leader cohort (14) the results lacked statistical power.

Acosta Prado et al. (2015) examined the leadership practices of 100 Chilean business leaders and the relationship between these practices and the psychological construct hope as measured by Snyder's (1991) instrument. The study did not reveal a significant direct relationship between leadership practices and hope but was able to draw certain correlations between both constructs and the demographic variables. Furthermore, the study identified the strengths (ENAB, MOD, ENC) and weaknesses (CP, INS) of Chilean business leaders in terms of transformational leadership practices.

Van Rensburg et al. (2015) conducted their study at 14 call centres in South Africa. Only observer data was collected. The observers were 217 call centre employees and the leaders were their immediate team leaders. This was a four-instrument study combining the LPI with instruments measuring work engagement, sense of coherence and team effectiveness. The main finding was that there was no significant relationship found between work engagement and effective leadership practices, which the authors attribute to the staff's perception of call centre managers as administrators not leaders (Van Rensburg et al., 2015).

The final paper reviewed in this section was authored by Posner (2016). It is not an empirical study in itself but rather a review of the reliability and validity of the instrument based on a vast dataset of aggregated data. Nevertheless, being recent and written by one of the original developers of the LPI it merits inclusion. Posner analyses the LPI normative database comprising 2.8 million responses collected online between 2007 and 2015. Approximately one in six responses are from leaders with the rest being observers. The database can be broken down by age, education level, gender, ethnicity, industrial sector, among others. Analysis supports that the internal reliability of the instrument is consistently high across almost all subsamples. He also emphasizes that this reliability is not U.S.-centric listing reliability scores for a range of non-U.S. subsamples including 0.64 to 74 for university department heads in Saudi Arabia (Posner, 2016). Also relevant to the present study, for engineering leaders and their observers the internal reliability is 0.80 to 0.92 (N = 67,525).

The LPI has been used in an engineering context and with samples comprising all or mostly engineer respondents. Dunn (1999) study the relationship between leadership practices and employee practices in US and Israeli engineering firms. The researcher found no significant relationship between nation of employment and any of the five leadership practices a result which was taken as supporting the universality of the practices and the relationship between the practices and employee commitment. Stonestreet (2004) conducted a study in the product engineering segment of the US automobile industry and reported a statistically significant relationship between organisational commitment and each of the five leadership practices. Baxter (2001), with a US engineering students and non-engineering students, found that transformational leadership scores of non-engineering students was greater than those of engineering students. Another US study (Godfrey, 2009) examined the effect of being exposed to the principles of quantum physics on LPI scores.

Cross cultural studies exploring the relationship between national culture and leadership practices where there is a debate between those proposing cultural contingency and those supporting universality or convergence of practices. Another group comprise evaluation studies of leadership development programmes where the LPI is used as the sole instrument. A third group are multi-instrument studies exploring relationships between multiple variables. Most LPI studies follow a quantitative design but the review did capture a small number of mixed method designs. The review of LPI studies has also raised some relevant methodological issues related to the LPI. For example, the question was raised whether approaches to completing the LPI as both self-reporter and observer may be culturally contingent. For example, in a high power distance country observers may be more likely to attribute positive practices to their leaders. Furthermore, the value of using self-reported data in isolation can also be questioned, while observer only studies did appear justifiable, particularly those with larger samples.

One issue of high relevance to the present study, the cultural contingency of leadership practices was not convincingly resolved by this review as empirical evidence from the cross-cultural studies included was not decisive.

3.6 Engineering leadership

It is important to consider whether conducting the present study in an engineering context is significant in how it may influence trust, cultural values and/ or leadership practices. There are multiple strands of literature addressing these issues. Firstly, there is literature examining the transition challenge from engineer to engineer leader. Second, there is literature proposing specific qualities and behaviours for new engineering leaders, though this is often opinion based rather than empirical. Third, there is literature on engineering culture which debates to what extent a distinct global engineering culture exists. Fourth, there is a small amount of literature on trust in an engineering context. Each of these are now discussed.

3.6.1 Transitioning to leadership

Any practicing engineer will argue that "an engineer is hired for her or his technical skills, fired for poor people skills, and promoted for leadership and management skills" (Russell & Yao, 1997). A similar point is made by Farr et al. (1997) who add, "Most senior engineers are successful because they have demonstrated technical excellence" (p. 40). Farr and Brazil (2009) refer to a balanced mixture of hard and soft skills required to bring sustained success. Capowski (1994) points out that "Managers these days have to be leaders; there's no getting around it" (p.17). Bellinger (2002) reports a survey in which 77% of engineers have at some point acted as team leaders. However, as Kumar and Hsiao (2007) explain, the soft skills required by leaders have to be learned by engineers when they are 'on the job'.

When making the transition from a technical role to a management one engineers face certain challenges. Normally, it would take 5 or 10 years of technical work before a transition into project management can be made (Reese, 2003, 2004). These challenges can be divided into three. Firstly, for those whose first love was engineering the people problems that come with man-management can prove irksome (Reeve et al., 2013). Secondly, those engineers having a view of leadership as traditionally hierarchical may have difficulty in coming to terms with the flat, egalitarian team-based practices associated with their discipline (Graham, 2012). Third, the very amorphous nature of leadership, which as we know escapes a consensual definition, can sit uneasily in the minds of those who have built their reputations on technical precision (McGrath, 2010; Gopakumar et al., 2013).

The scale of the transition task is also addressed by Fasano (2011) who states that "many engineers fail to make a smooth transition from day-today design calculations to the role of leader" (p.342). This is because the technical skills learned through their education and applied in the early years of their employment do not prepare them. Similarly, Yanow (1992) explains how engineering managers can gain comfort from showing they retain their technical skills, "Engineers face career and identity decisions about moving into management … managers need to reassure themselves of their worth with displays of still remembered engineering skill" (p.207).

Kurstedt et al. (1990) explains the shift from the quantitative priorities an engineer has had since high school based on meeting technical specifications within deadline and at the budgeted cost, to, as a manager, the qualitative human measures of success. Echoing much of the literature on the transition they argue that engineering managers who chose their profession based on a preference for working with “structured machines, materials, and processes, logically related through drawings, scientific laws, and mathematical formulae” (Kurstedt et al., 1990, p. 159) must understand culture and develop communication skills. Relationships with stakeholders have become key to an engineer’s success, including staff, management and peers.

Faulkner (2007) takes a gendered approach and argues that engineering is dominated by a “technicist engineering identity” (p. 331) that is associated with masculinity in contrast to the ‘social’ engineering identity that is linked to ‘femininity’. Faulkner (2007) proposes that this masculinity in engineering prepares new engineering managers for the commercial aspects and for exercising authority over others but that it also makes the transition more difficult in soft skill areas requiring interpersonal skills such as customer relations or team management. This engineering masculinity would be particularly acute in Saudi Arabia where of 2.8 million registered engineers only around 20,000 are women, equating to 0.7% (Saudi Gazette, 2017). Relatedly, another rationale for merging technical and humanistic aspects of engineering is based on the idea of professional service (Cassin, 2003) and on ethical perspectives (Vallero, 2008) and ‘holistic’ engineering (Grasso & Martinelli, 2007).

Managers at engineering firms are recruited for their track record of leadership in technology-based firms characterised by short term product cycles, something which means they must combine their leadership skills with technological relevance. Capowski (1994) points out that “Managers these days have to be leaders; there’s no getting around it” (p.17). Bellinger (2002) reports a survey in which 77% of engineers have at some point acted as team leaders. However, as Kumar and Hsiao (2007) explain, the soft skills required by leaders have to be learned by engineers when they are ‘on the job’.

3.6.2 Qualities for effective engineering leadership

In addition to the need to develop soft skills for use in their future management careers, Farr and Brazil (2009) argue that to help engineers understand the connection of their technical skills with business objectives and markets, engineering education needs to include more emphasis on how business and markets operate. Furthermore, the authors urge engineers to strive for self-actualization in order to maximise their effectiveness as leaders. Self-actualization is achieved by committing as an individual to life-long learning, continual self-evaluation and often through mentoring or using an executive coach. Above all, self-actualization is achieved by learning the nine leadership skills they identify as key to success as an engineering manager (see Figure 3-2).

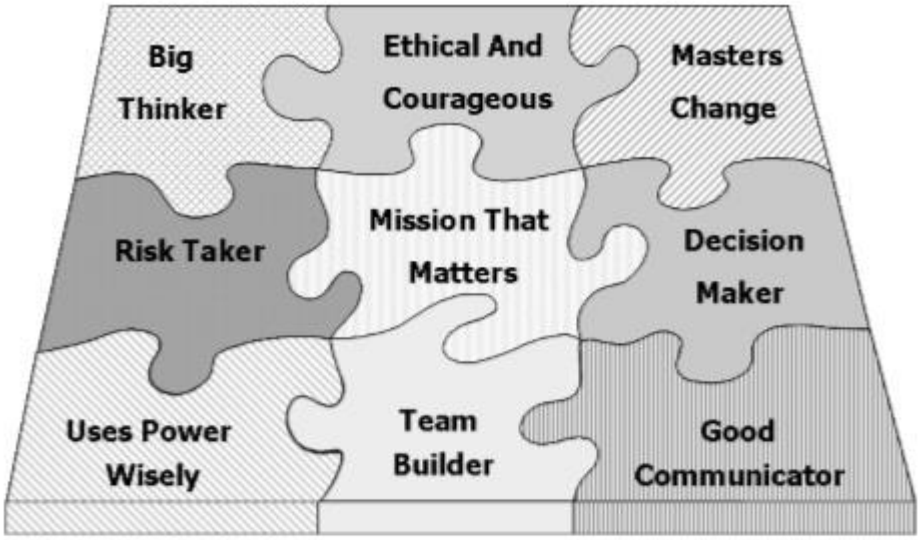


Figure 3-2: Farr and Brazil's (2009) nine steps to self-actualization

Hoske (2015) recommends engineer leaders adopt Horsager's (2011) eight pillars of trust to develop trust among their followers. (1) leaders should always communicate with clarity as followers distrust ambiguity; (2) leaders should act with compassion and take time to learn about and care about their followers; (3) leaders should have character and do what needs to be done irrespective of whether you feel like doing it or not; (4) engineering leaders should stay up-to-date, capable, and relevant and should understand that the best ideas are produced through collaboration; (5) leaders should show commitment as it will build and rebuild trust; (6) Maintain a connection through avoiding arrogance, ambivalence and controlling behaviours; (7) Make a 100% contribution every day always delivering what is expected; (8) Be consistent as consistency is trusted (Horsager, 2011).

Although new engineering leaders may have useful problem-solving skills, but this does not make an effective leader. Like Hoske (2015), Fasano (2011) identifies a set of eight qualities an engineering leaders needs to develop that they may not have been exposed to during their education and early years of employment: (1) exhibiting confidence; (2) communicating effectively; (3) delegating appropriately; (4) staying focussed on detail while maintaining a 'big picture' view; (5) constantly looking for opportunities; (6) maintaining a positive outlook; (7) respecting their followers; and (8) demonstrate appreciation for colleagues (Fasano, 2011).

Another attempt to list the qualities and behaviours needed by a transitioning engineer leader is offered by McKune (2011). To develop into an effective engineer leader the following nine behaviours and qualities are recommended: (1) seek out responsibility to demonstrate dependability; (2) recognise that being a leaders hard work; (3) be willing to be thorough and if necessary ask for advice from more experienced colleagues while accepting constructive criticism; (4) start leading before you are appointed to a leadership position, for example among peers, family and friends; (5) communicate effectively with listening as important as speaking; (6) be compassionate and caring toward colleagues; (7) understand that good leadership is not related to age or inexperience; (8) pass on your knowledge at every opportunity; (9) stimulate innovation by encouraging competition (McKune, 2011).

Different situations call for different leadership styles according to Larsson et al. (2015) who conducted a survey among civil engineers who were categorised according to leadership styles (producer, administrator, developer or integrator). They concluded that project performance is influenced by leadership styles, with different situations requiring different leadership styles.

3.6.3 Engineering culture

There has been long-standing consideration given to the question of engineering culture and the role of the engineer is society. Writing in 1931, Moore while assessing the role of engineers in contemporary culture referred to members of that profession as “Smoothers of the path for the development and refinement of manners and morals” contributing to society on the same level as painters, writers, artists and musicians (Moore, 1931, p. 53).

Trompenaars and Hampden-Turner (1997) argue that next to national culture and organisational culture there is a third level, professional culture which is shared by people performing the same function, “People within certain functions will tend to share certain professional and ethical orientations” (p.7).

This suggests, for example, that an American engineer working in a Texas petrochemical company may share certain common attitudes to a Saudi counterpart working in a marine engineering organisation in Dammam based on their shared professional culture and despite hailing from highly contrasting national cultures.

When considering the question of a universal engineering culture, it is important to remember that engineering research, education and professional institutions have long been Western-dominated. As Millington (1996, p.2) points out “The world’s first major engineering institutions were established in Britain, Ireland and America over 150 years ago i.e. the Institution of Civil Engineers (1817), The Institution of Civil Engineers of Ireland (1835) and the American Society of Civil Engineers (1852).” We should be cautious then when talk of a global engineering culture as this may actually be more accurately described as a Western engineering culture.

The debate as to whether there is a transcendent engineering culture echoes the universalism-relativism ethics discourse where universalists argue that there are certain ethical standards which apply to all cultures while relativists argue that this is not possible and what is considered ethical is entirely context dependent (Voss & Aguad, 2016). Globalisation has opened the way for conflicts of ethics something recognised by Voss and Aguad, (2016) who state that "ethical conflicts [are] likely to arise while doing business across international and cultural boundaries" (p.92). What is considered unethical in one culture may be seen as acceptable in another. Related to ethical issues, Brown (2012) highlights that engineering culture may be becoming increasingly influenced by sustainability issues.

As well as a distinct professional culture, engineering leaders/ managers may have certain characteristics which distinguish them from other professions. It is the norm in engineering organisations for leaders to have built up a track record of technical achievements and hence, the norm to be led by someone with superior technical knowledge/experience.

Robledo et al. (2012) view engineering and indeed scientist leadership as a distinct phenomenon to which traditional leadership theories are difficult to apply. The reasoning behind this is that traditional models understate the importance of engineers and scientists to an organisation. Leading engineers involves leading teams and their creativity and innovation. Engineering leaders may exercise influence on groups via team formation, creating a conducive climate, and positive interaction with followers which among others would stimulate intellectual thinking. Robledo et al. (2012) also argue that such is the multiplicity of leadership skills required, both technical and 'soft' required to successfully lead these creative teams that multiple leadership may be required with different leaders compensating each other for any deficits there may be but that communication between the leaders would be of paramount importance.

Vessey et al. (2014) consider the challenges associated with leading highly creative individuals. Using a content analysis of prominent scientists' biographies, the authors examine to contrasting leadership theories; one, the regulation model proposes leadership through regulation and control processes; the other, the systems exchange model is based on how the leader engages with organisational structures to benefit their work group. It is the latter model – systems exchange – that their analysis shows is a reliable predictor of team performance involving scientists (Vessey et al., 2014). Also prominent among their conclusions is that leaders need to consider both hygiene factors and performance factors. Without the hygiene factors there can be no performance (Vessey et al., 2014). Herzberg

(2005) had identified hygiene factors as job security, good salary, sufficient vacation days, and favourable work conditions among others.

Kurstedt et al. (1990) consider the engineering leaders' role and interaction with organisational culture. In common with much of the literature the authors emphasise the need for engineering leaders to become as at ease with qualitative measures (i.e. soft skills) as they are with quantitative measures (i.e. hard skills). They argue that leaders must engage in culture management to support the goals of continuous performance improvement. For this to happen, leaders must understand the concept of organisational culture and what brings about cultural change concluding, "Engineers who know what organizational culture is and how to manage it will be successful in helping their organizations improve" (Kurstedt et al., 1990).

Hence, from the literature a theme of exceptionalism emerges suggesting that there may be a distinct engineering culture bringing with it distinct leadership challenges.

3.6.4 Trust and engineering

In engineering-based organisations, the technical and humanistic aspects are merged into the concept of professional service (Hill et al., 2013; Pierson, 2013). In their study of R&D teams, very prevalent in engineering organisations, Gillespie and Mann (2004) found that the three most significant predictors of trust in leaders was a consultative leadership style, shared values and idealised influence which is associated with transformational leadership. With a sample of 301 engineers Laglera et al. (2013) apply a structured equation model to understand how leadership is experienced by engineers and to test a series of hypothesised relationships. Most relevantly they examine whether transformational leadership has a positive influence on trust in leadership. They find the hypothesis proven but also find that transformational leadership practices are positively associated with job performance, job satisfaction and organisational commitment.

From the engineering leadership literature, it seems the main case for contextual significance from the study being conducted in an engineering environment is that some engineering managers have a purely technical background and may not have developed the 'soft skill' dimension of leadership including those soft skills associated with transformational leadership practices as measured by the LPI. However, this narrative appears more intuitive than based on empirical evidence. LPI studies have examined the leadership of project teams (Aga et al., 2016; Söderlund, 2011) but not specifically in engineering organisations.

3.7 Leadership, culture and trust in the Saudi context

Part of the originality of this study is derived from its setting. The overwhelming majority of previous work on leadership and trust has been conducted in a western setting. It is therefore necessary to consider the likely influence national culture may have on leadership practices. National culture has been found to have an influence on leadership styles (Westwood & Posner, 1997) and this can be assumed to be as true of Arab countries as anywhere else.

Much of the literature suggests cultural factors act as determinants of leadership behaviour and this behaviour varies markedly from one culture to the next (Bass & Burger, 1979; Muna, 1980; Wright, 1981; Al-Jafary & Hollingsworth, 1983; Adler, 1991; Ali, 1993). For instance, Arab mangers and foreign managers exhibit differences in the areas of work satisfaction and orientation (Al-Meer, 1989; At-Twaijri, 1989). Additionally, Muna (1980) and Ali (1989) both assert that Arab managers display a marked preference for a consultative management style.

According to Hofstede (2005) different national cultures affect organisational cultures differently. He developed a model with five cultural variables: level of individualism, level of masculinity, power distance, time orientation and uncertainty avoidance. This model has become widely used in literature on the relationship between national and organisational culture and also the effect of these two on leadership styles. Vast amounts of data have been gathered from around the world to produce a global database of national cultures using the 5 variables. For the current study Saudi engineering middle managers in managers at oil and gas, and petrochemical companies are the subjects. In their study, Hunt and At-Twaijri (1996) assert that Saudi managers' values are deeply influenced by Islam. Senior managers in Saudi Arabia exhibit a strong commitment to the Islamic work ethic (Hunt & At-Twaijri, 1996). Furthermore, Saudi executives may view their friendships and personal concerns as being more significant than their organisations' goals and performance (Asaf, 1983) and are also likely to demonstrate only a moderate level of individualism (Ali, 1993).

Bjerke and Al-Meer (1993) conducted an analysis of the national culture of Saudi Arabia using the original four cultural dimensions defined earlier by Hofstede (1980). Their findings revealed that Saudi managers recorded high scores on power distance, reasonably highly on uncertainty avoidance and highly on masculinity and collectivism. These academics put Saudi managers' high scoring for collectivism and masculinity down to the teachings of Islam. Indeed, Islam's influence in Arab countries covers a range of different social practices, values and laws (Kabasakal & Bodur, 2002). Saudi Arabia's current profile using the Hofstede model was shown earlier as Figure 2-4 alongside that of the United States, for comparative purposes. It reveals sharp differences in two of the variables – power distance and individualism. The values guiding Saudi managers are derived from a mix of Islamic and Arab traditions (Bjerke & Al-Meer, 1993). The Arab part of this is in turn based in Bedouin tribal culture mixed with some colonial influences. These traditions put emphasis on family connections, personal relations, and social networks. They also feature the avoidance of shame, cultural pride and the maintenance of image (Arnold et al., 2009). According to Vogel (2006) Islamic law also shapes trust formation. On the one hand, it is discouraging of opportunistic/ betrayal behaviour and on the other it urges caution in decisions of whether to trust or not particularly where risk-taking and speculation are involved. Blind trust is effectively incompatible with Islam and the legal doctrine that is based on it. The work values literature is dominated by studies in developed countries; however, a number of people have authored studies on Arabic values (Al-Wardi, 1951; Murrell, 1979; Muna, 1980; Ali & Al-Shakis, 1985, 1990; Syed & Ali, 2010; Khan & Varshney, 2013). Ali and Al-Shakis (1990) explain that the Islamic work ethic features prominently in the Arab value system leading them to be strongly committed and attached to their working life. Commitment to basic human values including equality are also important Islamic principles (Syed & Ali, 2010).

Al-Wardi (1951) posited that Arab culture was, in fact, comprised of two cultures, one the Bedouin tribal culture and the other the fixed sedentary populations of Arab lands. Others have emphasised the universality of Arab values. For example, Muna (1980) argued that despite the modernisation of large parts of the Arab population, modern Arabs still shared a lot of common values with their traditional counterparts. The homogeneity of Arab values is challenged by Ali and Al-Shakis (1985) who instead suggest a range of demographic variables influencing Arab managers' values, thus leaving scope for these values to be shaped by individual and organisational backgrounds. On the contrary, Ali (1992) found that these two sources of influence did very little to alter Arab managers' orientation.

In contrast to transactional leadership, transformational leadership is said to operate on a more value-based level (Khan & Varshney, 2013). As value-based leadership is highly relevant in the Saudi context there is a case that transformational leadership practices should be easily accommodated among Saudi leadership. According to Khan and Varshney, 2013) the degree to which Islam influences the culture of the country, and because Islam places such emphasis on leadership and particularly value-based leadership Saudi leaders are guided toward an ethical approach which maximises the public good. This leadership role is embodied in the status of the Prophet Mohammed referred as the greatest role model and leader of all. As the Quran (33:21) declares" "The messenger of God is an excellent model for those of you who put your hope in God and the last day and remember him often". In an Islamic country like Saudi Arabia, the primary duty of any leader is thus determined in religious terms and are “both exalted and humble, capable of vision and inspiration, yet at the same time dedicated to the service of the people” (Adair, 2010, p.2).

The Saudi business environment and its culture play an important role in shaping the relevant leadership qualities among managers. The following paragraphs discuss three dominant dimensions of leadership that have a profound effect on the leadership attributes of Saudi managers, their value system, and the cultural context, as well as the effect of Islam in shaping managerial attributes.

Aside from collectivism, the Saudi culture is associated with high power distance and high uncertainty avoidance (Hofstede, 1991). In terms of leadership practices this would suggest that a Saudi leader would keep themselves apart from the group and give precise and rigid instructions and, equally importantly, is expected to do so (Khan & Varshney, 2013).

The multi-national teams that feature heavily in Saudi Arabia, including the petrochemical sector, require people with different native tongues to communicate. The role of language in trust formation within such teams was the subject of a study by Tenzer et al. (2014). The study was set in the German automotive sector and featured teams where the ‘official’ team language was either German and English though participants had a total of 14 native languages. Among the language effects reported were the association of low competence and lack of proficiency in the ‘official’ team language which affects ability-based trustworthiness; a similar attribution of low dependability to those with low language proficiency; and overall a conclusion that language was a significant factor in trust formation. This effect may be intensified in the Saudi Arabia where a great ‘language distance’ exists between the native language Arabic and the second language in multi-national teams, English.

3.8 Summary and hypotheses development

This chapter has reviewed a wide range of, mostly empirical, literature that has examined the relationships of interest to the present study. While the amount of literature available is plentiful for each relationship it does not always present the same findings. It is true that the literature is aligned behind the notion of trust being an important precursor to a whole range of positive outcome. However, the relative importance of cognitive and affective trust is much debated. Another example is the trust-culture relationship. Researchers and theorists agree that there is a cultural dimension to trust but disagree as to the nature of this effect. Some associate collectivism with high trust while others see an association between individualism and high trust. Still others emphasise the difference between in-group and out-group trust. Likewise, power distance is understood to have a relationship with transformational leadership practices but the literature is not fully consistent as to the nature of this relationship. The review of LPI studies did provide solid evidence for the suitability and reliability of this instrument for measuring transformational leadership practices in a whole range of research contexts.

3.8.1 Hypothesis development

With Chapter two ending with a set of theoretical assumptions and the relationships of interest being further examined at the empirical level in this chapter there is a sound basis on which to develop a set of hypotheses to take forward as the present study is operationalised.

3.8.1.1 The culture-trust relationship

The first set of hypotheses concern culture and trust. The individualist-collectivist and power distance dimensions, as defined by Hofstede (1980) are taken as proxies for culture in this study. Trust is represented by both cognitive trust and affective trust (McAllister, 1995).

Hence the hypotheses are:

H1a: High individualist and high collectivist scores are associated with statistically different means for ***affective*** *based trust in leader*

H1b: High individualist and high collectivist scores are associated with statistically different means for ***cognitive*** *based trust in leader*

and:

H2a: High power distance scores and low power distance are associated with statistically different means for ***affective*** *based trust in leader*

H2b: High power distance scores and low power distance are associated with statistically different means for ***cognitive*** *based trust in leader*

3.8.1.2 The culture- leadership practices relationship

The second set of hypotheses concerns the relationship between culture and leadership practices. Again, the individualist-collectivist and power distance dimensions, as defined by Hofstede (1980) are taken as proxies for culture. The reasons for doing so and for not including other cultural dimensions are two-fold. Firstly, the literature on culture, trust and leadership practices such as that reviewed in this chapter use these two dimensions far more regularly than the others. Secondly, the national cultural backgrounds of the participants in this research contrast most sharply along these dimensions and so are more likely to reveal a cultural effect on the other variables. Leadership practices are again examined using the two datasets form the LPI, self-reported and observer.

Hence the hypotheses are:

H3a: Self-reported leadership practices of engineers are influenced by the individualism-collectivism dimension.

H3b: Self-reported leadership practices of engineers are influenced by the power distance dimension

and:

H4a: Observer-reported leadership practices of engineers are influenced by the individualism-collectivism dimension

H4b: Observer-reported leadership practices of engineers are influenced by the power distance dimension.

3.8.1.3 The trust-leadership practices relationship

The third set of hypotheses concerns the relationship between trust and leadership practices. As with the culture relationship, trust is represented in two forms, affective and cognitive. Leadership practices are also examined using the two datasets form the LPI, self-reported and observer.

Hence the hypotheses are:

H5a: Self-reported leadership practices of engineers are influenced by ***affective*** *based trust in leader*.

H5b: Self-reported leadership practices of engineers are influenced by ***cognitive*** *based trust in leader*

and:

H6a: Observer-reported leadership practices of engineers are influenced by ***affective*** *based trust in leader*

H6b: Observer-reported leadership practices of engineers are influenced by ***cognitive*** *based trust in leader*.

In the following chapter the thesis moves from what others have theorised and researched on the constructs, concepts and relationships of interest in the present study to what the researcher did to contribute to this body of knowledge and develop understanding.

Chapter 4 METHODOLOGY AND RESEARCH METHODS

4.1 Introduction

The previous two chapters discussed the theoretical approaches to and empirical evidence on the constructs and relationships of interest in this study: trust, leadership and culture. The research questions were set in the first chapter and the hypotheses to be tested were just presented at the end of chapter three. In this chapter attention turns to the present research with the dual aims of explaining how the research was conceptualised and then how it was operationalised. Conceptualising the study required certain assumptions regarding the nature of knowledge and the role of research in its creation. Three epistemological viewpoints – positivism, interpretivism and pragmatism are discussed and the rationale for adopting a mixed methods approach is explained. In the second part of the chapter how the research was operationalised is presented, explaining both the choices made and the actions undertaken by the researcher. Finally, the ethical considerations related to undertaking the research are explained and the chapter ends with a brief summary.

4.2 The approach to knowledge and research

At the very outset of the research process, a researcher makes judgements and choices to determine which methodological approach matches their own basic beliefs in the nature of knowledge and role of research and also matches the research aims. The consequences of this evaluation are seen throughout the entire research process from selecting how data should be collected to formulating recommendations for policy, practice and further research (Tashakkori & Teddlie, 2010). The fundamental set of beliefs that the researcher reflects onto the research is the research paradigm which Bryman (2008) referred to as a "cluster of beliefs and dictates which for scientists in a particular discipline influence what should be studied, how research should be done, [and] how results should be interpreted" (p.605).

A paradigmatic dichotomy has long dominated debate on research philosophies between positivism and interpretivism. However, more recently, interest in a third, pragmatism, has increased alongside the popularity of mixed methods research. Each of these three are now briefly discussed.

4.2.1 Positivism

The emergence of positivism as a successor to 'reason', the philosophy that dominated the Enlightenment, heralded the beginning of the era of science. First calling it social physics, Compte was the pioneer of what he later framed as sociology (Compte, 1880). In the belief that society's ills could be solved through the application of science and that positivism was the third stage of societal development after the theological and metaphysical stages, Compte explained this philosophy as "phenomena posited or given in direct experience and resulting from scientific observation and scientific method" (Sarantakos, 2005, p.8). Compte's most renown study was *The Protestant Ethic and the Spirit of Capitalism* first published as a series of essays in 1904-5, it was them published in English in 1930 (Weber, 1930). As the positivist approach to social research was increasingly adopted research methodology, particularly based on quantitative methods changed to match its main principles. This meant that positivist researchers theory took on a deductive role, hypotheses were generated and then tested through empirical study (Bryman, 2008). Taking a historical perspective, it is easy to link the popularity of the positivist approach with the spreading social problems resulting from industrialisation. With urgent solutions needed to these new problems, the new sociology's claim to link data to policy in a scientific way was very attractive to both the authorities and the researchers themselves (Sarantakos, 2005). Perhaps the best-known positivist sociological study was authored by Emile Durkheim, the French academic who studied the phenomenon of suicide (Durkheim, [1897] 1951). Published in 1897, the work became a methodological case study for positivist social research and was accompanied by the author's call for future social researchers to set aside their personal subjectivity and undertake their research in an entirely objective manner. Using quantitative methods, he was able to propose a typology of suicides as a tool to understanding the phenomenon. While positivism would go on to dominate social research for most of the next century, the question of whether such objectivity was possible became the centre of the debate between positivist and anti-positivist scholars, a debate which continues to this day (Bryman, 2008).

The positivist researcher proceeds on the assumption that the self-disciplined use of scientific methods and language when investigating social phenomena will protect the research from the researcher's own ideology, values and sometimes passionately held beliefs. Furthermore, they assume that complete understanding of such phenomena can be achieved through observation and experimentation and a process of rational deduction (Ryan, 2006). Since its emergence and Durkheim's pioneering study, positivist social research has been overwhelmingly associated with quantitative methods. However, as the 20th century progressed these basic principles became increasingly challenged and new paradigms were offered under the umbrella of post-positivism.

4.2.2 Interpretivism

Opposition to positivist social research came from multiple directions including post-structuralism, feminism, anthropology, ethnography and critical psychology among others

(Ryan, 2006). They have in common the assumptions that there is no such thing as neutral knowledge, that dualistic thinking should be rejected in favour of complexity and an emphasis on the ethical dimensions of social research (Ryan, 2006). As the 20th century entered its second half, these new approaches led to an increase in qualitative studies (Bryman, 2008). These researchers rejected the notion that it was possible to apply the approach of the natural world sciences to social phenomenon. Researchers experience the world around them in a subjective way so Durkheim's call to objectivity was impossible to follow. Whereas, the positivists were limited to explaining a particular behaviour or phenomenon, interpretivists laid claim to the aim of understanding it.

This *verstehen,* as it was termed in German by the German scholars at its forefront, saw sociology as "science which attempts the interpretive understanding of social action in order to arrive at a causal explanation of its course and effects" (Weber, ([1904] 2010), cited in Bryman, 2008, p.15). This definition led to it being labelled social action theory. Rejecting positivism, social action researchers, who were increasingly likely to use qualitative methods, claimed that the only way to adequately understand the complexities of the social world and the perceptions and behaviours of research subjects was through the interpretivist paradigm (Holloway & Jefferson, 2000).

If *Le Suicide* was the classic positivist study, then American anthropologist Geertz's (1979) study of the cockfighting ritual in Bali the research for which took place in the 1950s could claim that mantle for interpretivism. After gathering data through observation, Geertz proposed the concept of 'thick description' used to uncover the symbolic meaning of his subjects' behaviour and by focussing down at the micro level of this one particular aspect of life, a picture emerges of the wider social world of Balinese society (Geertz, 1979).

Interpretivism is questioned for its approach to generalisation, either that it ignores the issue or that is impossible under this approach. There have been attempts to reinvent the concepts and language of generalisation for application to interpretivist research, most notably as 'transferability' (Gelo et al., 2008) or what Sarantakos (2005, p.98) terms "fittingness". This issue is returned to later in the chapter in the context of the generalisability of the current study.

4.2.3 Pragmatism

A third epistemological paradigm has emerged in recent decades, pragmatism. While it may be recently prominent it has roots in the writings of American philosopher John Dewey and his colleague Arthur Bentley (Dewey, 1929; Bentley, 1954). However, Ormerod (2006) suggests the roots go even deeper into history when defining pragmatism as a "philosophical doctrine that can be traced back to the academic skeptics of classical antiquity who denied the possibility of achieving authentic knowledge regarding the real truth and taught that we must make do with plausible information adequate to the needs of practice" (p. 892). The key principles of what would become the pragmatist paradigm are the rejection of distinction between theoretical judgement and practical judgement and a recognition that without practical consequences, theoretical concepts are pointless (Morgan, 2014). While there is a clear link between positivism and quantitative methods and between interpretivism and qualitative methods, the association between pragmatism and a specific research methodology is less clear cut (Denzin, 2012). This may be because, as Frankel Pratt (2016, p.508) states pragmatism is "a particularly flexible form of social ontology".

Nevertheless, when mixed methods research grew more popular the fact that it could be epistemologically grounded in pragmatism caused the latter's popularity to rise (Morgan, 2014). Mixed methods researchers combine methods linked to positivism with those associated with interpretivism with the justification that achieving the fullest understanding of a phenomenon is prioritised above the adherence to "dogmatic paradigms" (Florczak, 2014, p. 281). A pragmatist researcher acknowledges their subjectivity as a human but believe they can still conduct the research process, including collecting and analysing data, in a manner that promotes objectivity (Shannon-Baker, 2016).

Creswell (2003) emphasised the practicality of pragmatism with the statement that "Truth is what works at the time" (p. 12); however, this focus on the practical led to pragmatism being criticised for lacking a philosophical basis (Hookway, 2013). Morgan (2014) disputes this deficiency arguing that pragmatism can be both a new philosophical paradigm and a practical programme for social research and for Frankel Pratt (2016) it is "a particularly flexible form of social ontology" (p.508).

Such studies combine methods associated with positivism to those linked to interpretivism in pursuit of fuller understanding of social phenomenon. Pragmatist researchers acknowledge they are subjective beings in their reflections, but are nevertheless able to conduct their inquiries, particularly data collection and analysis, in a disciplined, self-controlled way which preserves objectivity (Shannon-Baker, 2016). In terms of its treatment of theory, pragmatic research connects the study to theory both before and after the study is operationalised, a process referred to as abduction (Shannon-Baker, 2016). Furthermore, a pragmatist researcher proceeds on the basis that theories may be contextual but at the same time generalisable or 'transferable' to other situations. Finally, pragmatism is characterised by a fundamental belief in complementarity whereby "qualitative and quantitative approaches can be combined to ‘‘complement’’ the advantages and disadvantages present within each” (Shannon-Baker, 2016, p.325).

Pragmatist researchers reject the purist standpoints of both quantitative and qualitative researchers. In educational research they reject that social phenomena can be treated in the same way as those in the natural/ physical world. They reject the total separation of the researcher from the context and the objects of study (Johnson & Onwuegbuzie, 2004). They reject the quantitative purists’ insistence on rhetorical neutrality and are not afraid to form opinions and recommendations based on their findings. Indeed, such recommendations are an important part of the present study’s objectives.

4.2.3.1 Why pragmatism informs the present study

The approach to research in the present study is most informed by the pragmatist paradigm. As explained later in greater detail the study employs a mixed methods research design using both qualitative and quantitative methods in tandem with the aim of benefiting from the strengths of both while ameliorating the weaknesses of each through this complementarity. Johnson and Onwuegbuzie (2004) describe pragmatism as the “philosophical partner” of mixed methods research (p.16).

A further reason for associating the study with pragmatism is that a high priority is given to the research questions and the researcher’s evaluation of how they can best be addressed, determining the how the research is designed, and which methods are selected. Thirdly, theory is used abductively meaning it is considered both before and after the researcher enters the field to collect data and after the data has been analysed. The pre-data collection evaluation of theory was conducted in Chapter Two and the post-analysis reflection is presented in Chapter Seven. A fourth reason is derived from the researcher’s purpose to determine “practical solutions and meanings” (Shannon-Baker, 2016, p.323) for the research problem and to formulate these into a framework of recommendations to be presented in the final chapter. Furthermore, the present study maintains the purpose of transferability, whereby subject to a “fittingness” test (Sarantakos, 2005) the findings of the present study may be applied to other contexts. Finally, the researcher set the aim

In summary, the researcher does not subscribe to the requirement for an ‘either or’ choice and is mainly guided by the research questions when selecting which methods to use. Furthermore, there is no convincing reason why methods characterised as either positivist or interpretivist cannot be combined to provide a richer and more accurate description and understanding of the phenomenon.

4.3 The Rationale for Using a Mixed Methods Approach

In line with its pragmatist philosophical underpinning, Mixed methods research "should … use a method and philosophy that attempt to fit together the insights provided by qualitative and quantitative research into a workable solution" (Johnson and Onwuegbuzie, 2004, p. 16). Creswell (2003) emphasises the importance for mixed methods researchers to state clearly the rationale for their mixing. Mixed methods has been defined as, "A procedure for collecting, analyzing, and "mixing" or integrating both quantitative and qualitative data at some stage of the research process within a single study for the purpose of gaining a better understanding of the research problem (Ivankova et al., 2006, p.3). The rationale for using mixed methods is that the researcher has evaluated that neither qualitative nor quantitative methods will satisfactorily address the research questions when used in isolation. Furthermore, the researcher anticipates that combining these two approaches will mean benefitting from the strengths of both (Ivankova et al., 2006).

Mixed methods enable the researcher to use inductive, deductive and abductive methods of reasoning in one piece of research rather than being restricted to one of these (Johnson and Onwuegbuzie, 2004). It is a flexible approach to research which enables the researcher to form a view on research methods based on their knowledge of the topic and their careful review of existing research work. For the present study, the researcher concluded that while a quantitative survey may provide evidence on the relationships of interest and may contribute to development of theory, a qualitative study would be required to meet the practical aims of the research. These practical aims included exploring the key characteristics of trust building practices in a culturally diverse workplace that can enable engineer leaders to enhance their leadership practices. It is true that leadership research has historically been dominated by objectivist quantitative research; however, there is a growing acceptance that "quantitatively generated leadership descriptors often fail to lead to an understanding of the deeper structures of the phenomena we study" (Klenke, 2016, p.4).This is also accepted in the present study and further explains the choice of mixed methods.

There are two additional justifications for adopting mixed methods. One is the desire to enhance the robustness of the findings through a process of triangulation. The other is to apply an explanatory sequential design to the methods used.

The researcher proceeded with a mixed methods approach having carefully considered several proposed weaknesses/ challenges associated with it. First is the 'incombatability thesis' which asserts that quantitative and qualitative methods should not be undertaken within the same study as they are fundamentally at odds with each other (Guba, 1987). When mixed methods research was in its infancy it may have been plausible to raise this notion but with decades of successful mixed methods research having been published and recognised as valid it can be set aside. Furthermore, the whole argument for ideological purism has for sometime been largely rejected. As Muijs (2004, p.9) explains “Mixed methods research is a flexible approach where the research design is determined by what we want to find out rather than by any predetermined epistemological position.” Second, on a practical level, a mixed methods researcher must to be able to draw on a broader range of skills and potentially will need access to greater time and financial resources (Johnson and Onwuegbuzie, 2004). Thirdly, in reporting the results/ findings the researcher the researcher must make certain decisions regarding the relative weight given to the quantitative and qualitative data in the absence of any generally accepted protocal on how this should be done (Johnson and Onwuegbuzie, 2004).

Notwithstanding these potential challenges the benefits of a mixed methods approach for this particular study are considered substantial. The use of triangulation and an explanatory sequential design are now considered more fully.

4.3.1 Triangulation

To enhance the quality of the present research the researcher has applied multiple forms of triangulation to the research design. Triangulation is defined as “the use of more than one method or source of data … so that findings may be cross-checked (Bryman, 2008, p.700). Its effect is described by Denzin (2012) as adding “rigor, breadth complexity, richness, and depth to any inquiry” (p. 82).

The highest level of triangulation in the present study is data-type triangulation as it addresses the research questions by synthesising quantitative survey data with qualitative interview data. In addition, the research collects data from multiple sites which provides for sample triangulation (Sarantakos, 2005). In gathering data (both qualitative and quantitative) from six different petrochemical companies, the researcher has enhanced the representativeness, and hence generalisability/ transferability of the findings.

With specific regard to the qualitative component, in contrast to a single case study, interviewing multiple (n=18) engineers offers data source triangulation, bringing together different perspectives to form a truer picture and deeper understanding of the phenomenon

Figure 4-1: The use of trangulation in this research

being studied. **Error! Reference source not found.** illustrates the use of triangulation in the present study.

4.3.2 An explanatory sequential design

Having established the need for a mixed methods approach the researcher must then decide which is the most appropriate of the many possible mixed method designs. Tashakkori and Teddlie (2003) identified as many as 40 such designs. In particular, the researcher must decide on the appropriate sequencing of the data collection. While Creswell (2003) points out that it is entirely possible to start with an exploratory qualitative study to inform a large sampled quantitative one such as a survey, the most common sequence is to collect quantitative data first and then the qualitative in what is referred to as an explanatory sequential design. Explanatory studies have also been described as those in which theory is taken as a basis for explaining and understanding practices (Scapens, 1990). Ivankova et al., (2006) describe this design as “highly popular among researchers and implies collecting and analyzing first quantitative and then qualitative data in two consecutive phases within one study.” (p.4). Indeed, Florczak (2014, p.279) explains that “Interviewing subjects after the quantitative study is complete in order to clarify and explain statistical results uses the basic explanatory sequential design since clarification and explanation are central to the explanatory sequential design."

This design divides the research into two phases. In phase one the researcher collects and analyses quantitative data. In the case of the present study this was in the form of a survey. Then, once this is completed, and informed by the results, the researcher collects and analyses qualitative data in order to develop and expand upon the phase one results (Ivankova et al., 2006). The researcher also has to evaluate the respective weights to be given to the quantitative and qualitative results when presenting and discussing the findings and the degree to which they should be synthesized. In the present study, the researcher presents quantitative and qualitative findings in separate chapters to match the sequential design but then synthesises the findings in a subsequent discussion chapter. The decision to collect quantitative data first was taken because the quantitative data analysis establishes the presence of relationships while the qualitative phase aims to examine how and why these relationships are occurring. The quantitative results also inform the interview schedule guiding both inclusion of questions on established relationships and exclusion of questions unlikely to address relevant issues. Using quantitative methods alone would have been unlikely to establish sufficient understanding to make a worthwhile contribution to the knowledge of the relationships being studied. Furthermore, the engineering context of the present study is a significant dimension of the study's contribution. As the survey did not include items on 'engineering culture' or self-identification as an engineer, the interview study was required to add this important element.

As with any design there are advantages and disadvantages to the explanatory sequential design. Among the proposed advantages are that it is straightforward and that by sequencing the quantitative phase before the second qualitative phase the second phase is more informed and focussed than it would otherwise be (Ivankova et al., 2006). Against this, a sequential design can take longer, and a researcher needs to carefully evaluate which of the quantitative results to explore further (Creswell, 2015). In the present study, the relationships of interest are first tested with a quantitative method and then followed up my a more detailed exploration using a much smaller sample.

4.4 Operationalising the research

Up to this point the chapter has discussed how the research was conceptualised. From here on the focus changes to how it was operationalised. With the nature of the study decided and a thorough review undertaken of both relevant theory and empirical evidence on the relationships of interest. After the extensive work considering the theory and empirical evidence base on the relationships and constructs of interest (as presented in chapters two and three) and settling upon the methodology underpinning the study the researcher arrived at the point of putting the research design into practice and enter the field.

4.4.1 The use of gatekeepers

Conducting organisational research without the knowledge and assistance of representatives of the organisations concerned is highly problematic, particularly when aiming to collect primary data from members of the organisation. Put simply, in the present study the use of gatekeepers was considered unavoidable. There are two separate processes involved: access and cooperation (Singh & Wassenar, 2016). The researcher initiated contact with the HR departments of the 5 companies selected from the petrochemical sector. Access to the population was sought in order to administer the online survey, specifically the researcher needed to get an email link to the sample.

While the use of gatekeepers facilitated the present study, the researcher had to be mindful of any downsides that may result. Broadhead and Rist (1976) remind us that a gatekeeper may seek to request some kind of reciprocity or control over the research. For example, the gatekeepers could have only given access to those employees who they felt would respond to the survey in a particular way.

4.5 The quantitative survey study

The first phase of the research comprised a survey study aimed at testing the hypotheses presented at the end of Chapter Three. Specifically, it examined the relationships of interest, between trust, national culture and leadership practices. Surveys can be administered in a number of ways: structured interviews, postal, physical distribution and, increasingly online. Online surveys can be divided into open surveys, accessible to the wider public, or closed surveys targeted at and accessible only within the sampling frame. This later type is sometimes referred to as email surveys as the link to the website hosting the survey is made available through the email addresses of potential respondents.

4.5.1 The closed online survey

In the present study the choice of survey option was determined by the multi-site nature of the sample and the requirement to restrict respondents to those within the sampling frame. It was also justified through a consideration of the advantages and disadvantages of the chosen option, a closed online survey. These advantages and disadvantages are summarised below in Table 4-1.

Table 4-1: The advantages and disadvantages of online surveys

Advantages	Disadvantages
• Speed: a large number of responses can be gathered in a comparatively short time; • Audience: if seeking a wide audience, the link to the survey is easy to spread. If targeting a narrow audience, then the link can be restricted to the personal email addresses of the sampling frame; • Financial: online surveys can be conducted at lower cost than alternatives particularly so when the population was geographically dispersed; • Convenience: respondents can complete the survey at their own convenience and pace without the presence of an interviewer. The respondent can even pause and return at a later time; • Simplicity: survey hosing websites such as Surveymonkey are extremely user-friendly both for the survey administrator and the respondent. The administrator can avail themselves of tutorials, templates and built in analytical tools.	• Availability: an online survey via an email link requires having the email addresses of the sample; • Digital divide: In some settings lack of internet coverage could exclude part of the population from participation in the survey. Although in a 'closed' survey distributed via an email link this issue does not arise; • Ease of abandonment: with no researcher present the respondent can be easily distracted or simply stop for time reasons, for this reason it is necessary to keep their time commitment as short as possible; • Spam filters: most email application providers include settings option to filter out unsolicited emails. Depending on these settings some of the administrator's emails may go directly and unnoticed to spam folders; • Survey fatigue: emailed requests to respond to a survey are becoming increasingly commonplace which may discourage respondents.

Having the survey emails sent from the organisations' web servers. As was the case in the present study, is likely to reduce issues of survey fatigue and spam filters.

4.5.1 Instrumentation and Questionnaire items

This section considers the survey instruments used in the quantitative phase of the research. The researcher decided to use existing instruments rather than device new ones, the main reason being that widely used and tested instruments were known to be available. Using existing instruments rather than devising a new one has several advantages (Bryman, 2008). One is the opportunity to compare results with those of other studies and other samples; another is that it saves time and resources and, in most circumstances, obviates the need for a pilot survey. Also important is that the researchers can check for reliability measures such as Cronbach's alpha coefficient and learn from other researchers' experiences in using the instrument. Despite the advantages, researchers should still reflect on the appropriateness of the use as instruments could lose validity if used to far out of the context for which they were originally developed (Boynton & Greenhalgh, 2004). In the present study two existing instruments were used: the Leadership Practices Inventory (LPI) and McAllister's affective-cognitive trust scale. Permissions to use the instruments are appended as Appendix 6.

4.5.1.1 The Leadership Practices Inventory

The LPI has been discussed in earlier chapters as have studies using this instrument. To avoid repetition only its reliability and application in the present study is discussed here. Perhaps the most common measurement applied to measure the reliability of an instrument is Cronbach's Alpha (Larson-Hall & Plonsky, 2015). According to Posner (2015), a coefficient of 0.6 would be considered 'good' and one of 0.8 considered 'very strong'. The Leadership Practices Inventory is consistently very strong as Table 4-2 shows.

Table 4-2: Cronbach's alpha coefficients for the Leadership Practices Inventory

Respondent Category	Leadership Practice				
	Model	Inspire	Challenge	Enable	Encourage
Leaders (Self)	0.810	0.901	0.843	0.825	0.898
Observers (All)	0.857	0.921	0.877	0.874	0.922
Managers	0.830	0.917	0.866	0.840	0.913
Direct Reports	0.873	0.924	0.876	0.869	0.917
Co-Workers	0.852	0920	0.881	0.892	0.930
Others	0.856	0.919	0.878	0.871	0.920

Source: Posner (2015, p.20)

Posner's detailed examination of the LPI's internal reliability extended to the coefficients for various sample populations, something made possible by the wide range of studies using this instrument. Of relevance to the present study, Cronbach's alpha for engineering managers and their constituents was between 0.8 and 0.92 (Posner, 2015). Hence the researcher concludes that the LPI is a reliable instrument for use in this study.

Another important advantage of the LPI is that it is available in Arabic as well as English, this enabled the researcher to use a translation that had been rigorously tested rather than attempting their own. This also improves confidence that those responding to Arabic questionnaire items were perceiving the same meanings as those using the English version permitting the responses to be aggregated from analysis.

The LPI is a 30-item questionnaire survey comprising of five subscales one for each of the exemplary leadership practices. The subscales each have six behavioural statements with responses recorded on a 10-point Likert scale ranging from 1. 'almost always' to 10. 'almost never' to reflect how often these behaviours are engaged in. There are two versions of the LPI one Self and one Observer (Kouzes and Posner, 2017).

The publishers of the Leadership Challenge website which includes the original authors, make normative data available for researchers to use for comparative purposes. Specifically, they provide the averages and distributions for over 128,000 leaders' scores across the five practices as extracted from global observer responses (Leadership Challenge, 2012). These data are used to compare results of the present study with this vast database. Hence the LPI instrument was selected for its reliability, its availability in Arabic and the opportunities it offers for comparisons with the globally collected database of scores.

4.5.1.2 McAllister's affective-cognitive trust scale.

The survey questionnaire also included measures of affective and cognitive trust using McAllister's scale. This scale comprises of 11 items, five measuring affect-based trust followed by six measuring cognitive trust. The items are formulated as behavioural statements and responses are recorded on a five-point Likert scale ranging from 1. 'Disagree Strongly' to 5. 'Agree Strongly' to reflect whether the statement is deemed true regarding the respondents' relationship with his immediate manager. The items are shown in full in Appendix 1. In addition to the original English version, each item was translated into Arabic, believed to be the first time this has been done. As discussed in Chapter Three, this instrument is one of the most commonly used methods for measuring interpersonal trust and has been used in many different contexts. McAllister's original scale (McAllister, 1995) was found to have estimated reliabilities (Cronbach's alpha) of 0.91 (affect-based) and 0.89 (cognitive) respectively. Translated versions of the scale have also been found to be reliable. For example, Ding and Ng (2007) translated the scale into Chinese and reported Cronbach's alpha at 0.803 and 0.841, for the cognitive and affective scales respectively. The trust instrument used in this study is therefore also deemed reliable and appropriate for the current study. While no use of an Arabic translation of this instrument could be found the researcher selected the instrument for its strong reliability and its extensive track record of use in organisational studies of trust.

4.5.1.3 National culture scores

A third source of data used in the analysis was not gathered for the purposes of the present study but instead is secondary data collected by cultural researchers and added to the Hofstede Center database. In this study the data is used to classify survey respondents according to two cultural dimensions high/low IDV and high/low PD.

4.5.2 Questionnaire Pilot Study

According to Kothari (2004) researchers should conduct a pilot study to pre-test a questionnaire to be used in a survey study. In some circumstances the questionnaire may need to be edited before the main study is undertaken. This is more likely when the researcher is using newly devised survey items than, as is the case in the present study, commonly used items are being used. Nevertheless, the researcher opted to conduct a piloting of the survey as much to check the process involved as the items themselves. Put simply, the researcher wanted to test whether the survey worked, from the initial emails through to extraction and analysis of data. A sample of 20 email addresses were used for the survey including five addresses belonging to the researcher’s colleagues who had agreed to give verbal feedback on all aspects of the survey.

4.5.3 Sampling for the survey

Organisational researchers conducting surveys within organisations invariably require the help of gatekeepers to do so. One consequence of this is that limits are placed on the sampling process as these organisations are highly unlikely to release their email databases to researchers and indeed may be prevent by law from doing so. Without physical possession of the database sampling options are limited and those that remain require the cooperation of the gatekeepers. The main priority for the survey was that the sample included both Saudi and non-Saudi engineer leaders and their followers. The second priority was to ensure that all respondents were in engineering roles rather than support departments. The gatekeepers agreed to these two criteria and distributed the email link accordingly. Each of the five gatekeepers at the five petrochemical firms had agreed to send 200 employees (leaders and followers) an email with link to the survey meaning a starting sample of 1000. As responding to the survey was entirely voluntary and as the email was sent through company email systems the researcher could not ensure that fully cross- sectional data was obtained.

4.5.4 Administering the survey

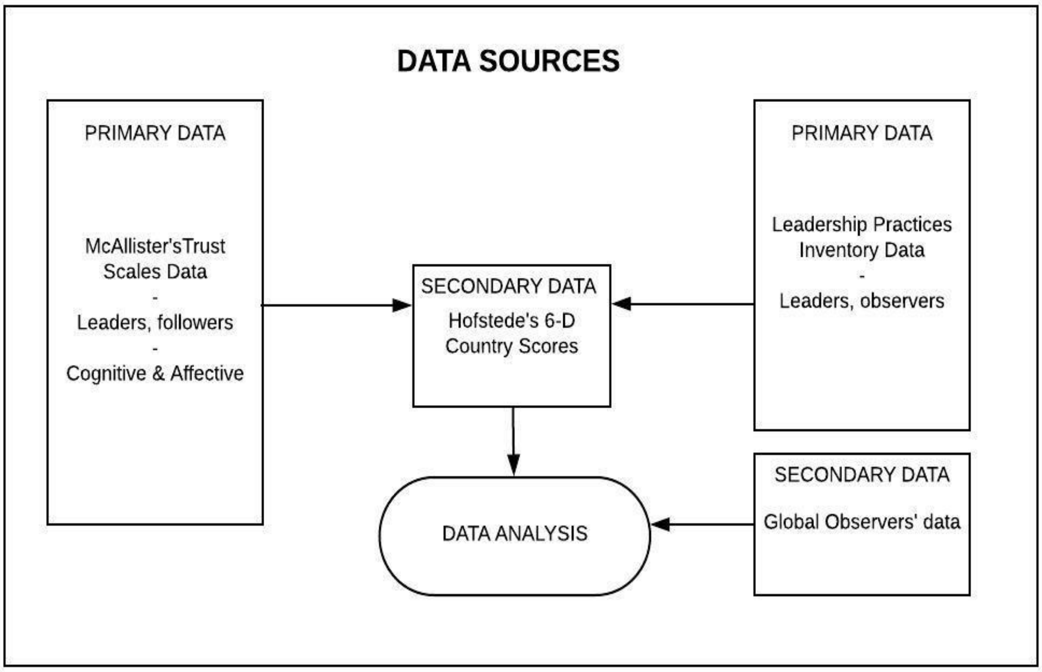
As discussed, this researched use the HR departments of the participating petrochemical firms as gatekeepers. For the survey, this involved distribution of the link to the online survey to the work email addresses of the sample using the companies' own email servers. The text of the email emphasised that the survey was part of an independent research project and not a company survey. If it was perceived as a company survey this may have skewed the responses.

By clicking the link, the email recipient was taken to the page on the Surveymonkey website where the survey was being hosted. Before commencing the survey, the independent and voluntary nature of the research was restated (See Appendix 1). The survey took an estimated 15 to 20 minutes to complete. At the end of the survey, participants were invited to indicate their willingness to participate in the interview stage of the research. It was from those who responded positively to this that the interview participants were subsequently chosen.

The researcher monitored responses on the Surveymonkey hosting website to track progress towards the objective of achieving a minimum of 180 responses. The gatekeepers had agreed to send reminder emails, but this proved unnecessary. After four weeks the survey was closed, and the data downloaded for analysis. A total of 195 surveys were completed representing a response rate of 19.5%.

4.5.5 Data analysis

The data sources described above were combined for analysis, these are summarised in Figure 4-2.



Data analysis was conducted using IBM SPSS Statistics (SPSS) version release 25, a software application facilitating advanced statistical analysis. As Hofstede (2011, p. 388) noted, “Interpreting answers to questionnaires is a main task of cross-cultural researchers who nowadays have many statistical tools at their disposal to help them.” Using the tools within SPSS a range of techniques were used to interpret the data. Descriptive statistics analysed the composition of the respondents in terms of working experience, age, nationality, length of service with present employer and formal education level.

A leadership practices analysis was conducted by calculating the mean and standard deviation for both leaders and observers. These results were then compared with the international observers’ data. For the trust analysis, mean and standard deviations were also calculated followed by an independent sample t-test to compare trust perceptions of supervisors and employees in leaders. The next stage involved a correlation analysis to identify the strength and direction of the linear relationship between trust perceptions and leadership practices. The next stage classified the results according to the country scores in the Hofstede Insights data. The results for respondents from high individualist countries were compared with those from high collectivist ones. Similarly, the results for respondents from high power distance countries were compared with those from low power distance countries. The results of the survey study are presented in Chapter five.

The data analysis process is summarised in Figure 4-3.

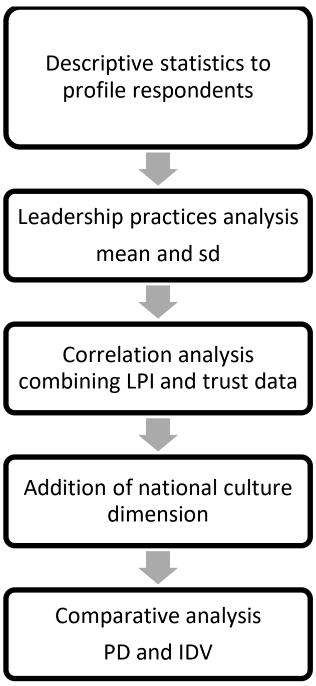


Figure 4-3: Data analysis process

4.5.5.1 Factor Analysis

Spearman (1904) pioneered an approach that has evolved into a statistical method widely used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved variables called factors. Factor analysis can be defined as "a set of statistical techniques looking for correlations between observable variables, simplifying the data by reducing the number of variables needed to describe them" (Pestana and Gageiro, 2003). In other words, the main applications of a factor analysis are (1) to reduce the number of variables to study and (2) to detect structure in the relationships between variables.

Data collected in the survey were subjected to an exploratory factor analysis with varimax rotation, intending to find out the number of dimensions that should be considered in the study. The factor analysis was applied to the dimension level of the questionnaire.

To apply the factor analysis two pre-tests should be executed: KaiserMeyer-Olkins (KMO) and Bartlett's test. According to Pestana and Gageiro (2003) “the KMO and Bartlett test are two statistical procedures for assessing the quality of the correlations between variables in order to proceed with the factorial analysis”.

Kaiser-Meyer-Olkins (KMO) statistics varies between 0 and 1. A value close to 0 indicates that the correlations between variables are weak and so, factor analysis would not be appropriate. On the other hand, a KMO close to 1 means small partial correlation coefficients (Pestana and Gageiro, 2003), or in other words, that patterns of correlations are relatively compact and so factor analysis could be applied.

Bartlett’s measure tests the null hypothesis that the original correlation matrix is an identity matrix (Pestana and Gageiro, 2003). If the value is high and p-value is recommended (Malhotra, 2010).

The test results an acceptable statistic value of KMO (0.835) as shown in Table 4-3. Regarding the Bartlett’s test, all variables got a high value and p-value is zero for all of them, which are good indicators for the application of factor analysis.

Table 4-3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.835
Bartlett's Test of Sphericity	Approx. Chi-Square	823.994
	df	55
	Sig.	.000

There are several different types of rotation methods. In this study, we will apply the varimax which is an orthogonal kind of rotation. Varimax rotation "aims to get a factorial structure in which one and only one of the original variables are strongly associated with a single factor and little with the remaining factors" (Marôco, 2014 p. 486).

A correlation matrix was created (Appendix 7). This enables the researcher to see if there are any variables that are not strongly correlated with any other variable. As a rule, a correlation level of $r \geq 0.3$ is considered a suitable cut off for a variable's inclusion. In the present study all variables (items) were found to correlate with at least one other variable with the exception of item 11. In addition to the matrix, a Scree plot was created to show the total variance attributable to each variable (Appendix 7). The Scree plot is based on a principal components analysis (PCA). The PCA was run on the 11-item questionnaire that measured cognitive and affective trust among 195 respondents. The suitability of PCA was assessed prior to analysis. Inspection of the correlation matrix showed that variables had at least one correlation coefficient greater than 0.3. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.83 with individual KMO measures all greater than 0.7, classifications of 'middling' to 'meritorious' according to Kaiser (1974). Bartlett's test of sphericity was statistically significant ($p < .05$), indicating that the data was likely factorizable. PCA revealed five components that had eigenvalues greater than one and which explained 26.9%, 13.4%, 11.6%, 8.1% and 4.2% of the total variance, respectively. Visual inspection of the scree plot indicated that three components should be retained (Cattell, 1966). The three-component solution explained 52.3% of the total variance.

4.5.6 Reliability and validity

A researcher should reflect on the quality of their research. This means considering a number of concepts that have been adopted as ways of assessing this quality. Which terms are appropriate, tends to depend on whether it is quantitative or qualitative research. In this mixed methods study two sets of concepts are considered. For the quantitative part, reliability and validity are considered and later in the chapter trustworthiness is discussed in the context of the qualitative phase of the research.

Reliability is concerned with the repeatability of study results and the stability of these results (Bryman, 2008). A reliable instrument is one that is free from bias from the research conditions, subject, or researcher (Sarantakos, 2005). In reporting the results of a quantitative study, a researcher should always report the reliability of the instruments used. In this context reliability refers to consistency and repeatability (Posner, 2016). Essentially, each time an instrument is used it should deliver the same result as long as what is being measured remains the same. Earlier in the chapter the reliability of both the LPI instrument and McAllister's trust scale were presented and both were found to be highly reliable as measured by Cronbach's alpha coefficient.

Validity is a related though distinguishable construct which presumes reliability (Bryman, 2008). A measure that is not reliable can thus not claim to have validity. There are different kinds of validity; Bryman (2008) names four: measurement validity (also termed construct validity); internal validity; external validity; and ecological validity. Measurement validity is concerned with whether or not a construct/ concept really measures what it is claimed to measure (Bryman, 2008) For example, whether the 5 leadership practices of the LPI really measure leadership practices. Internal validity is related to causality, are conclusions on the causal relationships between variables. Specifically, we ask how confident we can be that the independent variable concerned is at least partly due to the variation reported in the dependent variable (Bryman, 2008). External validity is related to generalisation, which is considered in later section in this chapter; however, briefly, it considers the degree to which the results in one study can be generalised to different context and settings. Fourthly, ecological validity concerns the question of whether the results of a study which may be technically and/or statistically accurate in themselves, hold up on contact with the daily reality of people's lives. A relevant example would be whether a questionnaire survey which may exhibit strong measurement validity, internal validity and external validity would be ecologically valid due to the unnaturalness of the act of completing such a questionnaire, its 'unconnectedness' to their daily lives (Bryman, 2008).

Another form of validity with growing recognition is statistical conclusion validity which refers to the degree of correctness or reasonableness that can be claimed for conclusions on the relationships between variables on the basis of statistical evidence (Cozby & Bates, 2009). In the present study, the use of reliable and stable instrument is seen as enhancing this form of validity.

4.6 The qualitative interview study

The second phase in the explanatory sequential design was an interview study with leaders (supervisors) and followers (employees) employed at the petrochemical companies included in the survey study. After deciding to collect qualitative data, the researcher had a range of options open to him on how to achieve this. Among the main possibilities were one-to-one interviews, focus groups, observations (Bryman, 2008). The researcher considered that the issues explored in the qualitative phase of the research could be considered controversial and could lead to discomfort among participants if the wrong techniques were used. At focus groups participants may be unwilling to voice their true perceptions of trust and leadership from their own experiences. Similarly, observations of complex concepts such as trust were considered highly problematic. Therefore, the researcher decided that one-to-one interviews applying the principles of anonymity, confidentiality and privacy were the most appropriate way to proceed.

4.6.1 Rationale for semi-structured Interviews

Having decided that one-to-one interviews were the most appropriate method to collect qualitative data a further decision was required to decide on the type of interview. Such choices normally centre on the degree of structure applied to the interview. Methodology literature tends to situate interview type along a continuum from structured to unstructured. In a structured interview the interviewer will ask a series of prepared questions. At each interview the same questions are asked in the same order, using the same wording (Doody & Noonan, 2013). Once an answer is given the interviewer moves to the next question. There is little or no latitude to pursue or follow up on the responses. The benefits are that one interview is highly comparable with another; there is a high degree of certainty that the researcher will cover what they intended to convert; and the technique can enable larger numbers of interviews to be conducted. Data from structured interviews can be easily coded (Bryman, 2008). The structured format also reduces the scope for researcher bias and subjectivity (Holloway & Wheeler 2010). However, critics argue that structured interviews are little more than spoken questionnaires and may only be suitable for market research street interviews or for collecting socio-demographic data (Doody & Noonan, 2013). Hence, structured interviewing is often viewed as being non-qualitative (Bryman, 2008).

An unstructured interview involves minimal question preparation and takes the form of a conversation that is based around the research topic. Potentially, it could be started with a single question and then be allowed to proceed wherever this takes it (Bryman, 2008). The interviewee is given full latitude to expand on their thoughts while the interviewer may encourage elaboration on statements of particular interest. This approach can produce in-depth rich data (Holloway & Wheeler, 2010) but can also produce a lot of data that lacks relevance (Doody & Noonan, 2013). In an explanatory sequential design such as the present study, the researcher already has the results of the quantitative survey and so will know with some certainty which lines of enquiry require following during the interview phase. This points to the use of some structure to ensure these lines are covered.

The most commonly used type of interview is referred to as semi-structured, which is the type used in the present study. For a semi-structured interview, an interviewer commonly prepares an interview schedule or guide that comprises a list of questions or topics he or she wishes to cover (Bryman, 2008). There can be flexibility in the order questions are asked and the precise wording of the questions may vary from one interview to another. Questions are open-ended and interviewees have sufficient latitude to pursue their own lines of thought (Doody & Noonan, 2013). The researcher retains enough flexibility to explore interesting examples and avenues that were unanticipated but nonetheless revealing and potentially important to addressing the research questions. It was the semi-structured type that the researcher opted for. The interview schedule for the present study is appended as Appendix 5.

There is a further important rationale for including a qualitative interview component to the research. While reliable instruments were available for trust and leadership practices and high quality secondary data available for national culture, the researcher used the interview study to explore the engineering dimension of the research rather than including it in the survey. This decision was based on the lack of a suitable instrument and the desire to explore nuanced questions such as personal qualities and management transitions and the relative strength of national culture and the professional culture of engineering.

4.6.2 Pilot Interviews and developing the interview schedule

There are two main purposes for conducting pilot interviews prior to the main study: testing the appropriateness of the questions and giving the researcher practice (Majid et al., 2017). The researcher conducted two pilot interviews with respondents to the pilot survey. One interviewee was a follower and one a leader. The leader was English speaking and the follower an Arabic speaker to provide the researcher practice in both languages. As part of the pretesting the researcher also consulted with researcher colleagues to discuss the interview questions and their translation. Based on the two pilot interviews and the feedback from colleagues, a number of useful changes were made to the interview schedule as well as the researcher's technique. The interview schedule comprised of four main themes: the engineering profession, trust in engineering leaders, leadership practices, and multicultural workplaces. These broad themes reflected both the research questions presented in Chapter one and the quantitative survey conducted prior to the interviews. Each theme had one main question, additional probing questions and prompts. There is also an open question at the end of the schedule where participants are given the opportunity to raise issues that they felt were not yet covered. The interview schedule is appended as Appendix 5.

4.6.3 Sampling for interview participants

In the first phase of the research, survey respondents were asked to indicate whether they would be willing to participate further in the research. The survey also collected email addresses which will be used to contact potential participants asking whether they would be willing to be interviewed. Of the 195 completed surveys 72 opted to indicate a willingness to participate further, of which 61 were from the three countries being carried forward to the interview study (UK, US and Saudi Arabia). The UK and US where included but India and the Philippines were not. This is because the cultural distance between Saudi Arabia and the two western countries was greater and only one Filipino and no Indian survey respondents had indicated a willingness to be interviewed. A quota sampling approach was taken to identifying the interview participants as shown in Table 4-4. Hence, meeting the pre-set quotas for nationality and leader/follower was the main criterion for inclusion.

Table 4-4: The quotas applied to select interview participants

Role	**Nationality**	
	Saudi	USA /UK
Leaders	3 (HC)	3 (HI)
Followers	6 (HC)	6 (HI)

Other than fulfilling the quota the researcher did not target any particular individuals as key informants as that would have reduced the representativeness of the sample. The researcher contacted potential interview participants by email. Reminding them of their previous willingness to participate, restating the topic and aims of the research and asking them to reconfirm their participation. The researcher gradually filled the quotas as potential participants confirmed or declined. The process of gaining informed consent from the participants is described later in the chapter.

As interview participants had previously indicated on the survey that they were willing to participate further by being interviewed, there was no question of resistance or reticence and the participant spoke free from influence. Communications setting up the interviews were solely between researcher and participant with no gatekeeper involvement.

4.6.4 Conducting the interviews

The interviews for the present study took place in Yanbu and Jubail in June and July of 2018. The location and time of each interview was agreed by email and confirmed again by phone on the day prior to the agreed date. This was done to minimise the chance of 'no shows' or misunderstandings. The interviews were held at a convenient location such as the participant's home or a nearby public place such as a café. Before the interview commenced, the researcher collected the informed consent form (see Appendix 4), or in cases where the participant failed to bring it with them, a new one was supplied and time given for them to read both this and the accompanying participant information sheet (see Appendix 3). Each participant signed a copy of the consent form. Having dealt with the paperwork, the researcher again stated that the interview would be audio recorded and subsequently transcribed. At that point the recorder was activated. In keeping with the semi-structured format, the researcher kept the interview schedule to hand, avoided reading directly from it and allowed the participant latitude to develop their points.

The researcher kept to the interview schedule (see Appendix 5) to ensure the required areas were covered. However, participants were given sufficient latitude to develop points that were not anticipated by the researcher in advance.

At the end of the interview an open question was added offering the participant the opportunity to reflect on whether something of relevance had not been covered. Participants were thanked and advised that a post-interview communication would be sent to confirm what would happen to their contribution. Typically, the substantive part of the interviews lasted 25-30 minutes.

4.6.5 Translation and transcription

As a cross-cultural, cross-lingual study this research required translation in addition to transcription. As data analysis would need to be conducted with data in one language, half the interviews would need to be translated. As most software applications used in qualitative analysis are not designed to work with right-to-left languages such as Arabic and as the final thesis report was to be written in English, it was decided that the Arabic interviews should be translated to English. A further decision was whether to transcribe then translate or translate then transcribe. It was decided that the Arabic interviews should be re-voiced in English then all interviews would be transcribed in English. In the chosen process transcription could make terminology and language consistent to ensure that the analytical tools in the software application could be properly utilised.

4.6.5.1 Translation

According to Sustrino et al. (2014), translation represents an important part of the research process, one that requires careful consideration and adequate explanation. The researcher played the main role in translation supported by two colleague researchers one whose native tongue was Arabic and was proficient in English and the other who was a native English speaker. The audio recordings of the Arabic interviews were played and simultaneously re-voiced by the two Arabic speakers involved (researcher and Arab colleague researcher).

Use of a translation agency was considered but ruled out as a true reflection of the data would require an understanding of the main concepts involved and experience in discussing them in both languages to ensure conceptual equivalence. The researcher had such experience. According to Squires (2008, p. 279). "conceptual equivalence means that a translator provides a technically and conceptually accurate translated communication of a concept spoken by the study's participant." As suggested by Al-Amer (2016), particular care was taken over those excerpts from the data that were selected for inclusion in the final thesis report (Chapter Six).

4.6.5.2 Transcription

With the 18 English language recordings now available, the process of transcription could begin. Using a transcription service was considered as transcription in a time-consuming task. Furthermore, Hammersley (2008) pointed to the possibility that during the transcription the researcher may mediate and construct the data through researcher bias. Notwithstanding this consideration, it was decided that the researcher themselves would conduct the transcription work in order to ensure consistency and use the transcription process to further refine the translations. The digital audio recordings of the eighteen interviews were transcribed from the audio files into Word documents in a process that took over a month to complete.

4.6.6 Data analysis

The most obvious contrast between qualitative and quantitative data analysis is that the former deals with words and the latter numbers. While quantitative analysis has coalesced around a number of leading statistical techniques, tools, and tests there is less consensus among qualitative researchers when it comes to analysing their data.

A recent trend in qualitative data analysis has been the growing use of software applications mirroring the use of software by quantitative researchers. These applications, sometimes referred to collectively as computer aided qualitative data analysis software (CAQDAS), have helped make analysis more systematic and have helped researchers effectively manage data that can often be "unstructured and unwieldy" (Richie & Spencer, 1994, p.176).

The main functions and stages of CAQDAS assisted data analysis are:

- Data Organization
- Data Management
- Memo Creation
- Coding
- Combining codes into themes
- Identifying exemplary data fragments (quotes)

In the present study, the researcher opted to use the Nvivo application and applied the following steps:

1. Data (in the form of word processing documents) were imported and organised into folders.
2. With the application open, the researcher read through the transcripts creating initial memos where relevant, pertinent, surprising or potentially significant data appeared, highlighting the text related to the memo.
3. A coding process then followed, whereby longer memos are reduced to single words or short phrases (codes). These codes are then applied to relevant data fragments across all the interview transcripts. A screenshot from the Nvivo coding of a pilot interview is included as **Error! Reference source not found.**.
4. The researcher then combined codes based on their similarity. A set of themes emerges from this process, representing perceptions, issues raised, repeated comments and common language that address the research questions.
5. The coding and theming process is not static, the researcher continually refines the codes and themes as more data is added. This includes adding new codes, deleting codes that fail to repeat and combining codes when it becomes clear there is a significant overlap.

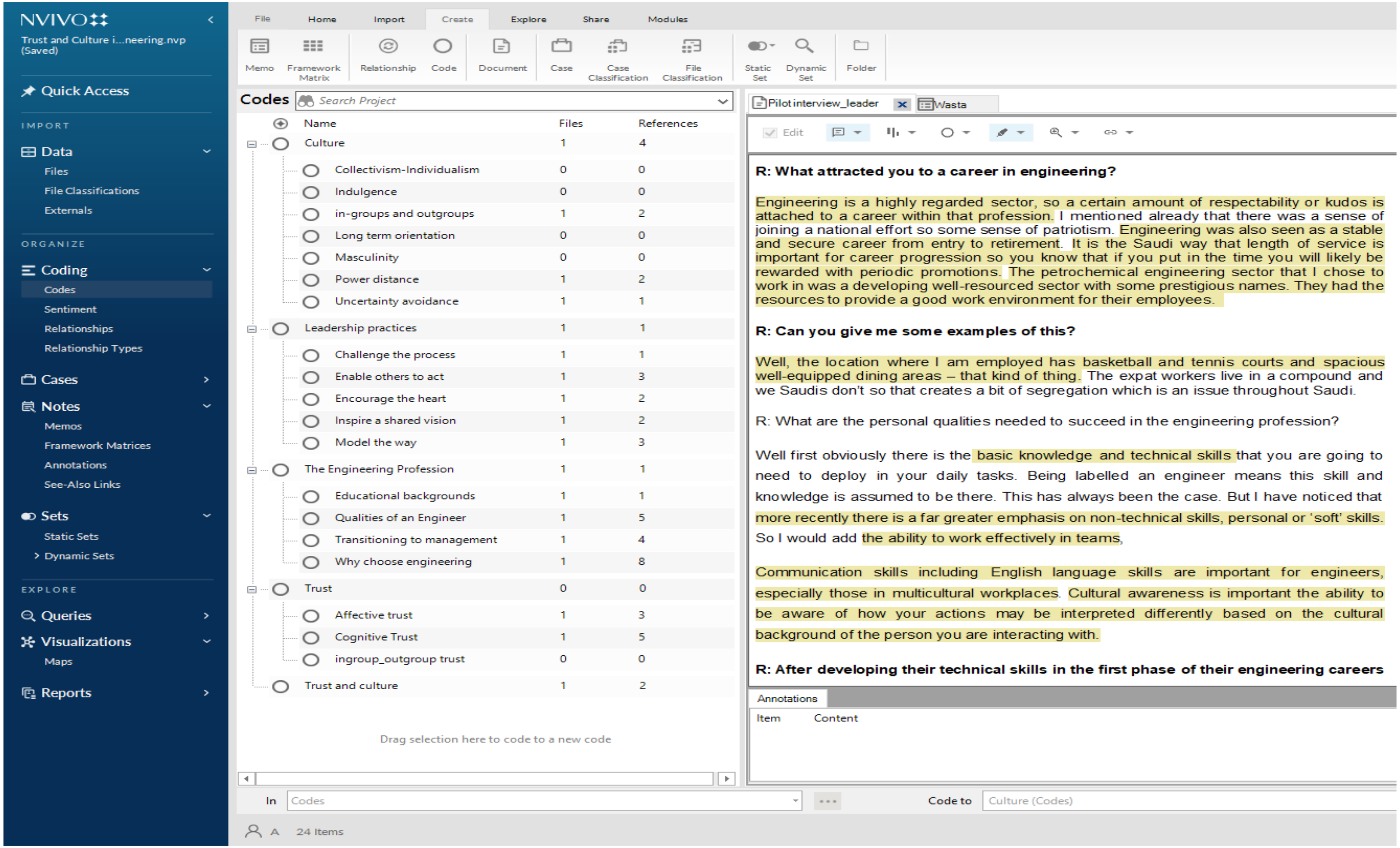
The themes then determine how the findings of the study are presented. To some extent, but not entirely, the themes reflect the questions asked by the interviewer, which in turn were informed by the results of the quantitative survey study and the earlier review of both theory and empirical evidence. This and the sequential nature of the research design mean that the quailtative data analysis was not conducted in fully inductive manner because the purpose of the qualitative stage was to investigate more deeply questions asked in the form of questionnaire survey items. The codes, while representative of the content, were largely predictable. Nevertheless, researchers applying this kind of thematic analysis should aim for a systematic approach, without stifling the complexity of the data they are analysing (Marks & Yardley, 2004). Table 4-5 show how codes were grouped as themes.

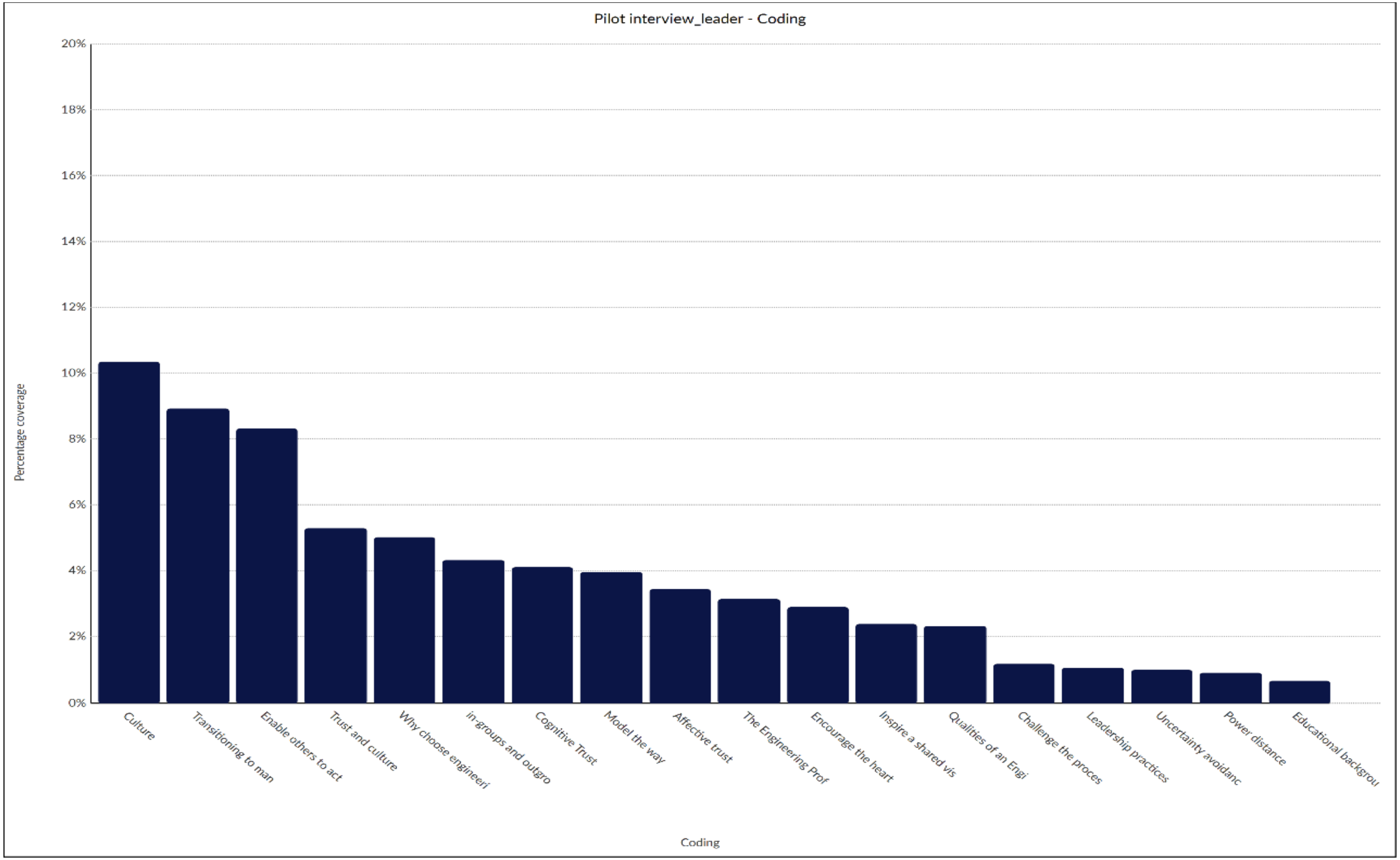
Table 4-5: Codes grouped as themes

Codes	Themes
Collectivism-Individualism	Culture
Indulgence	
Ingroups and outgroups	
Long-term orientation	
Masculinity	
Power distance	
Uncertainty avoidance	
Challenge the process	Leadership practices
Enable others to act	
Encourage the heart	
Inspire a shared vision	
Model the way	
Educational backgrounds	Engineering profession
Qualities of an engineer	
Transitioning to management	
Why choose engineering	
Affective trust	Trust
Cognitive trust	
Ingroup-outroup trust	
Trust culture relationship	Trust and culture

Nvivo includes functions which enable the researcher to interrogate the data and generate reports and graphics to verify that the themes used in the presentation of the findings are a true reflection of the data corpus. An example is shown as **Error! Reference source not found.** which comprises a screenshot of such a graphic taken from the analysis of a pilot interview.

Figure 4-4: Screenshot of pilot interview coding





Pilot interview_leader - Coding
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Percentage coverage
Culture
Transitioning to man
Enable others to act
Trust and culture
Why choose engineeri
in-groups and outgro
Cognitive Trust
Model the way
Affective trust
The Engineering Prof
Encourage the heart
Inspire a shared vis
Qualities of an Engi
Challenge the proces
Leadership practices
Uncertainty avoidanc
Power distance
Educational backgrou
Coding

Figure 4-5: An example graphic output showing main codes from pilot interview

There have been criticisms made of this approach to data analysis. Firstly, the use of software applications and systematic processes has been seen as an attempt to imitate quantitative research in an unjustified way and a way that undermines the very paradigm itself (Hollway & Jefferson, 2012). It is also argued that by extracting data fragments from the transcribed interviews they may be being taken out of context, undermining their true meaning (Bryman, 2008). This latter point can be overcome by reading and rereading the data fragments within the full transcript before selecting a fragment for use in the findings chapter.

Data saturation is a widely used concept in qualitative research (Saunders et al., 2018). As Glaser and Strauss (1967: p. 61) explain,

> *Saturation* means that no additional data are being found whereby the sociologist can develop properties of the category. As he sees similar instances over and over again, the researcher becomes empirically confident that a category is saturated.

The eighteen interviews were, once coded, judged to give sufficient coverage of the main and subthemes and the relationships of interest. Practical limitations also determined when data collection ended. Firstly, further interviews may have unbalanced the quotas set. Secondly, as the survey respondents who had indicated a willingness to be interviewed and then reaffirmed this willingness had been virtually exhausted any significant enlarging of the sample would have meant returning to the gatekeepers to request further cooperation which could not be guaranteed.

4.7 Generalising the study

As with all research, the mixed methods research described in this chapter needs to be evaluated for its ability to be generalised to other context. This evaluation, as the with the research as a whole, needs to be undertaken in two phases, quantitative then qualitative.

It is a common aim among quantitative researchers to be able to claim that their research can be generalised beyond the context and setting of their study (Bryman, 2008). Such an aim can be associated with a positivist epistemology as it seeks to elevate findings to the status of fact in the natural sciences. One way to get close to this status would be to include the whole population in the study but as this is almost always impossible it is down to sampling technique to determine representativeness of the sample (Bryman, 2008). Generalisability of the quantitative results of the present study is problematic and needs to be exercised with caution as it should in most cases. For example, the survey respondents were all engineers and strictly speaking the results may not be generalisable to other professional groups. The setting for the study was Saudi Arabia and the sector was petrochemicals, both which have their own unique set of characteristics. That is not to say the study could not be replicated in other setting and contexts particularly to the tried and tested instruments used.

In a qualitative context, generalisation is commonly referred to as transferability. Transferability is defined as “the extent to which research outcomes are applicable in other research contexts” (Zeegers & Barron, 2015, p. 79). The primary way a qualitative researcher can promote the transferability of his or her work is to carefully document this work and situate it within the body of existing literature on the topic at hand. This chapter has presented in detail what precisely the researcher did to conduct this study and after presenting the findings, Chapter seven situates them within the extant literature. According to Sarantakos (2005), future researchers considering the transferability of this study to their own work would need to assess the “fittingness” between the two studies which refers to the degree of fit between the original study and the new one. A researcher considering the ‘fittingness’ of a particular study to their own context relies on the existing study’s author to have clearly set out how the study was undertaken.

4.8 Trustworthiness in qualitative research

The concepts of ‘reliability’ and ‘validity’ are mainly used in the context of quantitative research. Indeed, Watling (cited in Winter, 2000, p.7) states “reliability and validity are tools of an essentially positivist epistemology”. Following this, there has been debate as to how worthwhile the application of these concepts is for researchers applying qualitative methods (Bryman, 2008). Where the validity construct is applied to qualitative research it is in the context of assessing the closeness with which a researcher’s claim to knowledge is reflecting reality in as much as it has been constructed by the participants (Klenke, 2016).

Whatever the reservations, they have not stopped qualitative researchers applying quality measures to their work. Eisner (1991, p. 58) argues that a good quality qualitative study can lead us to “understand a situation that would otherwise be enigmatic or confusing”. The concept of quality in qualitative research reflects its objective of generating understanding in contrast to quantitative research’s aim of explaining (Stenbacka, 2001). Healy and Perry (2000) reject attempts to use the terms reliability and validity for qualitative research as they belong to another paradigm altogether. Hence, when considering the second phase of the present research, reliability and validity have to be reconceived in the context of qualitative research (Davies and Dodd, 2002). Each offers essentially the same – a framework for ensuring rigour in qualitative research. For the purposes of this chapter I will apply the term ‘trustworthiness’ as having equivalence with validity while acknowledging that other terms are valid and, in some respects, different. In approaching trustworthiness, the researcher asks, “How can an inquirer persuade his or her audiences that the research findings of an inquiry are worth paying attention to?" (Lincoln & Guba ,1985, p. 290). Lincoln and Guba (1985) identify four criteria for evaluating the trustworthiness of qualitative research: credibility, transferability, dependability and confirmability.

Credibility (replacing internal validity) refers to the degree to which the findings of the study are believable from the participant's standpoint. Transferability (replacing external validity) describes the degree to which a study's findings can be transferred to alternative settings or contexts. Dependability is the measure of whether another researcher applying the same methods with the same sample would arrive at the same findings. Confirmability is the degree to which a study is verifiable, can be corroborated and confirmed by others. It is also the researcher's ability to demonstrate the neutrality of their interpretations (Lincoln & Guba, 1985; Klenke, 2016).

With the trustworthiness criteria (the equivalent of validity) satisfied so to is reliability. Lincoln and Guba (1985) posit, "Since there can be no validity without reliability, a demonstration of the former [validity] is sufficient to establish the latter [reliability]" (p. 316). Similarly, Patton (2001) also states that reliability is a consequence of the validity in a study.

Turning to concrete steps towards trustworthiness, including those taken in the present study, a researcher using qualitative methods (including in a mixed methods study) can deploy a number of "trustworthiness devices" to reinforce the rigour with which they have undertaken their work .In the present study, triangulation played on important part in establishing the credibility of the study findings. As well as a triangulation data types, the study featured data source triangulation and multi-site sampling. Bringing together different perspectives helped to form a truer picture and deeper understanding of the phenomenon being studied.

During the current research and the preparation of the thesis report, the research engaged colleagues in regular discussion on aspects of the study. As example, the researcher engaged peers in verifying the translation of the research instruments and also requested two colleagues evaluate the appropriateness of the identification of themes from the interview data. This involvement of colleagues has been referred to as "peer debriefing" (Klenke, 2016).

A further step a qualitative researcher can take to strengthen the trustworthiness of their research is to revert back to participants once the interviews had been transcribed. This process has been referred to as member checking (Klenke, 2016). In the present study, interview participants were asked to check the transcripts of their interviews and inform the researcher should there be any discrepancies, additions or indeed whether the participant wished to withdraw from the study. For practical purposes the participants were advised that if no response was forthcoming within four weeks then it would be assumed the transcripts were an accurate reflection of the interview. Finally, the researcher explains in detail in this chapter how the research was operationalised and provides an audit trail, mainly through the appending of documentation and examples.

4.9 The Research Process

Researching and presenting a thesis report is a lengthy process, often described as being a journey. In the present research there were three main phases of activity. The first phase can be labelled the define and design phase. During this period the researcher established what was already understood about the main constructs and relationships of interest. A research problem is defined, and research questions are set. This work helped the researcher delimit the research to a manageable area of investigation. Through literature review the main theoretical assumptions can be established and a conceptual framework devised. Reviewing empirical literature enables the researcher to develop a series of hypotheses that will subsequently be tested. As part of the design, instrumentation must be selected. The second phase of the research can be describe as operationalising. This involves setting the groundwork for the primary data collection by preparing the instruments, establishing relations with gatekeepers and working on the sampling frame and the sampling itself. In this sequential study, there were two stages of collection and analysis, the first quantitative and the second qualitative. The third phase of the research process can be termed the present-evaluate-conclude phase. The survey results are presented with each hypothesis tested, followed by the interview study findings. These are then synthesised and evaluated. This evaluation includes addressing the research questions and comparing the results and findings with the existing knowledge base. The overall main findings of the research are identified, and key conclusions are drawn, including concluding on what contributions were made. Lastly, recommendations are made for both practice and further research.

This research process is represented schematically as Figure 4-6.

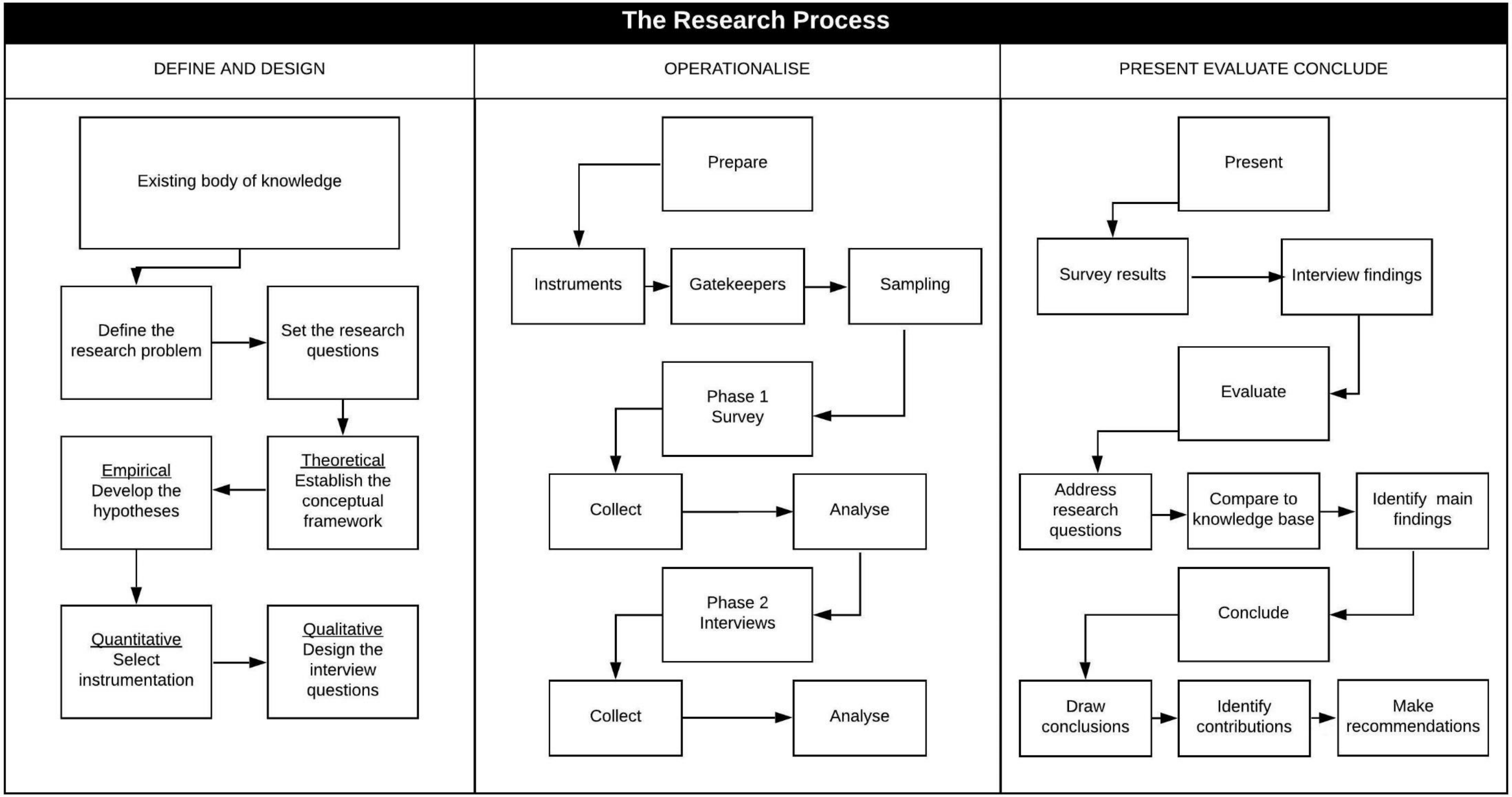


Figure 4-6: The research process

4.10 Ethical Considerations

For research to be quality research it must be ethical. This section describes the steps taken to ensure that the present study meets this requirement. There are four dimensions to ethical research: harm, informed consent, privacy and deception (Diener & Crandall, 1978). These are now covered in turn.

4.10.1 Potential for harm

The concept of harm is straightforward in medical research when seen in terms of physical harm. For business research as with other social research, the concept requires a broader application which covers every possible kind of negative outcome a participant could be exposed to. While physical harm from participation is highly unlikely the researcher had to consider the possibility of mental harm. This potential harm could be in the form of embarrassment, anxiety, loss of self-esteem, stress or indeed any form of mental discomfort (Sarantakos, 2005). In organisation-based research, the researcher must take steps to ensure that by participating, individuals would in no way undermine their place within the organisation or face any retribution for participating. A key ethical issue for the researcher is to ensure that participation in the study would not undermine the position of the participant in the organisation, or put them at risk of retribution. Using the HR departments of the firms as gatekeepers partly removed the possibility of this and certainly provides reassurance to the participants, however, to remove it further a strict adherence to anonymity and confidentiality is applied.

4.10.2 Informed Consent

Informed consent arises from the researcher providing sufficient information on the study and the participant's role in it (Bryman, 2008). Clearly explaining the nature and extent of participation is part of this process. The study population has two parts: (1) first line engineering managers (who have staff reporting to them but do not report themselves to the highest tier of management) who are currently employed at Saudi petrochemical firms. (2) employees reporting to the first part of the study population. The present study has two levels of contribution from participants – one as survey respondents and the other as both survey respondents and interview participants. Participants only responding to questionnaire surveys were asked to complete the instruments online and were advised of a time commitment of an estimated 15-20 minutes. In addition to the survey time, those participants involved at the second level were also asked to attend a single one-to-one interview with the researcher and were advised of an estimated duration of 45-60 minutes (not including their travelling time).

Both survey respondents and interview participants should and were required to give such consent, but this occurred in different ways. For survey respondents the informed element was achieved through inclusion of participant information in the original invitation to respond email and repeated on the survey itself on a web page that preceded the actual survey items. The consent element was satisfied through the use of a check box that had to be filled before the respondent could continue on to the survey itself. For the interview participants, an introductory email included summary participant information. Once someone had confirmed intention to participate, a further email was sent which included a pdf formatted file of the more detailed participant information sheet together with the informed consent form. Some participants printed these of and brought them to the interview for those who did not a hard copy was supplied at the interview. All participants had signed their consent forms before the interviews commenced.

A second important consideration for the research concerned informed consent in conditions where the human resources departments assumes the role of gatekeeper. Specifically, the principles (and practice) of informed consent have to be maintained despite the potential for respondents to perceive that the research was being officially endorsed and that participation was being requested by the organisation and not the researcher. To emphasise the independent nature of the research email communications between the researcher and the participants were not sent from the organisations' email servers but instead sent by the researcher directly.

There is a third aspect of informed consent relevant to cross-cultural research such as the present study. This study deployed materials prepared in both English and Arabic languages. This includes the Participant Information Sheet, the Informed Consent Form and the Questionnaire Survey itself where survey items appear in English with an Arabic translation underneath. Two PhD researchers, one native English-speaker and another a native Saudi assisted the researcher in verifying the appropriateness of translations.

4.10.3 Privacy, Anonymity and Confidentiality

Researcher's must uphold the right to privacy. This particularly arises in cases of covert methods; however, privacy also extends to the avoidance of embarrassing or personal questions during the interviews (Bryman, 2008). The giving of informed consent does not mean the researcher has licence to ask such questions and before the interview commenced the researcher advised the participants they could refrain from answering any of the questions without giving a reason. Another means of avoiding the possibility of harm to participants is the robust use of anonymity and confidentiality (Busher & James, 2007). In this study, the researcher affirmed that participants actual names would not be used in the write up of the research or any other disseminations. Furthermore, any other possible identifying information such as departments and job titles were also omitted from report of the findings.

In order to arrange the interviews, the researcher needed to receive (via the online survey) and use the email addresses of the potential and actual participants. During these communications other details including name and telephone numbers were also exchanged. Full confidentiality was maintained, and the researcher only kept these details on a password protected personal laptop and, as a backup, a memory stick that was also password protected.

For the survey study the researcher also checked the policies of the survey hosting company, in this case SurveyMonkey, to ensure that no privacy issues could arise through respondents completing the survey.

4.10.4 Deception

The final potential cause of harm to participants is deception. Such deception may occur should the actual purposes of the research be withheld from the participants or where the researcher subsequently uses their data for previously undeclared purposes (Bryman, 2008). The researcher ensured that there was no deception in the research and that participants data was used for the purposes and in the manner clearly described in advance to the participants.

4.11 Summary

The chapter has described and discussed how the research reported in this thesis was explaining was conceptualised and then operationalised. The research was identified as being based on a pragmatist research paradigm with a mixed methods research design, specifically a sequential explanatory design in which a quantitative survey preceded a qualitative interview study. In the second half of the chapter the steps undertaken to carry out the research were explained in detail and method and instrument and technique choices were justified. There was also a discussion of reliability, validity, trustworthiness and generalisability before, finally, the ethical dimensions of the research were considered.

Chapter 5 RESULTS OF THE QUANTITATIVE SURVEY STUDY

5.1 Introduction

The first phase of the explanatory sequential design was the devising, administering and data analysis of an online quantitative survey. This closed survey was distributed by email to the email addresses of employees and managers at five petrochemical companies in Saudi Arabia. The questionnaire used for the survey is appended as Appendix 1. The aim of this chapter is to present the results of this survey. The next section presents descriptive statistics of the sample. This is followed by the results of the trust analysis and leadership practices analysis. Next the classification of nationalities by the two culture dimensions used in this study (individualism-collectivism (IDV) and power distance (PD)) is explained. The chapter is then organised according to the hypotheses first presented at the end of Chapter Three. Each set of hypotheses examines a different relationship of interest, culture-trust, culture-leadership practices, and trust-leadership practices. The chapter then ends with a summary of the main findings.

5.2 Description of the sample

The sample comprised 55% of followers (i.e. employees with no one reporting to them) and 45% leaders (i.e. engineers with staff reporting to them), as shown in Figure 5-1.

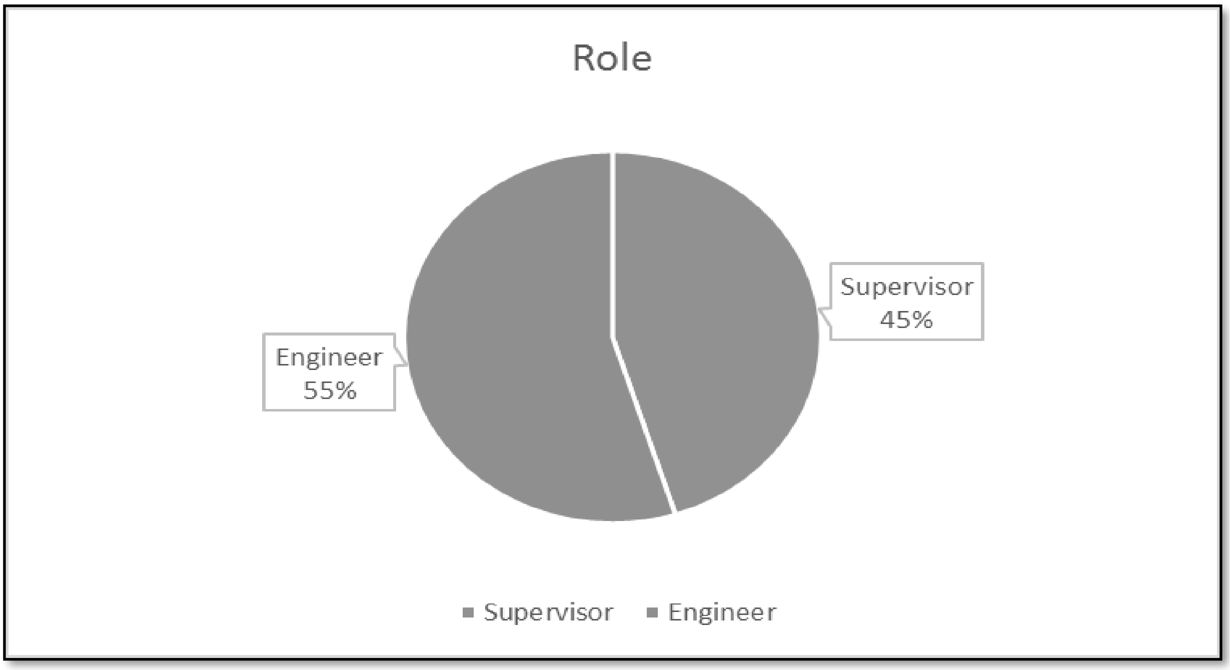


Figure 5-1: Leader-follower composition of the sample

Respondents were asked to indicate their length of experience as engineers. Overall the results showed that it was a highly experienced sample. The most common period of experience was 10 to 19 years, with 64.8% of leaders and 47.7% followers falling in this group (Figure 5-2).

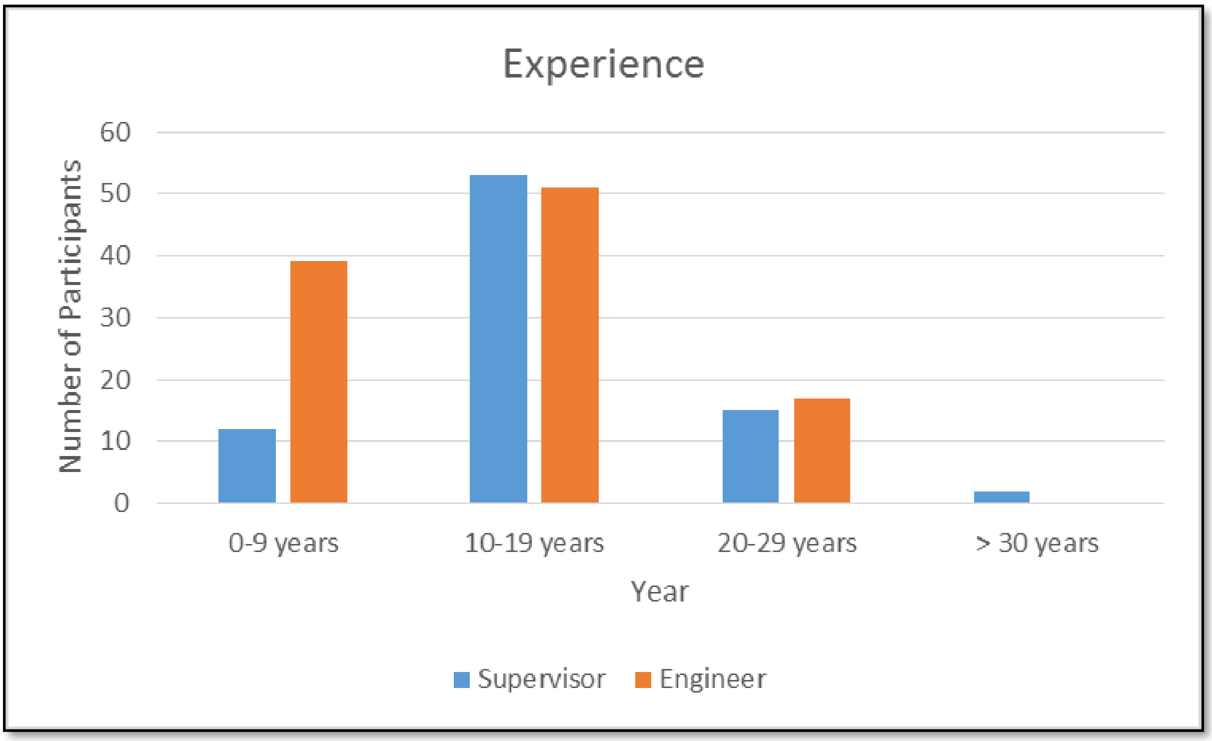


Figure 5-2: Length of experience as an engineer

In addition to career experience respondents were asked to indicate their length of service in their current organisation. As expected, leaders had a longer average length of service than followers with the majority of leaders having between 6-10 years while the most common tenure for followers was 1-5 years.

In a further item, respondents were asked to indicate their nationality. There were 71 Saudi leaders and 68 Saudi followers, the largest national representation. In addition, other countries represented in the sample were the United States, the United Kingdom, India and the Philippines (Figure 5-3).

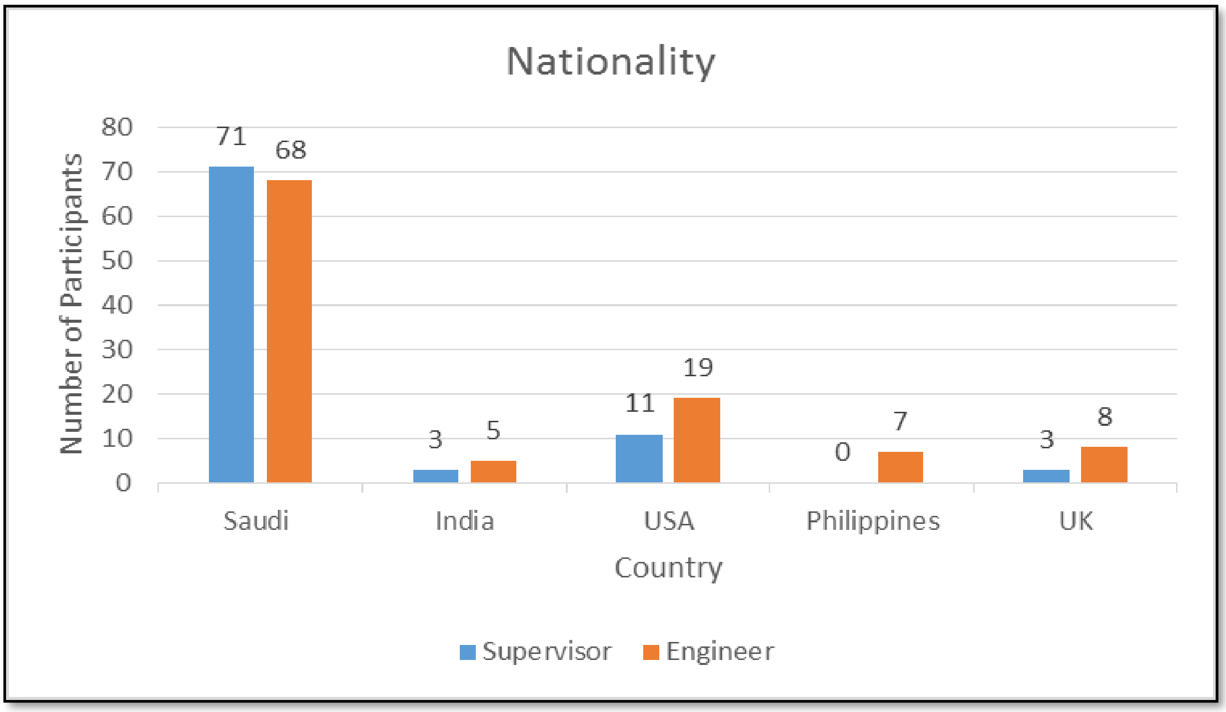


Figure 5-3: Respondents by nationality

5.3 Trust Analysis

All survey respondents completed the questionnaire items on cognitive and affective trust in leader (McAllister, 1995). Those classed as leaders in this study, on the basis they had employees reporting to them, were also followers themselves of the next level of management. Table 5-1 gives the mean and SD results for both engineering leaders and engineering employees.

Table 5-1: Combined cognitive and affective trust in leader

Trust in Leader				Independent Samples T-Test	
Role	**N**	**Mean**	**Std. Deviation**	**F**	***Sig. (2-tailed)***
Leaders	88	3.69	0.606	2.801	0.004
Followers	107	3.40	0.775		

The mean score of leaders' trust in their leader is 3.69 and the SD is 0.606 while the mean of employees score for trust in their leaders is 3.40 and SD is 0.775. Additionally, an independent sample t-test was conducted to compare trust perceptions of leaders and employees in their leaders. There was a significant difference in the scores. The result suggests that the trust engineering leaders have in their own leaders is higher than employees' trust in theirs. One possible explanation is the longer lengths of service found among leaders as stated earlier in the chapter. There is some evidence that trust develops over time (Webber, 2008; Williams, 2001).

Table 5-2 shows that the gap in trust between leaders and followers is present for both affective and cognitive forms of trust, with a slightly larger gap for cognitive trust.

Table 5-2: Affective and cognitive trust for leaders and followers

Trust form	Leader/follower	N	Mean	Std. Deviation	Std. Error Mean
Affective	Leader	88	3.67	0.690	0.073
	Follower	107	3.42	0.918	0.088
Cognitive	Leader	88	3.71	0.635	0.067
	Follower	107	3.38	0.768	0.074

To establish the overall levels of trust in leader at the Saudi petrochemical the scores of both leaders and followers were combined producing the results shown in Table 5-3.

Table 5-3: Combined affective and cognitive trust in leaders

Trust form	N	Minimum	Maximum	Mean	Std. Deviation
Affective	195	1.00	5.00	3.54	0.830
Cognitive	195	1.00	5.00	3.53	0.728

Table 5-3 shows that the combined (leader and follower) mean trust scores for the two forms of trust are almost identical. As part of the discussion in Chapter Seven these scores are compared with other studies using the same instrument to see if there is anything notable about the level of trust in Saudi petrochemical companies in global terms.

5.4 Leadership practices analysis

The LPI enables researchers to gather data both on how leaders perceive their own practices and how these practices are perceived by others. These others are referred to as observers. Five leadership practices were analysed and Table 5-4 compares the results of mean and standard deviation obtained from the data analysis for both leaders and their observer followers. The mean was calculated by dividing the sum of obtained values by the number of participants.

Table 5-4: Leadership practices self-reported and observers (followers)

Practice	Leader *n=88*	Follower *n=107*	Total *n=195*	Rank
Model the way	44.25	31.19	**37.73**	**3**
Inspire a shared vision	43.48	29.64	**36.56**	**4**
Challenge the process	43.89	29.07	**36.49**	**5**
Enable others to act	47.99	34.42	**41.21**	**1**
Encourage the heart	46.51	31.72	**39.12**	**2**

The results indicate that across all five practices Leaders perceived themselves to adopt transformational leadership practices to a greater extent than their followers perceived this. The most commonly indicated practice for both leaders and followers was Enable others to act. This practice describes the leader's collaborative style in interaction and engagement. In fact, specific behaviour needs building trust relationships with followers. On the other hand, challenge the process was the lowest score (36.49). Challenge the process shows how frequently leaders can experiment and take risk. This result might be related to engineering culture. For the professional engineer the highest purpose is safety and security of the technology application, this end up with many engineering standards and protocols to minimize risk.

By using the global observers data, made available through the Leadership Challenge website, it is possible to compare the primary data collected for the present study with a database containing 2.8 million responses. This comparison is illustrated by Figure 5-4.

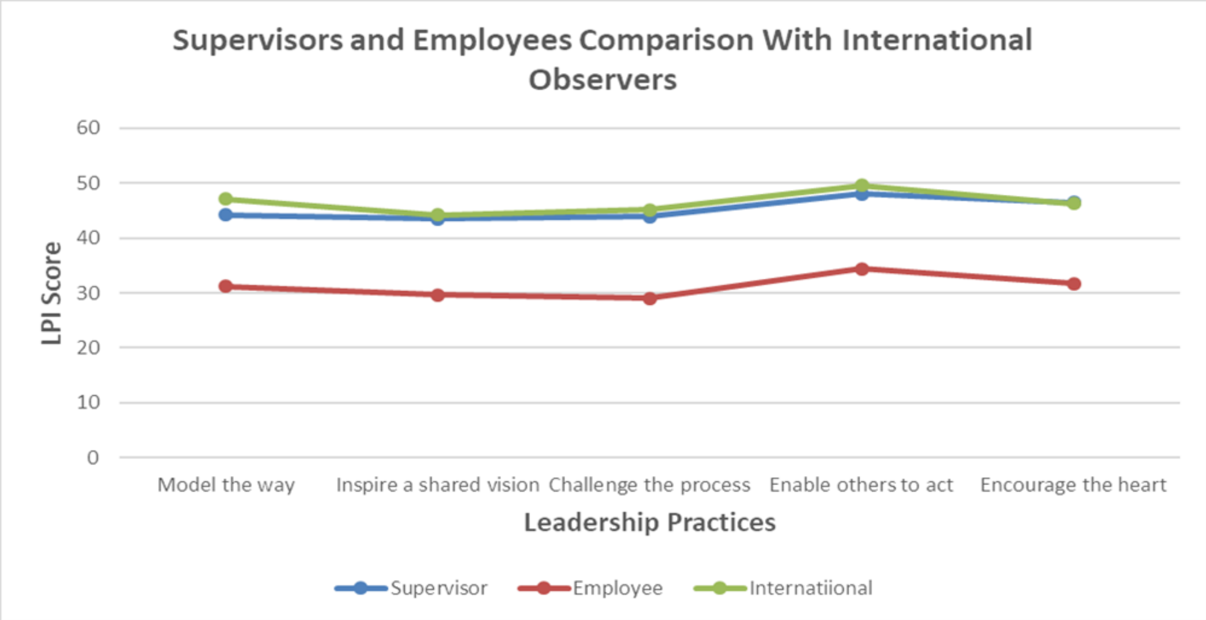


Figure 5-4: LPI score comparison – leaders, followers and global followers database

In Figure 5-4 it can be seen that there is a significant deficit in leadership scores for our employee (observer) group compared with the international scores for the vast sample of observers. This indicates the potential for a leadership problem as our sample of employees perceives lower levels of transformational leadership practices being adopted by their leader than is normal. Furthermore, the figure shows LPI Observers in the present study have significantly lower scores across all five practices than the international observer's scores.

5.5 Classifying national cultures

The respondents were classified according to the IDV and PD scores of their national culture as recorded by Hofstede Insights (Hofstede Insights, 2018). Both IDV and PD score refers to the score attributed by the Hofstede Insights based on an extensive database of studies and made available online. For the purposes of analysis, respondents associated with neutral scores were removed in order to establish two groups that had high cultural distance between them on both the IDV dimension and PD. This meant that respondents from India were excluded from the IDV analysis as that country has a score of 48 on that dimension.

Table 5-5 shows the scores for each of the five nationalities represented in the sample and the resulting code for that country.

Table 5-5: The Hofstede Insights scores for each nationality

Country	**IDV Score**	**PD Score**	**Code**
Saudi Arabia	25	95	Low IDV – High PD
India	48	77	High PD
USA	91	40	High IDV – Low PD
Philippines	32	94	Low IDV – High PD
UK	89	35	High IDV – Low PD

As shown in

Table 5-5, the high IDV respondents were from the U.S. (n=23) and the U.K. (n=18). The low IDV respondents were from the host country, Saudi Arabia (n=139) and the Philippines (n=7). Due to India's virtually neutral IDV score, Indian respondents (n=8) were excluded for IDV analysis. High PD respondents were from Saudi Arabia (n=139), India (n=8) and the Philippines (n=32). Low PD respondents came from the USA (n=23) and the UK (n=23). Data from the four groups (High IDV, Low IDV, High PD, Low PD) were analysed using the Statistical Package for Social Science (SPSS). Descriptive and parametric statistics were performed to analyse the collected data and test the hypotheses.

Having added the cultural variable, the chapter now moves on to present the results for the relationships of interest: culture-trust, culture-leadership practices, and trust-leadership practices.

5.6 The culture-trust relationship

The analysis of this relationship uses two of Hofstede's (1980) original dimensions as proxies for culture: individualist-collectivist and power distance. In order to evaluate the culture effect respondents from countries with moderate scores on these two dimensions were excluded Trust is represented by both affective and cognitive trust as defined by McAllister (1995).

5.6.1 Results

The IDV-trust relationship is hypothesized as follows:
H1a: High individualist and high collectivist scores are associated with statistically different means for ***affective*** *based trust in leader*

*H1b: High individualist and high collectivist scores are associated with statistically different means for **cognitive** based trust in leader*

The results are shown in Table 5-6 and the t-test in reported in Table 5-7

Table 5-6: Group statistics - trust and IDV

Trust form	IDV classification	N	Mean	Std. Deviation	Std. Error Mean
Affective	Low IDV	139	3.91	0.482	0.040
	High IDV	41	2.60	0.904	0.141
Cognitive	Low IDV	139	3.80	0.457	0.038
	High IDV	41	2.88	0.858	0.134

Table 5-7: Independent Samples Test - Trust and IDV

		Levene's Test for Equality of Variances		**t-test for Equality of Means**						
		F	Sig.	t	df	Sig.	Mean Differen-ce	Std. Error Difference	95% Confidence Interval of the Difference Lower	- Upper
Affective	Equal variances assumed	20.862	0.00	12.14	178	< 0.001	1.302	0.1072	1.0905	1.5139
	Equal variances not assumed			8.85	46.88	< 0.001	1.302	0.1471	1.0062	1.5982
Cognitive	Equal variances assumed	19.563	0.00	9.09	178	< 0.001	0.9253	0.1017	0.7245	1.1261
	Equal variances not assumed			6.63	46.89	< 0.001	0.9253	0.1395	0.6446	1.2060

Both hypotheses are supported by the results. For both affective and cognitive forms of trust in leader, high collectivism is associated with a statistically significantly higher level of trust.

Similarly, the PD-trust relationship is hypothesized as follows:

*H2a: High power distance scores and low power distance are associated with statistically different means for **affective** based trust in leader*

*H2b: High power distance scores and low power distance are associated with statistically different means for **cognitive** based trust in leader*

The results are shown in Table 5-8 and the t-test is presented as Table 5-9.

Table 5-8: Group Statistics Trust and PD

Trust form	**Power Distance**	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Affective	High PD	154	3.79	0.604	0.048
	Low PD	41	2.60	0.904	0.141
Cognitive	High PD	154	3.70	0.579	0.046
	Low PD	41	2.88	0.858	0.134

Table 5-9: Independent Samples Test - Trust and PD

		Levene's Test for Equality of Variances		**t-test for Equality of Means**						
		F	Sig.	t	df	Sig.	Mean Differen -ce	Std. Error Difference	95% Confidence Interval of the Difference Lower - Upper	
Affective	Equal variances assumed	9.04	0.003	9.929	193	< 0.001	1.1823	0.1191	0.947	1.417
	Equal variances not assumed			7.91	49.876	< 0.001	1.1823	0.1495	0.882	1.482
Cognitive	Equal variances assumed	7.85	0.006	9.093	193	< 0.001	0.825	0.1137	0.600	1.049
	Equal variances not assumed			6.632	50.102	< 0.001	0.825	0.1419	0.539	1.110

Again, both hypotheses are supported by the results. For both affective and cognitive forms of trust in leader, high power distance is associated with a statistically significantly higher level of trust.

5.7 The culture-leadership practices relationship

The second set of hypotheses concerns the relationship between culture and leadership practices. Again, the individualist-collectivist and power distance dimensions, as defined by Hofstede (1980) are taken as proxies for culture. Leadership practices are again examined using the two datasets from the LPI, self-reported and observer.

5.7.1 Results

The culture-leadership practices relationship for the self-reported leadership practices of engineering leaders is hypothesized as follows:

H3a: Self-reported leadership practices of engineers are influenced by the individualism-collectivism dimension.

H3b: Self-reported leadership practices of engineers are influenced by the power distance dimension

The results are shown in Table 5-10 and the t-test is presented as Table 5-11.

Table 5-10: Self-reported leadership practices and IDV

	Leadership Practice	**Cultural values**	**N**	**Mean**	**Std. Deviation**	**Independent Samples t-test**	
Leaders' self-reports						**F**	**Sig. 2-tailed**
	Model the way	Low IDV High IDV	71 14	7.41 7.13	1.108 1.319	0.26	0.394
	Inspire a shared vision	Low IDV High IDV	71 14	7.31 6.78	1.260 1.721	0.96	0.178
	Challenge the process	Low IDV High IDV	71 14	7.35 7.01	1.111 1.227	0.13	0.300
	Enable others to Act	Low IDV High IDV	71 14	8.05 7.76	0.952 1.012	0.01	0.302
	Encourage the heart	Low IDV High IDV	71 14	7.93 6.94	1.045 1.387	2.8	0.003

Table 5-11: Self-reported leadership practices and PD

	Leadership Practice	Cultural values	N	Mean	Std. Deviation	Independent Samples t-test	
						F	Sig. 2-tailed
Leaders' self-reports	Model the way	High PD Low PD	74 14	7.42 7.13	1.103 1.319	0.25	0.373
	Inspire a shared vision	High PD Low PD	74 14	7.33 6.78	1.238 1.721	1.21	0.159
	Challenge the process	High PD Low PD	74 14	7.37 7.01	1.130 1.227	0.21	0.281
	Enable others to Act	High PD Low PD	74 14	8.04 7.76	0.936 1.012	0	0.312
	Encourage the heart	High PD Low PD	74 14	7.90 6.94	1.046 1.387	2.81	< 0.001

The hypotheses are not supported by the results. For both IDV and PD the independent samples T-test shows that there is no significant difference with four of the five transformational leadership practices. Only for the practice Encourage the Heart does a significant difference result with IDV at p=0.003 and PD at p=0.003.

The observer-reported data was also analysed yielding the following results:

H4a: Observer-reported leadership practices of engineers are influenced by the individualism-collectivism dimension.

H4b: Observer-reported leadership practices of engineers are influenced by the power distance dimension

The results are presented in Table 5-12 and the t-test is presented as Table 5-13.

Table 5-12: Observer-reported leadership practices and IDV

	Leadership Practice	Cultural values	N	Mean	Std. Deviation	Independent Samples t-test

						F	Sig. 2-tailed
Observer reports	Model the way	Low IDV High IDV	68 27	5.82 3.95	1.495 1.755	0.85	< 0.001
	Inspire a shared vision	Low IDV High IDV	68 27	5.41 4.2	1.593 1.71	0.35	< 0.001
	Challenge the process	Low IDV High IDV	68 27	5.41 3.76	1.593 1.836	0.67	< 0.001
	Enable others to Act	Low IDV High IDV	68 27	6.43 4.60	1.361 1.885	6.5	< 0.001
	Encourage the heart	Low IDV High IDV	68 27	5.90 4.16	1.777 1.865	0.01	< 0.001

Table 5-13: Observer-reported leadership practices and PD

	Leadership Practice	**Cultural values**	**N**	**Mean**	**Std. Deviation**	**Independent Samples t-test**	
						F	**Sig. 2-tailed**
Observer reports	Model the way	High PD Low PD	80 27	5.61 3.95	1.575 1.755	0.30	0.01
	Inspire a shared vision	High PD Low PD	80 27	5.18 4.20	1.650 1.711	0.15	< 0.001
	Challenge the process	High PD Low PD	80 27	5.21 3.76	1.735 1.836	0.08	< 0.001
	Enable others to Act	High PD Low PD	80 27	6.12 4.60	1.540 1.885	2.91	< 0.001
	Encourage the heart	High PD Low PD	80 27	5.66 4.16	1.887 1.865	0.44	< 0.001

Both hypotheses are supported by the results. Collectivism (Low IDV) is associated with a statistically significantly higher level of observer-reported transformational leadership practices across all five practices. High power distance is also associated with a statistically significantly higher level of observer-reported transformational leadership practices across all five practices.

5.8 The trust-leadership practices relationship

The third set of hypotheses concerns the relationship between trust and leadership practices. As with the culture relationship, trust is represented in two forms, affective and cognitive. Leadership practices are also examined using the two datasets form the LPI, self-reported and observer.

5.8.1 Results

The trust-leadership practices relationships for the self-reported leadership practices of engineering leaders are hypothesized as follows:

H5a: Self-reported leadership practices of engineers are influenced by ***affective*** *based trust in leader*.

H5b: Self-reported leadership practices of engineers are influenced by ***cognitive*** *based trust in leader*.

The correlation results and shown in Table 5-14 and Table 5-15.

Table 5-14: Correlation analysis of leaders' affective trust

Correlation Analysis		
Leadership Practice N=88	**Affective Trust**	**Cognitive Trust**
Model the way	0.374**	0.308**
Inspire a shared vision	0.409**	0.300**
Challenge the process	0.342**	0.347**
Enable others to Act	0.356**	0.333**
Encourage the heart	0.403**	0.354**

** p<0.01

Both hypotheses are confirmed by the results which show that leaders’ cognitive and affective trust are positively correlated with the five transformational leadership practices.

Similarly, the relationships between cognitive trust and observer-reported leadership practices were hypothesised as follows:

H6a: Observer-reported leadership practices of engineers are influenced by ***affective*** *based trust in leader*.

H6b: Observer-reported leadership practices of engineers are influenced by ***cognitive*** *based trust in leader*.

The correlation results are shown in Table 5-15.

Table 5-15: Correlation analysis of followers' affective trust

Correlation Analysis		
Leadership Practice **N= 107**	**Affective Trust**	**Cognitive Trust**
Model the way	0.484**	0.538**
Inspire a shared vision	0.375**	0.475**
Challenge the process	0.474**	0.583**
Enable others to Act	0.618**	0.640**
Encourage the heart	0.392**	0.531**

** p<0.01

Again, both hypotheses are confirmed by the results which show that followers' cognitive and affective trust are positively correlated with the five transformational leadership practices. Indeed, the correlation is generally greater than was the case for the leaders' results.

To further examine the relationships between trust and transformational leadership practices the affective and cognitive trust results were combined to establish the linear relationships with the five transformational leadership practices. The results are presented in the following five figures.

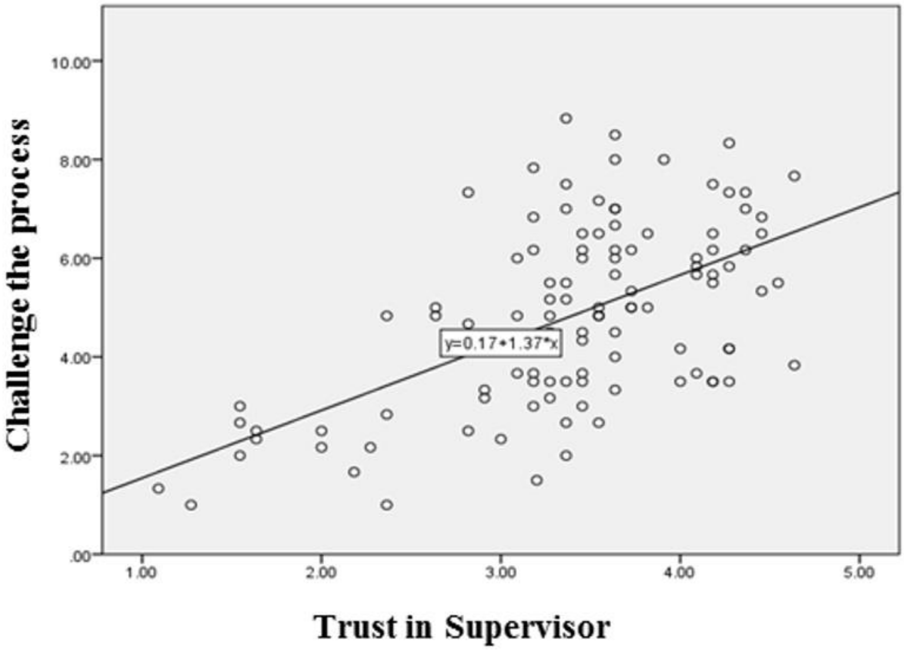


Figure 5-5: The linear relationship between trust in leader and 'Challenge the process'

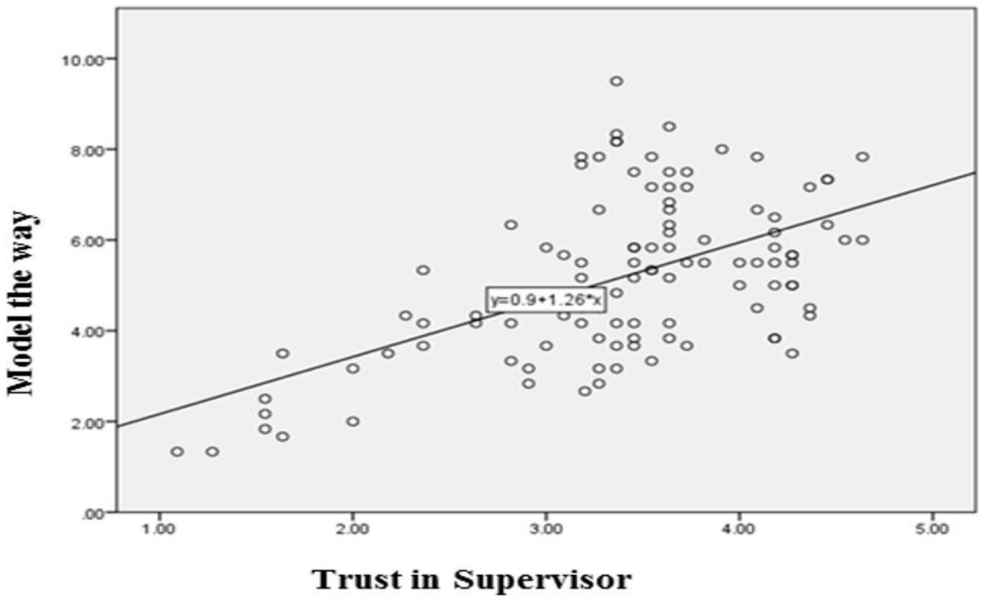


Figure 5-6: The linear relationship between trust in leader and 'Model the way'

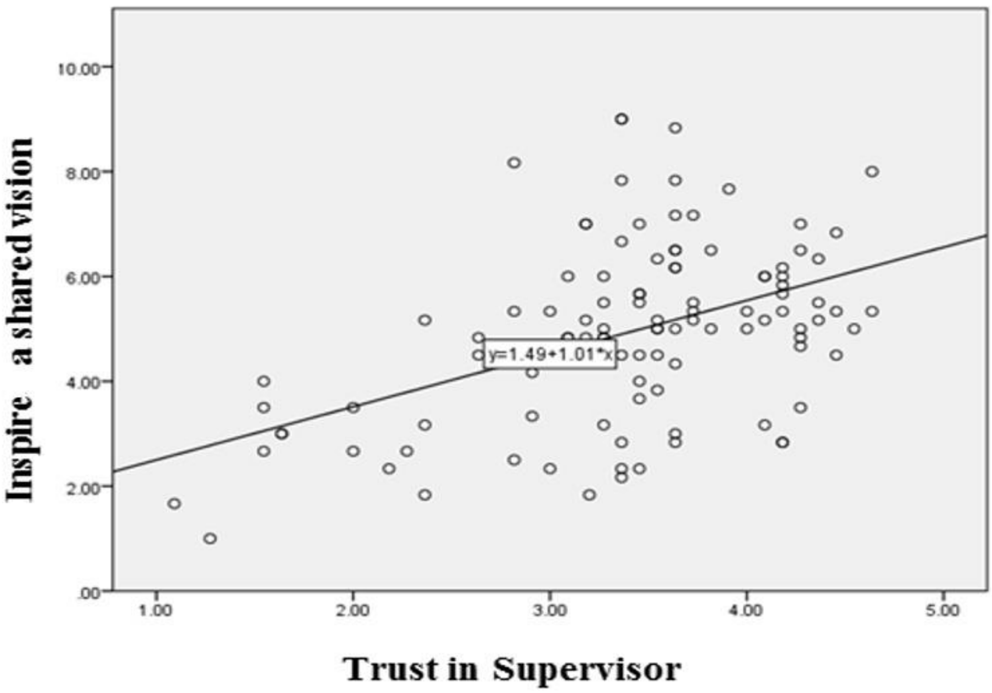


Figure 5-7: The linear relationship between trust in leader and 'Inspire a shared vision'

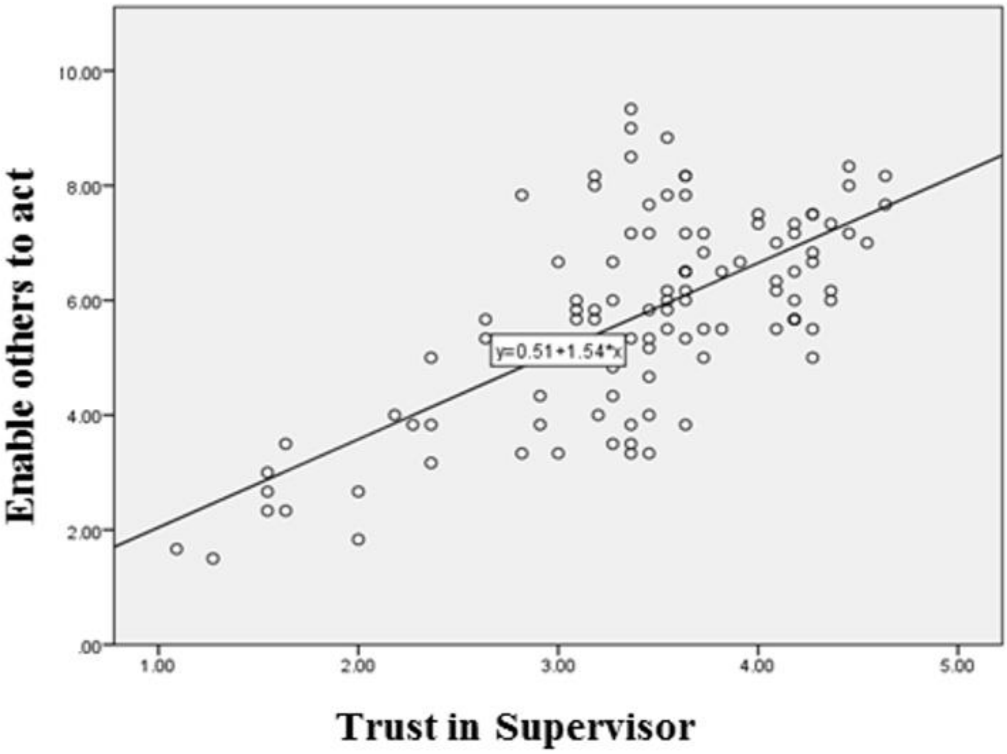


Figure 5-8: The linear relationship between trust in leader and 'Enable others to act'

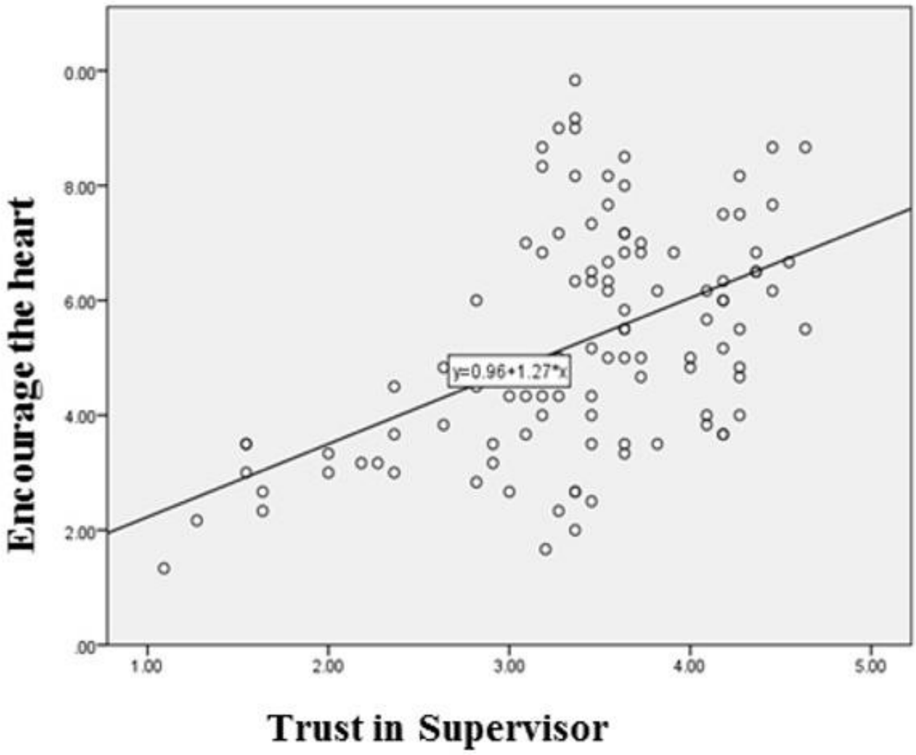


Figure 5-9: The linear relationship between trust in leader and 'Encourage the heart'

The scatter diagrams clearly show that a positive linear relationship exists meaning that as trust in leader increases so does the percieved prevalence of each of the five leadership practices.

Table 5-16 summarises the Pearson correlations between followers' trust and each of the five practices. Each correlation is significantly positive with the highest correlation being for the 'Enable others to act' practice while the lowest was recorded for 'Inspire a shared vision'.

Table 5-16: Correlation analysis of followers' trust and leadership practices

Correlations						
Trust Perception		**Model the Way**	**Inspire a shared vision**	**Challenge the Process**	**Enable others to Act**	**Encourage the Heart**
Followers' Trust	Pearson Correlation	0.552**	0.460**	0.571**	0.679**	0.499**
	Sig. (2-tailed)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

The final section summarises the results of the online survey study.

5.9 Chapter summary

This chapter has presented the results of the quantitative survey conducted among engineer leaders and followers to examine the relationships between trust, national culture and leadership practices. After summarising the demographics of the sample of engineers from six Saudi petrochemical firms, the next section showed that leaders trusted their leaders more than their followers trusted them. The following section presented the analysis of self and observer-reported leadership practices, revealing that leaders indicated they used transformational leadership practices to a significantly greater degree than those who followed them. When the data was compared with the LPI global observers database it was found that there was a significant deficit between the observers in the present study and the vast sample of international observers indicating a possible leadership problem in these petrochemical companies due to a low level of transformational leadership practices. After explaining how the different nationalities involved in the survey were classified according to IDV and PD scores, the chapter then began to test the hypotheses first presented at the end of Chapter Three.

Firstly, the relationships between culture and trust were tested resulting in a statistically significantly higher level of both affective and cognitive trust associated with low IDV and high PD. For both affective and cognitive forms of trust in leader high collectivism is associated with a statistically significantly higher level of trust. In other words, respondents from low IDV and high PD countries (Saudi Arabia and the Philippines) reported higher levels of trust in leader than those from High IDV low PD countries (United States and United Kingdom).

Next, the relationship between culture and leadership practices was examined. Using the self-reported leaders' data, low IDV and high PD was found to be associated with a statistically significantly higher level of transformational leadership practices across all five practices. The same was true of the observers reported data. This means that respondents from low IDV and high PD countries (Saudi Arabia and the Philippines), whether they were self-reporting or observing their leaders, perceived higher levels of transformational leadership practices than their counterparts from high IDV low PD countries (United States and United Kingdom).

The relationship between trust and leadership practices was the next to be examined. The self-reported leaders' data resulted in a positive correlation for both affective and cognitive trust across all five transformational leadership practices. The observers' data resulted in an even closer correlation between affective and cognitive trust and the five practices. Taken together we can conclude that trust is associated with transformational leadership practices.

Chapter 6 FINDINGS OF THE QUALITATIVE INTERVIEW STUDY

6.1 Introduction

This chapter presents the findings of the qualitative interview study. The approach taken follows Anderson (2010, p.3) who advises, “The researcher should select quotes that are poignant and/or most representative of the research findings”. Furthermore, is organised into the themes that emerged from the data analysis process. After a section profiling the interview participants the findings are presented under four main themes. The first is engineering as a profession and the motivations to enter it. This theme includes a subtheme of the transition challenges from engineer to engineering leader. The second theme covers trust in engineering leaders and is divided into affective and cognitive trust. Next, the third theme explores participants perceptions of either their own or their immediate supervisor’s leadership practices. The final main theme covers the issue of multicultural workplaces and its influence on both trust and leadership practices. There is a further section for the unstructured part of the interviews where participants were asked to add anything relevant that had not yet covered. The main findings are then summarised in a concluding section.

6.2 Profiles of the participants

Before the interviews commenced the participants were asked to complete a brief questionnaire to establish a profile of those taking part. The data gathered is summarised as Table 6-1. As the interview study was conducted on an anonymous basis, random initials are attributed to each participant and are used throughout the chapter. As the interview study included both leaders and followers and as this distinction is significant in this presentation of the findings the initials are followed by ‘L’ for leaders and ‘F’ for followers.

Table 6-1: Profile of interview participants

Identifier	Nationality	Age	Function	Total experience in Engineering (in years) (exc. education)	Time in current role
Leader participants					
AM_L	Saudi	34	Team leader	10	3
BN_L	Saudi	38	Senior Metallurgical Engineer	12	4

MA_L	Saudi	41	Senior operations engineer	15	6
RJ_L	British	39	Materials Manager	8	1
CG_L	American	32	Reliability engineer	9	1
SH_L	American	44	Project management senior engineer	17	2
Follower participants					
KA_F	Saudi	27	Research engineer	3	3
MM-F	Saudi	32	Operations Engineer	9	2
WA_F	Saudi	25	Trainee Engineering technician	2	1
AZ_F	Saudi	33	Metallurgical engineer	9	4
ZD_F	Saudi	38	Engineering scientist	15	5
SA_F	Saudi	28	Maintenance engineer	4	4
HP_F	American	31	Safety engineer	8	2
DT_F	American	32	Research technician	8	5
BA_F	American	38	Project engineer	13	1
WC_F	British	31	Electrician	7	2
HN_F	British	29	Design Engineer	6	1
JC_F	British	30	Design Engineer	5	1

The leaders and followers in the study are examples of the wider population and do not have working relationships with each other. They were selected on a quota basis from the survey respondents who had indicated their willingness to participate further in the research. The sample is broadly rather than exactly representative of the survey sample and the wider population of Saudi-based petrochemical engineers. They represent a range of ages, experience and length of service in current role. Each of the five targeted major petrochemical companies are represented as are a range of engineering roles commonly found at these companies.

6.3 The engineering profession

To elicit the motivations of participants when deciding to enter the engineering profession, participants were asked what had initially attracted them to engineering with further questions probing their educational background and their perceptions of the qualities required to enter the profession.

The participants' school competencies where it became apparent that they were more capable at maths and science subjects than others seems a common starting point that eventually leads to an engineering career.

> I was good at maths and enjoyed problem-solving. It seemed a natural choice. BN_L

Similarly, RJ_L recalled,

> It was the logical route based on what I was good at school. My degree was a BSc. in Logistics and Supply Chain Management. I knew when I was taking it that a lot of the relevant jobs would be in engineering. RJ_L

A theme emerged from both Saudi and non-Saudi participants that there was a conventional path through education and into employment.

> I followed a common career path through university including a masters and then I was taken on as a junior at one of the top companies in the kingdom. It was a very conventional path. CG_L

By university the path towards an engineering career seems set in concrete after the choice of major. WA_F adds to this a hint of family expectation,

> I came into engineering after taking a mechanical engineering degree at Alfaisal University. Riyadh. I was highly encouraged in this by my father.

The family connection, specifically paternal encouragement, was also part of the reason for an engineering career for AM_L.

> Well you could say I come from a long line of engineers – well at least my father was an engineer. He encouraged me all the way especially when choosing my degree programme. He told me that the country is going to need engineers for a long time into the future. So, I would never struggle to find work.

One deviant case arose with DT_F who stated off using his maths skills for another purpose but altered to engineering at a later stage,

> I had a brief flirtation with accounting believe it or not but on the basis of good maths I was able to switch for my masters. This is my second job, my first was in the U.S. DT_F

There were also participants for whom engineering was not their passion or profession but more the sector where many of the job were where their real specialism could be pursued. AZ_F came to engineering through chemistry,

> Chemistry was my passion at school and even more so at university. In Saudi Arabia chemical engineering is a good choice. There is always demand for graduates. So, in some ways it was a safe choice.

In a similar vein, WC_F described himself as first and foremost an electrician,

> I'm really an electrician working in a petrochemical engineering company more than I consider myself an engineer. I think that's just the way things are seen in the UK. Although I did take electrical engineering at university so I guess you could have it either way.

Finally, in this subgroup who defined themselves primarily as someone other than an engineer,

> I studied to become a project manager. I was attracted by its variety, its all-embracing nature. I wanted a finger in every pie and a different work experience each day. I'm in engineering because that's where project managers are found in large numbers. SH_L

These contributions remind us that engineering is a broad umbrella term under which many specialisms and identities can be found.

Remaining on the question of motivations for first becoming an engineering or at least joining an engineering company, there was a sense among Saudi participants that it was a socially accepted and valued career choice which may be related to these companies being to some extent part of the public sector,

> This is my first job since graduating. Working at a well-known and well-resourced Saudi company related to the government appealed to me for its security. SA_F

Working in an organisation linked to the Saudi government has, arguably until recently, been associated with good benefits and high job security. This was reflected in comment by HP_F when he stated,

> To get married and start a family you need security. I considered starting my own business, but I was talked out of it. It is seen as somehow un-Saudi so I got a lot of pressure from my friends and family. They even said I would never be able to get married.

There were also motivations arising from engineering itself and its particular disciplines. HN_F referred to the challenges of problem-solving and MM-F spoke of the technical challenges. BA_F talked of both problem-solving and technical aspects. KA_F liked the thought of being part of a profession.

6.3.1 Making the transition from engineer to engineering management

As part of the discussions on the engineering profession participants were specifically asked to give their views on the nature of and challenges associated with the transition from engineer to engineering manager. Questions covered the issue of hard and soft skills and whether the professional training available to engineers is adequate to smooth this transition. The questions were asked of both leaders and followers. The leaders' responses are presented first.

Expat manager RJ_L explained how he had not experienced these transition difficulties,

> Yes, I have heard much of this transition issue but to be honest even during my university years I knew I was pursuing a managerial career more than an engineering one. Engineering was just one of the sectors where the good jobs were.

Another expat, SH_L, the American project manager, made a similar point when asked about the transition,

> I have been in management roles for eight years now. The transition is a bit of a distant memory. It seemed to go ok form what I remember. Although maybe I had an advantage on some others as my education, my first degree and masters were in project management and not engineering. Engineering was the sector I joined not my education.

Other participants recognised the challenges facing engineers when they become engineering managers. AM_L recalled,

> The first year following my promotion to team leader was challenging. Some in the team had wanted that promotion. But I don't think that's an engineering thing – It could happen anywhere. After six months they switched me to lead a team I hadn't worked with before and that was a lot easier.

In a comment which was in tune with much of the literature on the transition CG_L stated,

> I am barely through my first year having people responsibilities. It is true what they say, with such a strong technical focus some of us neglect developing communication skills and other soft skills. It has been a challenging year, but I have enjoyed it.

While not referring to his own experience, Saudi leader BN_L offered a potential explanation for the difficulties some managers face by suggesting that length of service rather than management abilities was the criterion used when selecting engineer managers,

> There seems to be an unwritten rule that once you have 8 to 10 years under your belt as an engineer you are in line to get a management title. Sometimes it is just a way of keeping experienced engineers, not necessary the best and the brightest. BN_L

While they had not personally experienced the transition into management the follower participants offered some interesting insights into the phenomenon. ZD_F made a point related to the above comment by BN_L when he spoke of the length of service issue,

> I think in Saudi Engineering companies, length of service counts for a lot when getting a management role. One reason for this is that for an older experienced engineer to report to a younger less experienced one, even if they had great leadership skills would be culturally unacceptable. Age brings authority in Saudi. ZD_F

As it is normal to first serve as a frontline engineer SA_F, who was four years into his first job, was able to state with confidence,

> This transition is still a few years off for me. I am still developing as an engineer. SA_F

Likewise, WA_F a trainee, who had finished his Master's three years earlier and had just one years at his company stated,

> It will be some years before I face this transition, but I will learn from others who have done it successfully. WA_F

The followers' statements seemed mainly dependent on how close they perceived they were to making the transition they were asked to comment on. American research technician DT_F with eight years' work experience felt he was ready for it,

> I think I will start applying for management positions soon. I have been told that eight years on the shop floor is normal. I am pretty confident I could make the switch. I think this contract will make me a more 'rounded' person and will stand me in good stead. DT_F

JC_F, a British design engineer with five years' work experience saw a definite division between the technical early part of his career and a second part which for him may be more on the training side,

> Yes, I am interested in making the transition. I will serve my time using my technical design skills and then move to helping others develop theirs. I might even consider a training or educational role.

Other participants took a very different approach and made it clear that they were in engineering for its technical challenges not for a management career. For example, ZD_F commented,

> I'm a scientist I don't want to manage anyone, I'm sure I'd be terrible at it. ZD_F

He was joined by MM-F who declared no attraction to entering management,

> I like the technical challenges more than the thought of taking on responsibility for other people. Not everyone can follow a management path some, maybe like me, stay on the ground floor.

BA_F made a very similar point

> I am more of a team player than a team leader. I'm not desperate to be a manager. I like the technical and problem-solving aspects of my job.

These comments suggest that a subgroup of engineers is focussed on the technical and problem-solving aspects of their work and do not see the early part of their career as being a precursor to becoming an engineering manager. One of the expats was also sceptical about becoming a manager and would delay any thought of it until he returned to the US,

> I am not too interested in management and I don't think I would want to try it as an expat, maybe when I return to the USA. HP_F

One pair of comments bore some similarity and suggested that unprepared or unsuitable managers may be a real issue in the engineering sector. British design engineer, HN_F, added,

> I know of one guy who got promoted to management. He was like 'what am I doing here?' I think they call it imposter syndrome.

Similarly, another expat the American BA_F also reflected on some managers he had encountered in the past,

> I really do you think some new managers have difficulty with the new skills they need like communication and coaching skills? They get their promotion and managerial title and you just look at them and they are like fish out of water.

Participants gave some interesting hints as to why the transition is a challenge for some new managers. The first, made by the American HP_F raised the question of what is viewed as success and achievement in the engineering profession,

> In some ways it is not surprising that soft skills like communications are underplayed and undertaught. Nobody ever says "He's a great engineer because he really knows how to communicate" it's always about technical achievements and project completions… You know .. "He was part of the team that launched the new blah blah.." HP_F

Another contribution pointed to tertiary education as a source of the problem in that it failed to prepare potential engineering managers,

> Maybe it is now changing but my university education was really technically based and apart from one module ignored the skills needed beyond this. WA_F

Returning to a leader perspective another possible explanation was offered by team leader AM_L who felt that while formally managers should be developing their staff and preparing them for leadership roles in the future the task-based focus of engineering provides an obstacle to achieving this,

> There's quite a lot of pressure to be seen to be developing staff and readying them for future management roles. The truth is that in engineering we often work in project teams and one of the ways we are judged is on-time delivery. So, taking time out for staff training and development seems like a barrier not a good thing. AM_L

Overall, the transition was recognised by the participants as a known issue in the engineering sector and this existence was confirmed by the personal experiences of both leaders and followers. This leads to the further findings that a significant number of engineering managers may be unsuited, unprepared and hence ineffective, at least in the early stages of their transition to management.

In the following section attention turns to the question of trust and engineering leadership.

6.4 Trust in engineering leaders

All participants are followers in the sense that they all reported to a manager. Hence, the questions on trust in engineering leaders were equally valid for the L group and the F group. In line with the survey instrument used in the quantitative study presented in Chapter Five, the interview questions on trust in leadership were split between affective and cognitive forms of trust. After a general question on whether the participant felt that they trusted their immediate superior, affective trust was probed followed by cognitive trust, although these terms were not explicitly used in order to keep the questioning in everyday language.

> I trust my boss, he's very experienced and well-liked. He's got a good track record. AM_L

KA_F seemed to reveal a kind of 'crowd trusting' mindset under which trust is based on the person's perception of whether others trust the manager,

> I have no reason to distrust my manager. Everyone else seems to trust him so why shouldn't I? KA_F

In addition, an expat, the British electrician, conflated the question of popularity with trust,

> My manager is very popular in the department with the expats. They all seem to like him, so they trust him because of that. He'll always in the social activities at the compound.

Another approach heard from the Saudi participants referred to a duty to trust, something potentially rooted in aspects of Saudi culture like its high power distance,

> Well my current manager is the one who promoted me, so I see it as a duty of trust. BN_L

The word duty also surfaced in a comment made by KA_F, a Saudi research engineer,

> It's not about needing to be with the same manager you trust whoever your manager is at the time. It's a duty. And one day someone will have a duty to trust me.

There was also a hint of the ingroup phenomenon where trust is given automatically to members of one's own ingroup, in a short but revealing comment MM-F said,

> I trust my manager. We know his family; they live near us. Nice people.

In what is potentially a cultural divide there were a different set of perceptions voiced by expat participants. Typical was a comment by RJ_L,

> I am an expat and am just coming up to one year in this job. My superior is a Saudi, we get on Ok, but it is quite a formal relationship. We're not buddies or anything RJ_L

JC_F added that he brought his own personal philosophy to questions of trust,

> My attitude is .. give them the benefit of the doubt to start with and then judge people on their actions. So far, it's going ok. So, yes! I trust my manager. JC_F

Overall, the main finding for this section was that the Saudi participants more often referred to relational factors or a sense of duty. In contrast, the main theme of the expat responses was their instrumental nature.

6.4.1 Affective trust

After the general question on whether the participant felt that they trusted their immediate superior affective trust was probed through follow up questions on sharing ideas, hopes and feelings and whether their superior would take an interest in what they said to them. Also, participants were asked whether they believed they would experience a sense of loss should they and their immediate be split up.

On the question of listening and showing a genuine interest there were very few indications that this was not the case.

AM_L perceived his superior's listening as instrumental and an unavoidable part of their job,

> My boss relies on me for feedback on the team's performance and daily activities so listening is unavoidable I don't think it is about trust. It's the only way to get things done. AM_L

Interestingly, the word instrumental also appeared in a comment made by SH_L,

> There are times when I need to sell a new approach, a new deadline or ask for new resources. When I do this my manager listens to me and gives me the time I need. I don't think this is some personal thing., It's instrumental, it is just the process. SH_L

Without using the word, ZD_F echoes a similar sentiment that listening is vital for the manager to be able to gain access to vital knowledge,

> My manager knows I know more about the scientific aspects of petrochemicals so, he'd be stuck if he didn't listen to me.

Likewise, MM-F also agreed he could gain the ear of his manager, and is realistic as to how much impact these ideas have,

> Yes, I think he listens to my ideas. He doesn't always act on them but he will always give me the time to point across my point of view on a work issue. MM-F

The youngest participant WA_F perceived that as a trainee he may be less likely to be listened to than longer-serving colleagues,

> I am realistic about how my new ideas will be received or whether I will really be listened to. After all, I am a trainee. I am here to listen and learn not to come up with ideas. That's for people who know more than me. WA_F

The idea that different team members have different expectations of the time their superior would give to listen to ideas and take an interest in them was also supported by what AZ_F said speaking as someone more senior in status,

> I have been in this role for four years I am informally seen as a senior member of the team, so I usually get the most chance to put my views and ideas across. There is a short of pecking order for the boss's time.

JC_F seemed to have experienced a mild instance of culture shock when putting his thoughts forward at one of his first meeting after arriving,

> I remember when I had been here one month, we were all in a team meeting and the team leader was explaining how we were going to carry out this particular task. I knew a little about it so I put in my own idea that had worked before. The faces on the Saudi members of the team were priceless. I realised that was not the done thing, especially when you'd just arrived.

In Saudi's high power distant culture, it is highly likely that JC_F's Saudi colleagues would have felt that it was inappropriate for a newcomer to do anything other than listen and assent.

Another way of testing affective trust through the interview questions was to ask whether they would experience a sense of loss if they, for whatever reason, were split up from their current managers. Overall, there was not much support for this eventuality, BN_L left open the possibility that such a sense of loss could develop over time,

> No, I don't really feel like that .. maybe in a couple more years. It takes time. BN_L

Perhaps the project-based nature of engineering work could be one reason why there was an expectation that leader-follower relationships could terminate at any time,

> I am sure we will be split up could happen anytime. MA_L

The impracticality of expecting to stay with one manager for a major part of their career was emphasised by the highly experienced American engineer. SH_L who from his own knowledge could demonstrate how a long career in engineering is punctuated by having many different managers,

> I can't really be worried about being split up from my manager as we do not really communicate that much. It's a question of professionalism more than trust. I've been an engineer for 17 years, I must have had 7 or 8 managers already. SH_L

Another American manager, CG_L, also rejected the notion of experiencing a sense of loss when split up from his manager but for a different reason,

> No, I'm not really looking for a 'comfortable shoe' a familiar boss. I think that leads to complacency. Then suddenly you get a completely different boss who knows you got on well with the old one and may hold that against you. It's better not to be identified with a particular manager. CG_L

A contribution by suggested that affective trust may be more difficult to build between expat and Saudi, in other words, across cultures,

> I am an expat and am just coming up to one year in this job. My superior is a Saudi, we get on Ok, but it is quite a formal relationship. We're not buddies or anything.

This perception was corroborated further by who also sensed a subtle division between the expats and the Saudi nationals,

> My boss is a Saudi. He is a good guy and seems to treat Saudis and expats the same. However, there's always a suspicion that we are not in with the incrowd, if you know what I mean.

We can contrast this statement with one made by MM_F a Saudi engineer working for a Saudi manager,

> The Saudis in the team including the managers have a lot in common and we know each other socially, our families often meet outside work. Off course, we also pray together.

While signs of conflict between nationalities were only subtly expressed, they were not altogether absent. One example emerged during the interview with HP_F who suggested a link between the incrowd behaviour and trust,

> When I see the Saudis including managers meeting for their smoking breaks and prayers, I do sometimes get a feeling of being an outsider. That's not really good for trust.

6.4.2 Cognitive trust

Following questions exploring affective trust further questions were asked eliciting perceptions of cognitive trust. To do this, participants were first asked to comment on whether they trusted their superior to perform their job effectively as a professional engineer and engineering manager. They were further asked to consider how much this trust was based on personal experience and how much on track record. Furthermore, they were asked to look beyond themselves and consider whether they perceived their views were shared more widely among colleagues.

> Yes, I trust my boss to carry out his job effectively. He leads the department well and doesn't let us down. We think he is a good representative for our department to the upper echelons. He is professional at all times.

Many other contributions followed the that of particularly among the Saudis. There was no questioning of the professionalism of leaders, instead a succession of similar positive responses to the question.

Indeed, none of the responses from the expats impugn the professionalism of their immediate superior though some participants used more reserved language. For example, CG_L an American manager commented,

> I don't know if I would call it trust. I have expectations and assumptions that he means what he says. In return I try to let him know he can rely on me. CG_L

To the general question of trusting their manager as an engineer carrying out their job, there was widespread agreement that they did. This is perhaps an indication of solidarity among engineers. Also, the way the question was framed it could be interpreted as only asking for consideration of the technical aspects of their superior's work.

The next question on cognitive trust sought to elicit the relative importance of their superior's track record or reputation as a determinant of trust. There were some explicit confirmations of this; for example, MA_L responded,

> The person I report to is quite senior in the company and considered likely to end up near the top. So, you have to trust a man like that. MA_L

Similarly, WA_F suggested his trust was based on his superior's status as a manager,

> My boss is here he is for a reason. You don't get promoted to management roles if you don't know what you are doing. So, on that basis he must be trustworthy. WA_F

As reported earlier, AM_L also referred to track record. ZD_F made a short but important comment acknowledging cognitive trust,

> In my role its mainly about trusting someone's knowledge rather than their character. ZD_F

We can conclude that cognitive trust based on reputation and track record is a real phenomenon among this population.

The interview participants confirmed the existence of both affective and cognitive forms of trust through their responses. Duty was also referred to by two of the Saudi respondents. No respondent made a statement to the effect that they did not trust their superiors which may reflect engineer solidarity, or it may arise from a lack of candour or doubts about the anonymity and confidentiality or the research despite the strong assurances given. Furthermore, the data revealed some differences in attitudes based on nationality and national culture.

6.5 Leadership practices

The third main theme of the interview study was leadership practices and once again to coherently link the interview study with the survey study the section is divided into leaders' and followers' responses and the interview questions are aligned with the five transformational leadership practices of the LPI.

6.5.1 Leaders perspectives

Before exploring specific leadership practices, leader participants were asked to describe, in general terms, their own personal leadership style. They were not prompted to refer to any particular style recognised in the literature including in the LPI. AM_L made a comment which may relate to the nature of engineering leadership,

> I lead a team of 8 people, they all have their specialist knowledge and what's more in their specialist areas they actually know more than me. In these circumstances the only style that works is a consultative and open style AM_L

One Saudi manager, BN_L, proposed that he and other countrymen develop a style which emerges from their national culture and so have a lot in common,

> This is a difficult question because I don't feel I have consciously developed a leadership style. The Saudi managers here have values rooted in our culture, religion and traditions. We don't switch into a different mode when we enter the office. At least I don't. BN_L

MA_L preferred to see his style as arising from nature of his small team and suggested he personally operated in a low power distance way,

> I have a small team and we work very closely together. So I think the word I would use is collaborative. I am certainly not authoritarian as a this would ruin the atmosphere. MA_L Saudi

Turing to expat managers in our sample, RJ_L perceived there to me little room to develop a personal style in such a large organisation as his,

> This is a large organisation. I feel there is limited scope the show actual leadership. So, I keep myself to being a professional manager. RJ_L

The question of pre-assignment training was raised by the American manager CG_L and such preparation is commonplace for transfers within different divisions of the same MNC or when the expat is being placed by an agency, They include cultural awareness training which in the case of CG_L may not have helped,

> When I had my pre-arrival training, I was told that the Saudis expected a manager to be authoritarian and did not expect to be consulted on decisions. This could not have been further from the truth. In fact, I noticed no difference between Saudi engineers and the engineers in the States. So, I stopped trying to adjust my style and instead just carried on as normal. CG_L

One respondent SH_L, the highly experience American project manager was well familiar with the LPI, one of the instruments used in the present study. He recalled his own results,

> When I was in the States, every year or two we would do the LPI questionnaire. My results always seem to show me as highest on challenging the process which seemed like a good thing in engineering. Now that I am Saudi I would say I am different – more conforming. SH_L

Follow-up questions to the leaders sought to explore particular transformational leadership practices as featured in the LPI. Through the voices of the leaders a number of transformational leadership practices emerged. AM_L argued that he modelled the way for his followers,

> I set an example with my behaviour and professionalism. I can't force people to follow it, but most do. AM_L

RJ_L stated he felt he did inspire a vision but a narrow one restricted to the immediate team and its objectives,

> When I came here from the UK, I realised that in such a huge organisation I would have a limited impact. So, I restrict myself to those immediately around me. My vision is narrowly expressed as a vision for our small team. RJ_L

Similarly, CG_L perceived a lack of opportunity to implement transformational leadership practices doe to the size and nature of his organisation,

> The Saudi way of doing things is very by the book. I think the idea of transformational leadership at anything, but the very highest level is unrealistic.

This perception was not restricted to expat participants, the Saudi manager MA_L

> In terms of searching for improvements in the process. You have to understand this is a tightly controlled hierarchical organisation. So, this means my room for manoeuvre is limited. MA_L

In what was the most pronounced theme to emerge from the responses of the leaders in the study, senior Saudi engineer BN_L also referred to the nature of his organisation and the dampening effect it may have on transformational leadership at middle and lower levels of management,

> This is mostly a top down organisation. So about encouraging innovation, I don't want to create false expectations among my team. There is no benefit in raising hopes of realising their ideas when it's just not there. BN_L

One way to inspire a vision within the team was suggested as being ample use of face to face communication,

> To make sure everyone is on board I use a lot of face to face communication. Looking someone in the eye is the only way to really know if they are behind you. BN_L

Notwithstanding the effect of the organisation on leadership, there was still evidence of collaborative working and as the LPI would term it, enabling others to act. Examples were found among the comments of both Saudi and expat managers. AM_L, the Saudi team leader stated,

> When you are leading a team, you need all the talents to be put on the table. I see it as my job to make this happen. Once its all there we collaborate to move forward. AM_L

British manager RJ_L situated collaborative working at the heart of the engineering profession,

> You are right about the need for collaborative working. Without it everything would grind to a halt. That's what engineering is all about. RJ_L

From an experienced American manager there was a comment reflecting the supposedly task-oriented nature of American culture,

> My philosophy is simple … it's 'achieve the task' or 'get the job done' on time and on cost. The goal is everything and I need everyone on board to achieve it. SH_L

The same participant made another culturally-based statement on the subject of decision-making,

> Let's be clear, most of the Saudis don't really expect to be part of decision making. So, when I arrived and changed the style and the way we decided on things it took some by surprised. Some loved it, like they had been keeping things bottled up for years. SH_L

To elicit encourage the heart behaviours, leader participants were asked how they recognised the contributions of their followers, the first example suggested that the nature of the organisation, its size and hierarchical structure gave limited latitude,

> At my level there is little scope for recognising achievement. Of course, I can make recommendations about promotions but the main tool I have is just giving public and private thanks to those who have done good work. AM_L

SH_L referred to his approach to recognition and also mentioned the existence of formal recognition processes beyond his control,

> Ok, about recognition I have one main way beyond the formal schemes that the company runs. This is verbally recognising contributions at team meetings. I think that whatever the nationality this always works … and costs nothing. SH_L

Finally, there was also a reference to challenge the process practices from Saudi manager MA_L,

> At each team meeting we have a process improvement session. Everyone is told they must make a least one contribution to the discussion. MA_L

The main findings from the leaders' perspectives on transformational leadership practices are that such practices are to be found among the sample. The use of these practices may be restrained by the nature of the organisations they are employed at. Also, some instances of cultural effects on leadership practices were found in the data.

The quantitative survey demonstrated that a leader's perceptions of their leadership practices can vary in important ways from how their followers perceive them. Thus, followers were also asked how they perceived their leader's style – first in general terms. As the leaders in our sample also report to someone, they were asked same questions.

6.5.2 Followers' perspectives

The survey study revealed that leaders' perception of their leadership practices is not always shared by their followers (see Chapter Five). The interview study enabled the research to explore this issue in more depth. However, as the LPI-observer instrument has 30 items it was not possible to frame interview questions to reflect each one. Nevertheless, questions were asked which elicited discussion of each of the five transformational leadership practices though where too jargonistic the terms used in the LPI were avoided.

In reference to modelling the way, participants were asked whether they felt their managers set an example for them to follow. All participants were asked these questions as they all reported to a superior. AM_L was explicit in answering positively but was viewing the example as being his manager's career as a whole,

> My manager is a great example. He has been here 20 years, he's a real company man. I admire that kind of loyalty. AM_L

AZ_F also expressed an example in a wat other than intended by the LPI,

> Does he set an example? I guess so. He doesn't seem to do anything wrong if that's what you mean. AZ_F

JC_F inferred that the organisational structure at his firm meant that leaders were unlikely to model the way in any kind of hands on manner,

> I worked at a much smaller engineering firm in the UK which was pretty flat. There were the owners who worked alongside us and there were a couple of managers. Here God knows how many levels of management there are I really wouldn't know. JC_F

JC_F continued with a comment suggesting a contrast between Saudi and American leadership practices,

> I see some leadership practices and I think .. wow If only they would do it like this, or that. But maybe that's just me looking from a western perspective. JC_F

There are other expressions of culturally influenced attitudes and practices when it came to enabling others to act. It seems mostly rooted in power distance values such as when Saudi maintenance engineer SA_F was asked whether his manager encouraged him do try new things,

> Encourage me to do new innovative things … oh no … I think I'd be shot. He encourages me to follow procedures very closely and that's what I expect. SA_F

AM_L related to being enabled to act to the sense of reluctance to innovate and contribute engendered by authority,

> One of the drawbacks of having such a senior and experienced boss is that it feels a bit impertinent to make suggestions. I'm afraid there's a lot of nodding going on at his meetings. AM_L

This perception voiced by a Saudi, finds echoes in the comments of British leader RJ_L,

> I do find myself moderating my input. I don't want to get the reputation as someone who thinks they know it all. That doesn't go down well here. RJ_L

BN_L continued with the theme of negotiating the organisation by self-controlling input,

> One of the great skills needed in this kind of organisation is judging when to pipe up and when to nod and smile. It's something you learn over time. BN_L

On the one hand, MA_L suggested his own leader enabled others to act; however, in so doing he inferred this was not the case with other managers within his organisation,

> My boss is a good listener. I know of many occasions when he has put other people's ideas into action and given them full credit. Not like some other managers. MA_L

CG_L points to a practical reason why management at his organisation do or should elicit contributions from their expat followers when he refers to knowledge transfer,

> I know that part of the reason for putting an expat into this role was about knowledge transfer. In the States we ran the leading-edge solutions on reliability and so I am positively encouraged to put my ideas and views forward, that's essentially why I am here. CG_L

MM-F makes an explicit contribution which suggests the lack of transformational leadership in his organisation in regard to enabling,

> Even though I have been an engineer for nine years or more I don't feel I have any real input into decisions. We are called to meetings and told what is going to happen and that's it. When they ask at the end .. 'Any questions?' Everyone knows the expectation is for you not to ask any. MM-F

Demonstrating that perceptions can contrast greatly from organisation to organisation, department to department and team to team, BA_F makes an opposite point,

> When it comes to achieving a task or getting around a problem we each get a chance to make our suggestions and there is a pretty democratic process of arriving at the best solution. That is a satisfying way of doing things. BA_F

The contrasts continue with another pair of comments, WA_F makes a classic high power distance remark,

> I know my place here. I don't expect to be involved in making decisions I am content that the team leader explains the decisions he and others have made. WA_F

Meanwhile, RJ_L praises his manager's communication skills,

> My manager's best quality is his communication skills – nothing seems too much trouble in that regard. Answering emails quickly, team meetings, one-to-one meetings everything. RJ_L

WA_F gives some insight into why, according to some participants, some managers lack enabling behaviours, he suggests they are more explainers than enablers,

> My manager and I think other ones as well see their role as explainers. They don't feel like they have to involve us in the decisions. They probably get this from their own managers and so on up the ladder. WA_F

Similarly, ZD_F, who expressed familiarity with the concept of transformational leadership practices made a comment on the nature of large Saudi organisations,

> I know all this stuff about transformational leadership practices, but I think it's a bit of an 'ideal world' approach. The truth is that organisations of this size in Saudi are tightly controlled from the top down. It's the way they have always done things. ZD_F

While this statement suggests bottom up input may be limited in Saudi petrochemical firms, Saudi engineer AZ_F did perceive that he was influencing decisions made at a higher level,

> My boss includes me in discussions before some decisions are made. I think I am making a genuine input and I know I have influenced some decisions towards my way of thinking. AZ_F

HN_F differentiated between control over his day-to-day work and higher-level strategic decisions,

> I make micro-decisions about my work every day, that's what being a design engineer means. For the more strategic stuff that's not really my concern and it is not why I am here. HN_F

Another of the fairly common references to power distance issues was made by SH_L, and the references he makes to 'by the book' had clear suggestions of uncertainty avoidance.

> I tended to have quite an informal relationship with my managers in the United States. Here it is very different. The informalities are gone and it's all strictly by the book. Meetings, minutes, agendas and so forth. SH_L

Another expat, HP_F, made a similar cultural and style distinction between American and Saudi managers,

> Compared to American managers, the style of the Saudis is very different. There's not so much joking around. Its rather formal for my taste. Your always on your guard in case you say something out of place. HP_F

DT_F who had been in his current role for a relatively long five years reflected on one effect of the cultural distance between Saudis and Western expats,

> The American way of management that you read about in all those pop management books doesn't really work here. The culture is just so different. Perhaps that is why so many just do one contract to enjoy the tax -free salaries then go home. DT_F

According to WC_F one manager did seem to have brought an American management style to his role in Saudi

> My boss is an American from Ohio. He is a classic American manager, a communicator and acutely aware of the need to put himself in the shoes of those he is leading. If tomorrow, he left and was replaced by a Saudi I think it would be a shock to the system. WC_F

Participants were asked whether their immediate supervisor/ manager gave their team an exciting vision of the future and what they did to try to make sure all the team are on board with this future vision? KA_F played down the extent to which individual leaders had the space to create and inspire their own visions,

> I don't know if you would call it a vision. I think it's more like towing the company line. Each year the company has a new set of key lines to show its mission and priorities. All the managers are encouraged to repeat these at every opportunity. KA_F

A notably similar point was made by American project engineer BA_F,

> Our team doesn't really have a vision apart from the official corporate one. BA_F

In eliciting responses related to encouraging the heart practices, the participants were asked to discuss how their leaders recognised the achievement of individuals within the team. One comment from HP_F seemed to indicate that his organisation was focused solely on extrinsic rewards to maintain the motivation of the workforce,

> About recognising staff's contribution. The attitude here is that the salary and benefits take care of all that. There is no real understanding of intrinsic motivation. None at all. HP_F

More intrinsic motivation seemed to be on offer at RJ_L's company.

> The main way my manager recognises people is through calling them out at meetings. There is an employee of the month scheme covering the whole department. RJ_L

In summary, across the different organisations and departments represented by the participants there were widely differing reports on transformational leadership practices or their absence. Some of the anticipated cultural effects on leadership styles such as power distance were detected and the overall cultural distance between expats and Saudis reflected the differences at a national level. Some Saudi managers are perceived as not encouraging input though equally, some Saudi followers may not expect otherwise. For the expats there are clearly adjustment issues for many westerners though it may be going too far to call it culture shock. After all, expats are usually kept at some distance from many aspects of the home culture being segregated in living compounds.

The following section turns to the main theme of multicultural workplaces and features the participants' responses to culture-based questions.

6.6 Multi-cultural workplaces

As the previous sections have demonstrated, without being prompted or asked culturally based questions the participants made many statements that highlighted cultural differences between the expat Westerners and the local Saudis. Some comments also connected Saudi national culture with the organisational cultures of the firms in the study. In the final part of the interview culture was explicitly broached in the questions. As a starting general question on this theme participants were asked to describe their experience of working alongside colleagues from other countries. As expected, because having such experience was a criterion for being selected as a participant, all participants could report some degree of experience in this regard. It is also worth restating at this point that while the interview study only included participants from three countries – Saudi Arabia, the United Kingdom and the United States – the participants would have almost certainly experienced working alongside a much broader range of nationalities as is common in large Saudi petrochemical companies.

6.6.1 The trust culture relationship

The participants were asked whether their immediate supervisor/ manager was the same nationality as them. The researcher then framed a question on trust and national culture accordingly seeking to understand whether participants perceived their cultural differences/ similarities to promote trust of make trust more challenging.

> In my team I have four Saudis, two other Arab guys, and two Americans. I try to build trust among all of them but with the two expats it is quite difficult. Even just at the level of communication. Not sharing a common mother tongue makes it more difficult for sure. AM_L

When asked to expand. Saudi team leader added how being engineers did not remove the effect of national culture on work relationships,

> With the Saudis and to some extent you know that you come into work with a whole lot of shared beliefs and practices. With the expats, we may all be engineers, but you can't escape how different our cultures are. AM_L

Another Saudi leader, BN_L, made reference to a recurring theme, that time is an important factor in building trust, particularly across cultures where innate ingroup trust is absent,

> My staff know I am more experienced than them, so I expect them to trust my judgement. It takes time for the expats to trust you. With them it is not automatic but built up over time. BN_L

The highly experienced expat manager SH_L, also viewed cross culture trust building as a difficult task,

> I don't think there is too much trust of Western expats. However, individually I think it is possible. Possible but painstaking. And it involves appealing to their professionalism as engineers. SH_L

This comment also seems to suggest that national culture and the engineering profession are competing influences with national culture a divergent factor and the engineering profession a convergent one. An example of trust building over time and across cultures was given by Saudi leader MA_L,

> I have been in this role for 6 years. And as a team we have achieved quite a lot. So, I would say that I am quite well trusted. This is true for both the expats and the local staff. It just takes a little more effort, especially with Westerners. MA_L

A contrast can be made with the words of British leader RJ_L who had only one year in role,

> I am in my first year of my first expat assignment. It is a whole different ball game, no doubt about it. The default attitude to new expat managers seems to be distrust among the local staff. One

> of the reasons for this is that we are seen as not having the same commitment to the organisation or the country as a whole. This may be because they know many of us only stay 2 or 3 years. RJ_L

For AZ_F, that time is required for leader-follower trust to grow holds true even when both parties are of the same nationality,

> I have worked with my current boss since I joined this department four years ago. Trust has just developed over time in a natural kind of way. No great dramatic transformation, just a steady stream of small things where he showed he was reliable and did what he said he would. Maybe only marginally helped by the fact we are both Saudis. AZ_F

Time was also on HP_F's mind when he stated,

> I try to trust my Saudi manager, but it takes time. I feel a little bit of an outsider as one of only two westerners in the department.

Operations Engineer MM_F, gave further insight into the cultural gap between Saudis and Western expats,

> I think it is easier to trust someone you have much in common with. There are some foreign cultures that are just difficult for us to accept. Things like alcohol for example. You can't entirely forget these things. So yes. It's more difficult in multicultural teams. MM_F

A Saudi follower SA_F gave a blunt assessment of trust and culture,

> I think it is easier to have an atmosphere of trust is a monocultural department or organisation. People just have more in common, especially, obviously, their faith. SA_F

There was a very similar response from the American leader CG_L who was still in the first year in his role,

> It is undoubtedly more challenging to gain trust from people from a different culture. Anyone who says otherwise is misleading you. CG_L

KA_F highlighted expat living arrangements as a dividing factor between expat and Saudi elements of the workforce,

> The western expats are their own little group. They live together in the compound while the rest of us live in town. I think management take extra effort to build trust with them KA_F

WA_F gave an indication that professional association may be another influence on cross cultural trust in the workplace although in an opposite convergent direction,

> Well I trust my boss, but that's not because he is a Saudi, it's because he is recognised to be a good engineer who earned his position. WA_F

The American project engineer BA_F found himself having to adjust his behaviours to suit his expat assignment. With thirteen years' experience he arrived in Saudi expecting to make a forthright contribution,

> When I arrived, I think I was treated with a bit of suspicion because they knew I was quite experienced and maybe I tried to assert myself too much, you know in meetings. I was viewed as a typical American 'know-it-all'. After that I toned it down a bit.

This perception was echoed by HN_F who made a similar adjustment early on in his assignment,

> I quickly realised that rule number one was always follow their rules. HN_F

On the subject of rules, BA_F reflected on the organisational culture of his firm and in particular its hierarchical and procedure-led nature,

> It is a very hierarchical company, with many hoops to jump through. The hardest part of the job is to comply with the mammoth amounts of procedures and policies, the rule books make the bible look like a short story. BA_F

In a particularly forthright comment HN_F, a British design engineer, depicted a disunited workforce,

> There is pretty much a culture of us against them, expats vs Saudis and you're going to lose over here, every time. HN_F

There was an implicit suggestion in a comment from DT_F that very multicultural teams and departments may have more trust and operate more smoothly than those with a small number of nationalities where perhaps the ingroup-outgroup contrast is more pronounced,

> There is a pretty good level of trust in out department and it is quite multicultural, with Indians and Filipinos as well as some westerners and of course Arabs. It is fully multicultural not just bicultural which some departments are. Maybe that's the secret.

For DT_F the mix of nationalities was also reflected in the living compound where the expats lived,

> I have noticed a change in the compound, whereas it used to be like a recreation of a small Midwest town now there are many more Indians, Pakistanis, Filipinos, and non saudi-Arabs. These nationalities also make up the bulk of all project teams. DT_F

Ending on a positive note, WC_F's description of his department gives us a reminder that levels of trust can vary from team to team and department to department with the leader playing an important part in determining the outcomes,

> I feel that there is a good level of trust in the department even though it is a multicultural team. I think trust across cultures is certainly possible. The American manager is extremely good at communicating. WC_F

The data collected on the issue of trust and culture points to a main finding that national culture and specifically cultural distance is a barrier to workplace trust, or at least slows down the trust building process. While there were some indications that membership of the engineering profession may mitigate against the national culture effect, it is a relatively week mitigation. The other main finding was that time is an important factor in the development of trust in the workplace.

6.6.2 Culture and leadership practices

Leaders only were then asked whether they would adjust their leadership practices depending on whether you are dealing with someone from your own culture or someone from a different culture? It was understood by the researcher that there would be a reluctance to admit treating some followers differently to others. Nevertheless, some interesting responses were forthcoming. CG_L stuck to the task-based approach in his answer,

> At the end of the day the most important thing is that the task gets done, done well and done on time. That applies to everyone wherever they were born. CG_L

For his part, MA_L was happy to justify why, in fact, treating different nationalities differently was natural and that other factors would also make such differential treatment inevitable,

> I don't think it's realistic to say you treat everyone identically. As a manager of a multicultural team I have to be nimble on my feet. In fact, I would say on that question that you treat each person differently and their nationality is only one of a number of considerations … others might be their own personality or their length of service. MA_L

Support for the same view came from Saudi leader BN_L who referred indirectly to the power distance contrast between Saudi and American followers,

> I think it is inevitable that you modulate your approach depending on who you are communicating with. Some ways that I would

speak with a Saudi might seem high-handed to an American. BN_L

AM_L made an insightful comment on the culturally determined interpretation of leadership behaviours and communication,

> I treat everyone the same wherever they come from. But that doesn't mean my actions and communications are interpreted in the same way. For example, what may look like being consultative to an American might look being indecisive to some Saudis. AM_L

For British leader RJ_L the fact that he had to work harder to gain the trust of Saudi followers then there must de facto be different treatment,

> As an expat manager I work hard to earn the trust of the locals … so yes, there is a difference according to nationality RJ_L

JC_F made reference to his company's official policy but also added an important caveat when it comes to trust,

> This organisation encourages managers to treat all staff equally, it recognises the need for knowledgeable engineers from other countries. However, you can't always legislate for trust. It's down to the individual manager and how they handle people from different cultures. JC_F

Hence despite the expected 'everyone is treated equally' reflection of official policy, the managers did contribute some worthwhile remarks suggesting a consciousness of the challenges present in multicultural teams.

6.6.3 Advantages and disadvantages of multicultural workplaces

Finally, for the theme of multicultural workplaces, the participants were asked to describe what they saw as the advantages and disadvantages of having a multicultural workplace in the engineering sector? First leader comments are presented then followers.

CG_L had a very personal and positive reflection on the benefit of a multinational workplace,

> The best thing about a multicultural workplace is the learning experience it creates for everyone in the department. You go home nearly every day having learned something about another culture. It's fascinating. CG_L

In some respects, the comment BN_L makes is also about a learning experience but is framed much more at the organisational level in terms of the benefits,

> In two words, the advantage is knowledge transfer. We need the expats knowledge and that's why we recruit them. They may only stay two or three years, so you have to learn as much as

> possible. I think the main disadvantage is just what I said… there is quite a high turnover among expats. BN_L

AZ_F elucidated both advantages and disadvantages. The disadvantages were explained as low level conflicts,

> Advantage number one is the opportunity you get for personal growth. It's a good addition to your resume as well. On the downside there are sometimes little problems that arise. For example, there was quite a problem recently about the breaks that Saudi staff take, first for smoking and then for prayers. Some words were exchanged. The Saudis responded by saying that some of the expats get paid more than they do so they should be entitled to their breaks. AZ_F

A similar irritation was expressed by WC_F concerning the impact of religious practices on his work,

> During the last Ramadan season, I would have to wake up at 3:00 am in order to be ready for the daily team meeting being held at 4:00 am.

AM_L raised the possibility for conflict but also the positive potential for creativity in problem solving,

> The advantages are the access it gives you to different ideas and approaches, different ways of thinking about a problem. Managers need to take advantage of that. The disadvantage is that there is more room for conflict and misunderstanding. AM_L

The ability to approach problems from different perspectives is an important benefit in engineering which is essentially a problem-solving discipline. SH_L restates this point but also has a view on a possible source of conflict between local staff and expats,

> On the plus side the multinational team brings a lot of different skills to the table. One negative is that the locals seem more entrenched while the expats are passing through. This also raises issues of commitment. Some Saudis think that expats only come for a couple of years to get their high tax-free salaries and then go back to the US and buy a house or something. And sometimes they are right. SH_L

The problem-solving advantage is also suggested by KA_F but he sees it as one that is undermined by communications deficits,

> The advantage is that you can see problems in different ways. The disadvantage is that you can't always communicate well enough to take advantage of this. KA_F

In a comment which evoked the question of ingroups and outgroups, HP_F talked of 'cliques' existing in multicultural workplaces,

> Multicultural teams are problematic, some departments, I'm sure, have different cliques based on where they are from. This is a big management challenge. HP_F

The British design engineer HN_F drew a parallel with one of the most well-known examples of multi-cultural workplaces,

> When I think of multinational workplaces, I think of the top club football teams in England. So many different nationalities and languages but still they manage to operate as a team. In some ways it is the same here. HN_F

HN_F paints an almost idealistic picture of high performance and JC_F, another British design engineer, makes a comment suggesting convergence among engineers wherever they are in the world,

> I think one advantage is that you learn that engineering is a global professional sharing a lot of principles and elements wherever you are in the world. A problem in London is a problem in Saudi and it takes engineers to solve it. JC_F

Unsurprisingly, language featured in the discussion of challenges faced by multicultural teams with WA_F

> One of the main issues is the question of language and all the highly technical terms we have to use. That's tricky. WA_F

Saudi engineer KA_F, gave a highly positive view on his multicultural workplace,

> Working where I am gives me the chance to experience a dynamic and global culture that offers a diverse working environment. There are also opportunities to learn different business units and models. KA_F

Overall the Saudi participants, whether leaders or followers, had more positive comments to make and were less likely to state disadvantages, MA_L described a harmonious environment,

> We manage to achieve work harmony by personal involvement, coaching and guiding the workforce. MA_L

In summary, the main theme for advantages was the way that engineering problems could be approached from multiple perspectives leading to creativity and innovation. On the downside there appeared to be scope for low-level conflict and misunderstandings arising from communication barriers. There were also issues of knowledge transfer raised and inferences that expat workers were perceived as less commitment to their organisations.

6.7 Further reflections

Before the conclusion of the interviews an open question was asked giving participants the opportunity to make any further points on the issues raised during the interview. This unstructured element of the interview is aimed to capture useful contributions that have emerged in the minds of participants during the course of the interview bearing in mind that this may be the first time they have discussed such questions and are thus forming opinions as they go. As further prompts and when required the researcher asked, where appropriate, “How do you see the future?” and /or, “What would you say to a fellow countryman considering taking an assignment at your company?” Some of the more revealing comments are reproduced in this section.

When considering the future, the highly experience expat leader SH_L gave the impression that for Western expats they may be reaching the end of an era in terms of lucrative Saudi assignments,

> The need to achieve Saudisation targets is creating an awkward atmosphere where I work. For example, the appraisal system is being used to parse out the expats in favour of locals. This is creating a ‘get it while you can’ mentality among some of the Western expats. There is now little room for career growth. SH_L

The participant’s comments were in line with the data in the first chapter that showed that Saudis were forming an increasing proportion of the engineering workforce in the kingdom. There was also a recognition of this issue from one of the Saudi leaders BN_L,

> The National Transformation Program (NTP) 2020 and Vision 2030 highlight the importance of the petrochemical sector to the future economy of Saudi Arabia. In the background of all these issues of leadership, trust and culture is Saudization. The government wants to replace the expats with Saudis in this sector as well as others but how are we going to replace all these expats and what happens if they stop coming before we are ready. It’s not exactly saying ‘You are welcome here is it?

When asked what he would say to a fellow countryman engineer contemplating applying to work at his company, the American SH_L offered this advice,

> My three tips for an expat at this organisation is 1. Learn the chain of command 2. document all activities and communications, and 3. Make sure you push hard to get your ideas acknowledged because if you don’t, they won’t be. SH_L

The open question also gave one of the Saudi followers MM-F a chance to raise something known to be a source of widespread discontent among the Saudi workforce.

> The salary for the Saudi engineer is way too low compare to the expat, while both of them are doing the same job. How can that be fair? MM-F

Another poignant reflection was made by HP_F, in response to what he would say to a potential recruit,

> There is a sense among us Western expats that they are trying to get rid of all of us so Saudization is in full swing, but the only problem is that most are completely lazy so without us nothing would get done. HP_F

Clearly, the background ‘noise’ of the long standing but now escalating policy of reducing reliance on expat employees is affecting work relations at Saudi petrochemical firms.

6.8 Chapter summary

This chapter has presented the findings of the interview study which was the second phase of the research following the survey study. In all, eighteen leaders and followers employed at Saudi petrochemical companies took part in interviews that followed a semi-structured format using an interview schedule prepared by the researcher (see Appendix 5).

The main findings can be summarised as follows:

1) Regarding engineering as a profession, there was support for engineering being a conventional career route for students strong in maths and sciences and that this can be a path set at a young age. In Saudi Arabia, engineering is viewed as a socially acceptable profession, particularly the in the government linked major corporates that are associated with good salaries, benefits and job security. There were also indications that because engineering is a broad umbrella some participants self-identified as primarily another type of professional before engineer (e.g. chemist, scientist). It was also found that perceptions existed that the engineering profession (in Saudi Arabia at least) placed great weight on length of service as a determinant for promotion. Furthermore, the issues related to the transition to engineering leader were widely recognised among the participants.

2) The chapter then turned to this issue of trust. Cultural contrasts on trust emerged from the interviews with Saudi participants more likely to refer to relational factors or a sense of duty or other relational factors than the expats whose responses were more likely to be instrumental. Affective trust was found to exist in some leader-follower relationships. Some Saudi’s revealed high power distance orientation in their comments. Elsewhere, there was little evidence that affective trust extended to followers being concerned at the thought of being split up from their leader. With much project-based work, engineering is perhaps a discipline where changing leader periodically is so commonplace. Cognitive trust may be based on the assumption of technical engineering record or a track record of participating in successful projects. The trust-based interview questions also elicited national cultural contrasts.

3) The interviews then moved on to discuss leadership practices. There was a wide variation in perceptions of transformational leadership practices, some evident some absent. Cultural distance was once again present between the local Saudis and the expats from the US and the UK. Power distance was certainly one dimension where this emerged. Expats expressed cultural adjustment challenges.

4) The relationship between trust and culture was also found in the study. In particular, it appears that workplace trust may be more difficult in workplaces where there is cultural distance between colleagues and between leaders and followers. At the very least it appears to slow down the development of trust. Professional engineering ethos may provide some minor mitigation against this. It was also found that participants associated the development of trust relations as requiring time.

5) There was some evidence that some leaders may adjust their leadership practices according to the nationality of the follower they are dealing with. For example, higher power distance responses may be given to a Saudi follower than a Western one.

6) Among the advantages of multicultural workplaces perceived by the interview participants were creativity and innovation and diverse inputs into problem-solving. The disadvantages mainly centred on communication difficulties and the potential for low-level conflicts, for example, those arising from behaviours rooted in religious practices.

7) The perceptions of participants reflected some of the cultural values attributed to Saudi culture. Expat employees lowered their expectations for participation in decision-making in line with the higher PD of the national culture that was reflected in Saudi organisations. Also, the perception of organisations as hierarchical reflected the same values. Furthermore, the remark regarding rules and procedures and doing things 'by the book' were closely associated with uncertainty avoidance as defined in Chapter Two.

8) Finally, expats, to varying degrees, perceived a them and us environment, a perception strengthened by the Saudization process. For the Saudis a them and us feeling may be caused by the differences in rewards received between Saudis and some expat employees.

In the following chapter the quantitative results presented in Chapter Five are synthesised with the findings of this chapter and are discussed in the light of existing literature and the conceptual framework presented in Chapter Two.

Chapter 7 DISCUSSION OF THE RESEARCH

7.1 Introduction

In aiming to investigate the leadership practices of engineering leaders in Saudi petrochemical companies together with the relationships between these practices and trust and national culture the researcher undertook two sequential studies, one a quantitative survey and the other a qualitative interview study. This chapter presents a discussion of the synthesised findings of the quantitative survey study reported in Chapter Five and the qualitative interview study presented in Chapter Six. Two main factors determine the approach to and organisation of this chapter, the research questions set in Chapter One and the theoretical framework developed in Chapter Two. The first five research questions are addressed under separate sections and the chapter concludes with a summary. The sixth recommendations-based question is deferred until the final chapter.

7.2 The engineering profession

RQ1. How does membership of the engineering profession influence issues of culture, trust and leadership

The first research question asked how membership of the engineering profession influenced issues of culture, trust and leadership. For each, the objective is to understand whether this study's engineering context influences the relationships of interest. In other words, we evaluate whether the study would have yielded different results and findings if it had been conducted in another context. The literature also included many references to the uniqueness of the transition challenge faced by those engineers who take up leadership roles (Farr et al., 1997; Reese, 2003, 2004; Kumar & Hsiao, 2007; Reeve et al., 2013; Fasano, 2011).

There are four main discussion points related to this research question. The first is the role of trust in the engineering context. The second is the influence of culture and whether its influence is diminishing in the face of globalisation-driven convergence. Third is the extent to which there is such a thing as engineering exceptionalism, though this may be limited as it was not comparative multi-sectoral research. Fourth is the issue of the transition from engineer to engineering manager. These points are now dealt with in turn.

7.2.1 Trust and engineering

The main findings on trust in the present study were that culture influenced the nature and level of trust and that there was no significant difference between levels of cognitive and affective trust. While there is not a global database of results using the McAllistar (1995) instrument, the results of this study suggest that trust is at a typical level in the five petrochemical companies included in the sample. The interviews did, however, reveal different attitudes to trust between locals and expatriates. The expatriates appeared to apply a more rational transactional approach to trust while locals view trust through a longer term relational lens as proposed by (House & Javidan, 2004). Interviews also provided evidence for the existence of ingroup, outgroup trust differences as proposed in the literature (Brewer, 1979; Tajfel et al., 1979).

Trust has been examined in the context of new product development, an important component of engineering. Bstieler (2006) found that perceived fairness and communication behaviour were leading antecedents of trust. Trust was associated with conflict reduction and improved collaboration leading to higher levels of performance. The present study has shown that in multicultural engineering workplaces there are perceptions of unfairness and through cultural distance and language, significant communication challenges. This raises questions over new product development in multicultural project teams or teams with low trust (Dirks, 1999), a significant concern for engineering firms.

7.2.2 Culture and the engineering profession

Convergence theory (Kerr et al., 1960) would propose that as time passes there is an inevitable coalescing around one way of doing things and one set of values. This movement is spurred on by globalisation and would suggest that an engineer in one culture shares much in common with those in another. The findings from this research were, on balance, less supportive of this convergence thesis. The cultural differences derived from national culture and reflected in workplace practices and relations seemed a more powerful influence that any global engineering culture. Similarly, time-limited contracts, the Saudisation process and the practice of compound living may each mitigate against a values change process as proposed under the crossvergence thesis, and, in any case, such a change in values could only be effectively measured in a longitudinal study.

The process of globalization has led to engineering teams becoming increasingly multicultural. Engineers now commonly work alongside team members from a different country with sometimes sharply differing cultural values (Tomek, 2011). There are clearly upsides and downsides to this trend with teams having a broader range of perspectives to draw on but also scope for miscommunication and even conflict. Both positives and negatives were identified in this research. For example, conflicts and irritations can arise as a result of religious observation in the workplace. Workplaces in the West tend to be secular domains whereas prayer rooms are commonplace in Saudi businesses which stop work for prayers. For the Saudi employees, some of the expat behaviours would also be viewed as unacceptable such as the lack of gender segregation and the drinking of alcohol on the expat living compounds.

The question of religion and national culture is a significant one in the Saudi context because religion plays a major role in Saudi society. Its legal system is based on holy texts and religious practices are widely observed. In this study individualism-collectivism and power distance are used as proxies for culture. Saudi Arabia is identified as a collectivist, high power distance culture using Hofstede's analysis (Hofstede Insights, n.d.). The collectivist nature of Saudi society is reflected partly reflected in Islamic principles as cooperation is encouraged but Islam also establishes that people will be judged individually according to their deeds. For power distance, where Saudi Arabia scores very highly there is less of a match with Islamic teachings as equality is emphasised throughout the holy texts and the only means of evaluation is piety. Hence, as Latifi (2006) found in the case of Iran, even in highly religious societies, religious values are not necessarily reflected in the workplace where Hofstede's work was set.

7.2.3 Engineering exceptionalism

One way of categorising the participants in the interview study could be between those who, if not born to be engineers, then certainly educated to join the profession and those who would self-identify as something else and happen to work in an engineering-based organisation. This latter group tends to water down the notion of engineering exceptionalism. The umbrella term 'engineering' may be so all-encompassing that the identity is weakened. If the notion was displayed in the interview study then it was in the importance placed on actual or assumed technical knowledge with leaders being trusted on the basis of their track record, technical knowledge or past project completions. It is plausible that the nature of engineering, with its project-based working may alleviate the potential for conflict in a multi-cultural workplace but further research of a comparative nature would be needed to establish whether this was the case.

The data presented in the quantitative study (Chapter Five) revealed that the engineering followers, responding to the LPI observers instrument, attributed significantly lower scores to their leaders across all five leadership practices than is found in the vast global observers' database. This could be caused by an engineering effect but could equally result from the multicultural nature of the workplaces, or indeed from the national cultural context of Saudi Arabia. As with the findings from the interview study, there is insufficient evidence in the survey to support the notion of engineering exceptionalism and some participants did not associate engineering with their professional identity. Engineering is such a broad umbrella term that it should not be assumed that all employees working in the engineering sector would label themselves as an engineer, some, for example, may identify more closely with terms such as e.g. chemist, scientist etc.

7.2.4 A unique transition challenge?

The present study provides support for the notion that the engineering sector features a particular challenge in the transitioning from engineer to engineering manager. This notion is strongly supported in the literature. Fasano (2011) argues that this results from the engineers being poorly prepared through their technical education and subsequent application of these technical skills. Faulkner (2007) writes of a "technicist engineering identity" (p. 331). While the quantitative survey did not examine this phenomenon there was data in the interview study which seemed to recognise its existence, sufficient to warrant a dedicated thematic subsection. Participants recognised the concept of the transition challenge when it was referred to by the researcher and offered a range of explanations and personal experiences of their own transition or those of their colleagues. It is unlikely, however, that this is a phenomenon unique to engineering. Laroche (2011) argues that technical professions share some issues in common including the challenges of multicultural workplaces.

7.3 National culture and trust

RQ2. How does national culture influence the relationship between trust and leadership practices?

This research sought to understand how national culture influenced trust, leadership practices and how it influence the relationship between trust and leadership practices. This was undertaken through both the survey and the interview study. For both affective and cognitive forms of trust in leader, low IDV and high PD are associated with a statistically significantly higher level of trust. Low IDV and high PD are associated with the Saudi national culture, meaning that Saudi respondents reported higher level of trust in leaders than the non-Saudi respondents. With Saudi leaders dominating the leader subsample (71 out of 88) this result could reflect the strong nature of Saudi in-group trust. According to Tyler and Degoey (1996), trustworthiness is closely related to the willingness to defer to authorities which in Hofstede's terms would suggest a high PD orientation as associated far more with Saudi nationals than those of the other nationalities represented in this study. This association was borne out in the survey results which showed a significantly higher level of trust in leader among the high PD subsample. The relationship between national culture and trust was further explored in the interview study. To use the instrumental-relational dichotomy (Tyler & Degoey, 1996) the researcher can characterise the perceptions of Saudi interview participants as more relational and the expat participants as instrumental. The instrumentality of the expats was mainly related to fulfilling the terms and length of their contracts and securing the financial benefits that are linked to doing so. Another dimension was the expats task orientation. Less concerned about forming relationships, the expats interviewed were more concerned about getting the job done. To draw on an engineering analogy, if a team were a machine then trust is the lubricant that keeps its parts from seizing up. The interview participants from high IDV low PD countries (i.e. American and British) recognised this and appeared to base their trust upon it.

Although the GLOBE project (House & Javidan, 2004) was not included in the conceptual framework applied in this research (mainly because of the lack of data on Saudi Arabia) it may offer some insights on the findings. For example, on the question of individualism at the organizational level House & Javidan (2004) argue that in an organization with an individualist culture the individual employee would feel themselves as mostly independent of the organization, there because their skills are needed. Leaders would understand the need for rational exchanges with employees, starting with recruitment and lasting throughout their employment. In contrast, collectivism at the organizational level would suggest employees are far more interdependent with the organization and that membership of the organization was a part of the individual's self-identity. Leaders would make assumptions that employees would make sacrifices for the collective good and in place the, often short term, rational exchanges are long-term relational exchanges (House & Javidan, 2004). Transposing this contrast to multicultural workplaces such as those featured in the present study, we can consider how having collectivist local employees alongside individualist expatriates presents particular leadership challenges. For example, can or should leaders in such environments modulate their interactions with rational and relational exchanges according to who they are interacting to?

Participant contributions on the question of trust in leaders suggested that among Saudi followers there was a greater likelihood of perceiving trust as a function of duty; something owed due to the position and greater experience of the leader. Among the same participants there was also evidence of in-group trust and the importance of relational factors. By contrast, the perceptions of the non-Saudi participants, from either the UK or the US, presented a much more instrumental approach whereby trust was based more on it being required for teams to function and to get the task completed. This is again in line with the cultural values associated with these countries but could also be influenced by the shorter tenures associated with expat workers, who tend to stay in position for two or three years and then take another assignment.

Notwithstanding the above-mentioned differences along cultural lines there were expressions of trust across the nationalities and evidence for both affective and cognitive forms of trust.

Potentially, engineering solidarity caused the expressions of trust although an unwillingness to make statements expressing mistrust in their leaders at a research interview could also explain the absence of such statements.

Situating these findings within the literature, Chapter two discussed the theoretical approaches to trust. Parsons (1978) asserted that for trust to exist there must be a system of shared norms and values in place creating solidarity. In a multicultural workplace, it can be assumed that such a system is less likely to exist or, if it does exist, to be weaker. The present study would support this.

The current research provides mixed findings in regards to the thesis that propensity to trust is a psychological trait within an individual as argued by (Morrow et al., 2004; Mayer et al., 1995; Schoorman et al., 2007). Undoubtedly variations within the same nationality subsample existed: standard deviations show this statistically and the spoken words of the participants give concrete examples. However, both quantitative and qualitative data demonstrated the influence of national culture on trust in leaders.

Turning to empirical literature, Chapter three discussed a range of studies and it was found that the majority of evidence associated collectivism with higher levels of trust than individualists. Doney et al. (1998), for example, found that collectivists are less likely to engage in opportunistic behaviours because of their group values. However, plausible evidence also presented a more nuanced picture with the concept of in-group and out-group trust whereby the trust displayed by collectivists was purely the in-group form. Brewer (1981) states that this in-group trust is presumptive, automatically given based on group membership rather than the actual behaviours of the trustee. Under this thesis a follower would be more likely to trust their leader if they were viewed as part of the in-group (including being of the same culture).

The nationality of the leader being considered by the survey respondents was not recorded so it is not possible to directly state whether shared nationality (and hence shared culture) in the leader-follower dyad had an effect on the levels of trust. A study of leader-follower dyads in neighbouring Oman found, interestingly, that the quality of relationships did not significantly improve when leader and follower shared the same national cultural values (Schmidt et al., 2013). Nevertheless, there is sufficient evidence from the present study to show that a relationship exists between national culture and trust and particularly the nature of the trust. It is a reasonable assumption that some cultures encourage an innate form of willingness to trust while others require a positive expectation of a favourable personal outcome from trusting behaviour. Collectivist and high power distance cultures would fit more logically with the first category while individualist low power distance cultures would suggest the latter.

A further important point for consideration is the nature of the role of culture in the relationship between trust and leadership. Are the two cultural dimensions (IDV and PD) used in this study best seen as an antecedent of trust and transformational leadership practices? Are they moderators or mediators of the relationship between them? These questions were not directly addressed in the quantitative analysis which established on correlations not causation or moderating/ mediating effects. One concept that proposes a causative relationship between culture and trust is that of in-group trust (Brewer, 1981). In-group trust is a presumptive trust in that it assigns trustworthiness on the basis of group membership not personal knowledge. It is understood to be present in collectivist societies such as Saudi Arabia (Hofstede, 1980).

Fairholm and Fairholm (2000) position trust firmly as an antecedent of leadership when writing,

> Leadership is not an individual, but a collective, relation-based activity. In fact, leadership can only take place in a climate of mutual, coordinated action based on common values and a common vision. For leaders to lead they need a united and harmonious environment characterized by mutual trust. (p.102)

Elsewhere, the role of the leader in developing trust and a trust culture is emphasised. Yousuf (2017) situates leadership is an antecedent of trust. Goodwin et al. (2011) emphasis the role of leaders in creating a high trust culture within an organisation. So we can see in the literature that there is support for leadership being an antecedent of trust but also trust being a precursor of leadership. This may lead to the conclusion that a bidirectional mutually dependent relationship is indicated.

Some of the literature on the culture-trust-leadership relationships concerns organisational culture rather than national culture. According to Fairholm and Fairholm (2009) trust or lack of it is part of an organisation's culture. As Hofstede (1994) explains national culture comprises mostly values, while organisational culture is mostly made up of practices. Practices can change far more easily, therefore organisational culture can be viewed as more malleable than national culture. Fairholm and Fairholm (2009) suggest a mutually dependent relationship for the three variables, culture, trust and leadership. Leaders can create a culture which can in turn lead to a "trust situation" to achieve shared goals. However, the authors are not refering to the national cultural dimensions used in the present study but instead an individual or institutional level system of shared beliefs, the establishment of which is made more complicated in (national) multicultural environments.

7.4 Trust in leaders

RQ3. What is the influence of trust perception on leadership practices when leading a culturally diverse workforce in Saudi petrochemical companies?

Trust lies at the heart of the leader-follower relationship (Robinson, 1996; Goodwin et al., 2011). The absence or breakdown of trust leads to a range of undesirable outcomes (Dirks & Ferrin, 2002). In engineering, trust is an important commodity – consider, for example, the many safety issues related to engineering work both for the engineers and the users of the fruit of their labours. There needs to be trust at all levels for safety to operate successfully. Engineering is also dominated by project-based work, requiring close cooperation and trust of both team leaders and fellow team members. All survey respondents completed a modified version of McAllister's affective-cognitive trust instrument. This included those who were classed as leaders, on the basis they had employees reporting to them, but were also followers themselves of the next level of management. The results reported in Chapter Five showed a mean score (affective and cognitive items combined), on a five-point scale, of 3.69 for leaders and 3.40 for followers. Follower and leader combined means were (3.54) for affective trust and (3.53) for cognitive trust showing that there was no significant difference between levels of affective trust and levels of cognitive trust as both were present almost equal measure. We can compare these results with other studies using McAllister's instrument.

Colquitt et al. (2012) used the scale to measure trust in supervisor among sample of 195 employees of a hospital network located in the southeastern United States measured trust in supervisor. The mean result for affect-based trust was 3.45 and 3.59 for cognition-based trust. Using only McAllister's cognitive items and a 5-point Likert scale Luo and Lee (2013) reported a mean score of 3.1 for a sample of 147 employees, managers and executives of Taiwanese businesses. Cheung et al. (2017) measured subordinates' trust in supervisors at Hong Kong based service companies and reported a mean score of 3.27 but used a different set of items to do so (those from Robinson and Rousseau (1994). Using three of the items from the cognitive part of McAllister's instrument on a 5-point Likert scale, Joshi et al. (2009) reported a high mean score of 4.05 for their sample of service employees working in geographically dispersed teams in the US and other countries. The items were used to measure trust in their fellow team members rather than their leaders. Levin and Cross (2004) used just two cognitive items to measure competence-based trust among mid-level professionals at three companies, one American, one Canadian and one British.

Some studies have used a 7-point Likert scale which complicates comparisons. In McAllister's (1995) original study with a sample of 194 managers and professionals 5.43 cognitive and 4.71

affective trust on a 7-point Likert scale. Holste and Fields (2010) used a sample of 202 professionals and managers at a US-based international organisation resulting in a mean of 4.43 for affect-based trust and 5.11 for cognitive trust. Hong et al. (2013), also using a 7-point scale, applied McAllister's items in their study of colleague relationships and reported mean scores of 5.35 for cognitive trust and 5.02 for affective trust. Other studies do not report the mean scores but use their trust data in other ways such as in regression or factor analyses (Wang & Hseih, 2013).

The present study used McAllister's trust scale which is divided into cognitive and affective trust items. It should be acknowledged, however, that not all authors have been convinced of the validity of this dichotomy or have at least questioned whether each form of trust carries equal significance in all forms of exchange processes. The cognitive–affective approach to trust has been critiqued for downplaying the role of context such as social and cultural factors. Fukuyama (1995) proposed that national cultures could be divided between high and low trust. Rather than a psychological state, Girmscheid and Brockmann (2010) viewed trust as an essential social ingredient without which society would cease to function properly.

Against this other studies have shown a direct and complimentary role for the two forms of trust. For example, Schaubroeck et al. (2011) found that the adoption of transformational leadership practices was important for both cultivating and maintaining followers' trust in the leader's vision and ability to realise it (cognitive trust) and in gaining trust that the leader will act in a way that promotes individual's wellbeing as well as that of the team (affective trust). Hence, two distinct positive effects. Newman et al., 2013 found that both affective and cognitive trust have been found to be distinct but important influences on the social exchange process. In line with Morrow et al. (2004), the view taken in the present study is that the concept of 'general' trust is too simplistic and, in fact, trust evolves from two distinct processes, one cognitive and one affective.

In the present study, where analytical comparisons are made between expatriate, shorter service, term-based contracted engineers and local longer service/ career engineers having greatly contrasting national cultures it was justified to use McAllister's dual form approach to trust. This is because it could be reasonably assumed that clear differences would arise between the two groups. Indeed, this was something borne out by the findings with expatriates being more inclined to develop cognitive trust than affective trust while locals developed both.

While Dirks and Ferrin (2002) provide meta-analytical evidence for transformational leadership practices as a whole being a strong predictor of trust, other evidence on individual practices is more mixed (Gillespie & Mann, 2004). There is also debate over the direction of the relationship between these two variables. In the survey study, leaders' cognitive and affective trust was found to be positively correlated with the five transformational leadership practices and this correlation was even stronger for the followers' subsample.

Although they used different instrumentation to measure the variables, Goodwin et al. (2011) provided evidence for a close relationship between trust and transformational leadership practices with trust mediating the influence of these practices on three outcomes, organisational citizenship behaviours, performance and affective commitment. Hence trust is not simply an outcome of transformational leadership practices, but instead the relationship is codirectional. This is in line with earlier literature which viewed these outcomes as an indirect rather than a direct result of transformational leadership practices (Avolio,1999).

The present study adds to the literature and gives further evidence of the importance of trust in the development of transformational leadership practices as well the role of these practices in developing trust. However, the study was restricted to identifying correlations rather than the direction of the relationship and so the question of which factor influences the other is not conclusively addressed by the findings. Furthermore, the present research does not directly clarify whether trust is a moderator or a mediator of transformational leadership practices.

As discussed in Chapter 3, a range of antecedents for trust have been proposed. These have tended to centre on particular character traits and perceived abilities. Briefly, these have included benevolence (Bews & Rossouw, 2002) perceived justice (Colquitt & Rodell, 2011) and fair treatment of followers (Yang & Mossholder, 2010). In addition, integrity is cited as a further characteristic likely to promote trust and is manifest in the principles and values of the leader/ trustee (Marshall, 2012).

There is certainly support for the assertion that leadership practices influence trust. Leaders and by inference their styles and practices are understood to play the main role in developing trust within an organization (Creed and Miles, 1996; McAllistar, 1995). Koohang et al. (2017) find that effective leadership leads to elevated trust. Elsewhere the relationship is framed in a more bidirectional way. Fairholm (1994) argues that the existence of a unified trust culture is a precursor to enabling transformative and collaborative leadership styles to be adopted. Indeed, if trust is, as Gordon (2017) posits, "a foundational element of all types of relationships" (p. 23), then we should conclude that the trust leadership practices relationship is a bidirectional one.

7.5 Leadership practices

RQ4. How are transformational leadership practices manifest in Saudi petrochemical engineering firms?

As reported in Chapter Five, leaders reported using a higher level of the five transformational leadership practices than their observer followers did. The LPI scores for the observers (followers) in this study were significantly below those in the vast global observer database across all five practices. In Table 7-1 a comparison of the third column with the fifth highlights these considerable differences.

Table 7-1: A comparison of follower scores with LPI 360 normative data

Practice	**Leader** ***n=88***	**Follower (Observers)** ***n=107***	**Total** ***n=195***	**Rank**	**LPI 360 Normative Data * (Observers)**	**Rank**
Model the way	44.25	31.19	**37.73**	**3**	46.89	**2**
Inspire a shared vision	43.48	29.64	**36.56**	**4**	43.83	**5**
Challenge the process	43.89	29.07	**36.49**	**5**	44.90	**4**
Enable others to act	47.99	34.42	**41.21**	**1**	49.39	**1**
Encourage the heart	46.51	31.72	**39.12**	**2**	46.02	**3**

*Source: Leadership Challenge (2012)

A large majority of the leaders in the study were of Saudi nationality, which could be a factor and could mean that Saudi engineering managers believe that they adopted transformational leadership practices but that their followers did not perceive this to the same degree. A higher representation of non-Saudis in the follower subsample could also suggest a cultural dimension to the difference in scores, with non-Saudi followers projecting Western use of transformational leadership practices onto their Saudi leaders and perceiving that they fell short. Looking to the interview study for further evidence, there were perceptions of hierarchical and bureaucratic practices and perceptions that initiative, innovation and input into decision-making were not encouraged by some leaders.

When asking whether Saudi leaders use transformational leadership practices, we could argue that these practices in a Saudi context are associated with appealing to a collective identity using inspirational and charismatic leadership and with energizing followers toward a collective vision. The collectivist values of Saudi leaders and followers surely facilitates such practices.

Based on observer reports, the survey results indicated that collectivism (Low IDV) was found to be associated with a statistically significantly higher level of transformational leadership practices across all five practices. High PD was also found to be associated with a statistically significantly higher level of transformational leadership as defined by the five practices. However, this result was not repeated in the data from the leaders' self-reports where only a significant relationship between low IDV and the practice Encourage the Heart could be found. There can be multiple tentative interpretations of this result. Low IDV and High PD are considered two prominent dimensions of Saudi culture as presented in Chapter Two (Figure 2-4). Saudi observers, therefore, attribute transformational leadership practices to their leaders to a greater degree than non-Saudis. This may arise from the more deferential stance of Saudi followers or, conversely, in the less deferential attitudes of the expat followers in the study. The interviews gave grounds to support the more cynical outlook of expat workers towards their leaders, particularly when the leader was a Saudi.

Earlier research has identified Saudi and other Arab leaders as having high power distance, high collectivism, relatively high uncertainty avoidance and high femininity (Abdallah & Al-Homoud, 2001). There is also known to be a strong emphasis on interpersonal relations both for leaders and followers (Khan & Varshney, 2013). In the interview study of the current research, there was a marked contrast with these Saudi values and the expressions of almost disinterest from expats in their relationship with their leader.

7.6 Multicultural engineering workplaces

RQ5. What are the perceived advantages and challenges of a multicultural engineering workplace?

While the quantitative survey did reveal a relationship between culture and trust in that low IDV and high PD were found to be associated with higher levels of trust in leaders, the main data addressing the fifth research question came from the interviews. This question asked what the perceived advantages and challenges of a multicultural engineering workplace were. The interview participants were asked this exact question. Regarding advantages, much of the related literature focuses on the potential for creativity and innovation in multicultural teams as problems are approached from multiple perspectives (Dulaimi & Hariz, 2011).

In the present study, participants referred to a learning experience and personal growth. In addition, a local manager understood the role of knowledge transfer from expats to local engineers. For the disadvantages, misunderstandings and low-level conflicts were revealed, some associated with religious practices and others on salary differentials.

The literature on cultural diversity and team performance has yielded a very mixed bag of findings. Some researchers have reported a significant and positive relationship between these two variables (e.g. Earley & Mosakowski, 2000). Others, in contrast have found this relationship to be negative (e.g. Kirkman et al, 2004). There are also studies that found no significant correlation (e.g. Webber & Donahue, 2001).

As globalisation began and multicultural workplaces became more common so research interest in the topic grew. Hofstede (1984) established the link between culture and workplace values and behaviours. Some of the earlier studies pointed to difficulties arising in such environments (Tang & Kirkbride, 1986; Vaid Raizada, 1985) with conflict and conflict management popular themes. Religious beliefs are a key source of the differences in customs and practices between countries (Millington, 1996). Communication problems in culturally diverse teams have also been highlighted (Misoc, 2017).

Based on the findings of this study, Saudi petrochemical corporations including those featured in the current study, are hierarchical bureaucratic organisations in common with much of corporate Saudi Arabia and such organisations are more likely to maintain a utilitarian approach to motivation involving "the use of economic power to elicit compliance with rules and regulations from a workforce concerned mainly with maximising material rewards" (Kunda, 1999, p.356). Certainly, the expat participants in this study were trading the challenges of their Saudi assignments, including the culture-based ones, off against high financial rewards. The 'us and them' perceptions present in both expat and local employees could be viewed as expressions of in-group and out-group tensions. In collectivist cultures the in-group out-group distinction is understood to be particularly significant (Hofstede, 2001). However, factors beyond culture were also causing this division including the salary differentials between expats and locals and the national policy of Saudization.

Chandler (2017) argued that the existence of subcultures within large organisations should be viewed as the norm rather than the exception but also suggested that their existence brought with it the seeds of conflict. Based on the present study, it is reasonable to view the Western expats within Saudi petrochemical companies to be an organisational subculture. With their common language and their living together in compounds while the local employees live in the local towns and cities, it seems highly improbable that integration into the dominant culture (the Saudi organisational leadership). There is also evidence in the present study that the 'seeds of conflict' thesis is also evident within these organisations.

The issue of cross-cultural adjustment and the potential consequences of compound living raise important issues relevant to the present study. In chapter three, literature examining this adjustment and the training that may ease it was discussed. Evidence showed that such training led to a range of positive outcomes for both the individual expat and the organisation they work for as it accelerated adjustment. However, there was little evidence of the assimilation of local cultural values among our expat participants only an accommodation. This is unsurprising as in Saudi Arabia segregating the expat population from the local population was a key motivation for their use (Glasze, 2006). Furthermore, expats in Saudi Arabia are likely to be accommodated in living compounds making it possible for expats to avoid the need for interacting with the local culture outside of the workplace. Thus, the process of adjustment and the possible development of multiculturals within the organisation could be inhibited to a greater degree in the kingdom than elsewhere. The participants in this study did not appear to have moved away from their national cultural values into some kind of crossvergence state (Ralston et al., 1993). New cultural identities could not be identified which Western expats and Saudi locals voicing perceptions close to what would be expected based on their cultural background such as greater ingroup collectivism and higher power distance among the local staff.

While the workplaces were multicultural, the living compounds, while still multicultural did not have any significant number of Saudi residents potentially inhibiting integration. Reflecting on the concept of cross-cultural adjustment (Black, 1988), and the proposed requirement for expats to reach a satisfactory level of comfort, the expat participants seem to have reached this as there was no indication in the interview data that significant numbers were curtailing their assignments, or even considering it. Instead, it was the process of Saudization that was mentioned in relation to the fall in the numbers of expat workers. The expat interview participants spoke in terms which suggested they were working out their time before a return to their home country. This echoes Showail et al. (2013) who suggest that "'maladjustment' may be seen as temporary – as something to be survived until the [expat] worker can leave" (p. 3959).

7.7 Summary

This chapter has addressed the first five research questions set in Chapter One. It has done so by applying the theoretical framework presented at the end of Chapter Two and setting the findings in the context of existing literature. **Error! Reference source not found.** shows a representation of the findings, specifically the relationships between the three main variables of interest - trust, leadership practices and national culture.

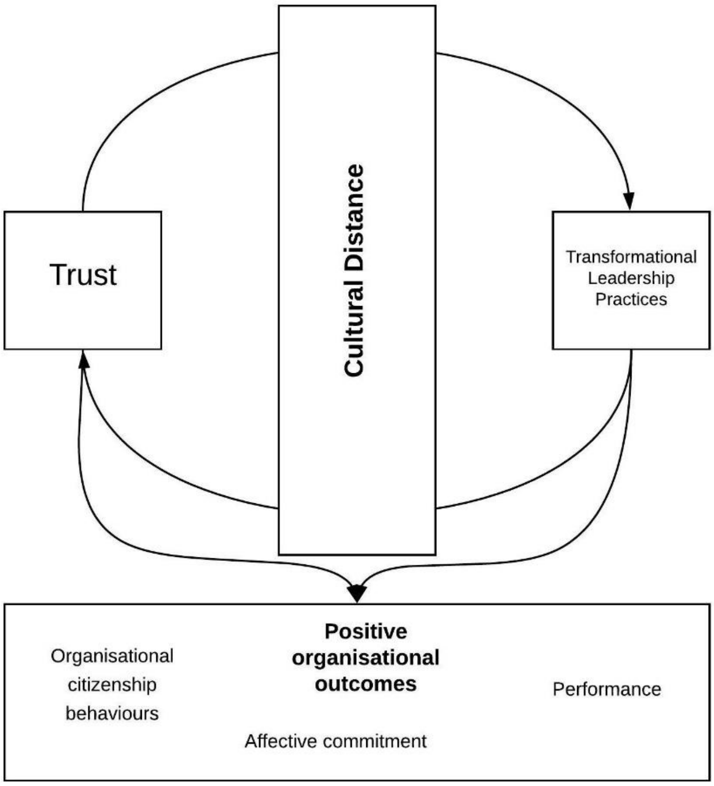


Figure 7-1: Conceptual diagram of the relationships among variables

Trust and transformational leadership practices have a positive circular relationship. Both are associated with positive organisational outcomes such as organisational citizenship behaviours, affective commitment and performance. Based on the findings of this research the relationship between trust and transformational leadership practices is influenced by national culture. Or more specifically, in multicultural workplaces the relationship is hindered by cultural distance . Thus cultural distance acts as a kind of fog – clouding, confusing and complicating what should be a straightforward relationship.

The findings related to the engineering profession were discussed including the concept of engineering exceptionalism and the much written about phenomenon of the transition from engineer follower to engineer leader. The chapter then discussed the findings related to the relationships of interest, among culture, trust and leadership practices. Both the quantitative and qualitative studies indicated an association between the two cultural dimensions (IDV and PD) and trust in leaders. Both forms of trust, affective and cognitive, were found to be present in broadly equal measure and the levels of trust across the full sample of engineers was also in line with earlier studies although comparisons should be treated with caution. There was a significant gap in the level of trust reported by followers in the survey and that reported by leaders. Indeed, this study may have provided evidence of a trust deficit at Saudi petrochemical firms. If there is one, the survey results suggest that this the deficit arises among the low PD, high IDV expats. The findings that leaders in the study perceived they deployed transformational leadership practices, but their followers had a lower perception of this were also discussed. The increasingly multicultural nature of engineering teams and their pros and cons has become an important field of inquiry and the present study provides evidence on the kinds of challenges that arise

In the closing chapter, the research process will be summarised, and the main findings and conclusions will be presented. Contributions and limitations will be summarised and a set of recommendations for practice and further research will be made.

Chapter 8 CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

The overall aim of all research is to make something known that was previously not part of human knowledge. Within this, the researcher may seek to explain an emerging phenomenon, investigate an existing problem, generate new knowledge, develop a new system or procedure, offer solutions, or any combination of these (Hussey & Hussey 1997).This final chapter will present the ways in which this present study has achieved this aim. To do this the chapter has four main purposes. First, to summarise the main findings of the research and how they addressed the research questions set in Chapter One. Second the limitations of the research are highlighted including those related to the research design. This is followed by a section proposing the contributions of the thesis at the empirical, theoretical, methodological and practical levels. Finally, the chapter closes with a set of recommendations, first for practice and then for researchers active in this field of study.

8.2 Summary of the research process

The mixed methods research presented in this thesis report sought to address the problem of trust and transformational leadership practices in cross-cultural engineering workplaces. In particular, it examined the relationships between trust, national culture and transformational leadership practices at petrochemical companies in Saudi Arabia. The rationale for pursuing this line of research was the potential for negative consequences to arise from cultural diversity in engineering workplaces and the need for positive leadership practices to counter this potential and to support a high trust environment. By contributing to the understanding of the relationships of interest the researcher aimed to make it easier to pursue practices that would bring positive outcomes for engineering firms as well as developing relevant theory and offer empirical evidence.

The researcher set out to establish what was already known and theorised about the constructs of trust, culture and leadership. This was presented in Chapter Two which ended by presenting a conceptual framework for the study in which it was proposed that national culture (proxied by the IDV and PD dimensions) influenced the relationship between trust and leadership practices. Next, the researcher reviewed the empirical evidence on the relationships of interest in Chapter three, which enabled a set of hypotheses to be developed and presented at the end of the chapter. Which this groundwork in place the researcher moved on to complete the details of the research design and prepared Chapter Five which explained both the methodology and the research methods to be used and the rationale behind the choices made.

This thesis has reported a mixed methods sequential research design in which the research undertook a survey, administered online, which used established and reliable instruments to collect data on trust and leadership practices. Further secondary data from the Hofstede Insights database and the LPI observers dataset was added to the analysis which comprised statistical analyses including descriptive statistics, group statistics including t-tests and correlational analysis conducted using the SPSS application. The results were reported in Chapter Five. In the light of these results, interview schedules were designed to explore the relationships of interest in more depth. In this second phase the researcher undertook an interview study with a sample comprising leaders and followers employed at five Saudi petrochemical firms, as with the survey, the sample comprised both expatriates and Saudi nationals. With the interview data gathered, a thematic analysis was undertaken using the Nvivo application and the findings were presented in Chapter Six. Having collected, analysed and presented the findings of the two phases of the research, the research began a process of evaluation of what had been revealed. This evaluation was organised following the set of research questions first presented in Chapter One and was conducted with consideration of the conceptual framework from the end of Chapter Two. Which this evaluation completed in Chapter Seven the researcher could then extract the main findings of the research which are given in the next section of the current chapter.

8.3 Main findings and conclusions

A detailed discussion of the findings and research questions was presented in Chapter Seven. Here the main findings and conclusion related to the three key constructs – trust, culture, and leadership practices – are summarised.

8.3.1 Trust

Trust is known to bring a range of benefits to the organisation, including enhanced, commitment, job satisfaction and overall performance (Butler, 1991; Deluga, 1995; Dirks & Ferrin, 2001; Flaherty & Pappas, 2000; Robinson, 1996; Simons & McLean Parks, 2002). The survey found that for both affective and cognitive trust followers trusted their leaders less than the leaders (mostly first line managers) trusted their own leaders. Overall levels of trust at the Saudi petrochemical firms featured in the research were found to be broadly in line with a range of other studies using the same instrumentation, but the follower trust was relatively low. The qualitative study found that Saudi trust was associated with a sense of duty and other relational factors while for expats it was more instrumental and related to the need to complete the task at hand and their overall assignment. The survey reported that leaders' cognitive and affective trust are positively correlated with the five transformational leadership practices. Likewise, and to an even stronger extent, followers' cognitive and affective trust were found to positively correlate with these leadership practices. Overall, the two forms of trust tended to behave in a similar fashion with the cultural dimensions associated with the Saudi respondents associated with significantly higher levels of both forms of trust.

8.3.2 Culture

The survey study found that high collectivism is associated with a statistically significantly higher level of trust and also found that high power distance is associated with a statistically significantly higher level of trust. Hence, the two cultural values known to be associated to Saudi culture were both related to higher reported levels of trust in immediate leader. The findings of the interview study shed further light on the role of culture and supported the existing evidence (Hofstede, 2015) that trust in a collective society was mainly 'ingroup' trust. Trust in a high PD relationship was likely to be assumed rather than earned. Individuals with a lower PD orientation (as represented by the expats in our study) may assign an instrumental form of trust for the smooth running of the relationship and wider team.

Assigning national cultural values to groups of expatriate workers could in some circumstances be questioned. Crossvergence theory (Ralston et al., 1997) would propose that an expatriate working for many years in another cultural setting could develop a set of values and beliefs at variance to his countrymen. However, in the Saudi setting with its compound living model and with a high level of cultural distance between the UK, US and Saudi Arabia, this effect can be discounted.

8.3.3 Leadership practices

The quantitative survey revealed that followers (observers) at the Saudi petrochemical firms featured in this study reported significantly lower levels of transformational leadership practices used by their leaders than the leaders self-reported or the aggregated global scores for the LPI-observers instrument. This indicates a potential problem for Saudi petrochemical firms as these practices seem highly suited to engineering workplaces, particularly in project teams and R&D teams because team members are likely to have more up-to-date knowledge than the leaders of those teams making practices such as 'enabling others to act' entirely apposite. The interview study revealed mixed perceptions of the leadership practices which were largely interpreted through the lens of national cultural values. Examples of this were the Western task-oriented approach contrasting with the Saudi relationship-oriented approach and the perception of the hierarchical (high PD) nature of the organisations, held mainly by the expat participants.

8.4 Contributions of the research

This section considers the contributions made by this research into trust, culture and engineering leadership at Saudi petrochemical organisations. It does this by answering three questions. First, how does this research help develop the theoretical constructs of trust, culture and leadership and what evidence does it offer on the relationships between these variables? Second, in applying the research methods and design the research chose, how has the present research contributed methodologicallyand what utility does it have for subsequent researchers? Third, what could those involved in cross-cultural leadership and human resources, particularly in engineering, learn from the present research that has practical implications for their organisations?

8.4.1Theoretical and empirical contributions

As Chapters Two and three confirmed, there is no shortage of interest in theoretical development of the constructs of trust, culture and leadership, nor is there a lack of empirical research applying these constructs. However, in examining the three relationships, trust-culture, trust-leadership practices, and culture-leadership practices in the same study, the present study is making an original contribution.

It adds to the theoretical consideration of trust by examining reported trust (both cognitive and affective) in two subsamples from sharply contrasting national cultural backgrounds. The research established a positive relationship between trust and transformational leadership practices. Furthermore, by using the dual forms of trust, cognitive and affective, proposed by McAllistar (1995) the study was able to examine whether each form was related differently to cultural variables. The survey results showed that for both forms of trust, collectivism and high power distance predicted higher levels of trust.

For cultural theory, the research also made important contributions to theoretical development. The study added to the work on culture and leadership by showing an association between collectivism and high power distance with observer reported transformational leadership practices. Put another way, Saudi followers reported higher levels of transformational leadership practices than their Western peers. The interview study developed themes as to why this may be, with Saudi followers having a greater tendency to voice positive views of their leader and expats taking a more neutral and instrumental view. While other models of cultural dimensions could potentially have been used, Hofstede’s dimensions were shown to be appropriate for this research and had the added benefit of readily available secondary data on Saudi Arabia.

For the theoretical development of transformational leadership, it also demonstrated a significant difference in leader self-reports and observer reports across the five practices. Importantly, the research found that followers' perception of their leaders use of transformational leadership was far lower than the leaders had of their use. This in itself may not be unique or even unusual. However, when analysed with the LPI global database of observer responses a substantial deficit is found among this cohort. This raises the possibility that a real deficit of transformational leadership practices exists among leaders in the Saudi petrochemical sector. With a correlation found between trust and each of the five transformation leadership practices increasing use of the practices would increase trust.

The followers in our survey study reported lower levels of trust in their immediate leader, than those immediate leaders (mainly supervisors, team leaders and first line managers) did in their leaders who would have been middle managers. Unlike for the LPI there is no global database of trust scores using the McAllistar instrument for comparison purposes.

To the field of engineering leadership, the research offered confirmatory evidence of the particular challenge faced by engineers when transitioning into leadership roles. There was also evidence from the interview study that not all people working in engineering-based organisations identify primarily as engineers.

The increasingly multicultural nature of engineering teams and their pros and cons has become an important field of inquiry and this study contributes a real insight into the perceptions of leaders and followers active in such teams. The qualitative approach to giving voice to these perceptions enabled a nuanced and highly authentic picture to be drawn.

The setting for the research is also part of its empirical contribution because Saudi Arabia has received far less attention in terms of trust, leadership and multicultural workplaces than other parts of the world. This despite it being an important G20 economy which relies more than most on an expatriate workforce and on knowledge transfer in its direction. Within this economy the petrochemical engineering sector has a strategic significance because it as been earmarked as one that will form part of the diversification strategy to move the economy away from a dependence on oil exports.

In summary, while the research presented in this thesis makes important contributions to understanding of the relations between trust, culture and leadership practices, the main contribution and originality is to study these variables/relationships in the Saudi context and with the additional dimension of the engineering professional and its associated culture.

8.4.3 Methodological

The research has demonstrated a mixed methods approach to the study of trust, culture and leadership practices in a field that has been dominated by quantitative survey-based research. As well as conducting a survey with established reliable instruments, the researcher was able to probe more deeply into the issues raised to create a richer picture through the voices of both leaders and followers in the petrochemical engineering sector in Saudi Arabia. This design facilitated a deeper understanding of the relationships of interest. The research methods also enabled data to be collected from multiple sites in Saudi Arabia with survey respondents and interview participants from five different petrochemical companies, in two major industrial regions on opposite coasts.

Furthermore, there is a contribution based on the instrumentation used. While the LPI was released by its publishers in Arabic in 2014, this research is the first known translation and use of McAllister's 11-item scale in the Arabic language. This initiative will be of great value to other researchers examining trust in an Arabic context.

The study combines use of reputable and well-supported instruments in its collection of primary data together with equally high quality secondary data from Hofstede Insights' database on national cultural dimensions and the global observers database of the LPI, offering researchers an example of how primary and secondary data can be synthesised into statistical analysis.

8.4.4 Practical

The research was not conducted for purely academic purposes but was also intended from the outset to be of practical value to managers, human resource professionals, trainers and anyone else involved in developing effective leadership in multicultural workplaces. Chapter Two presented the theoretical constructs associated with trust, culture and leadership and which should be of interest to practitioners wishing to root their practice in theory. Similarly, Chapter Three should be a useful resource for anyone interested in the empirical evidence related to trust, culture and leadership. With the LPI being such a widely used tool in organisations around the world, the present research offers an example of its application as well as a review of many other studies that have applied it. By using a trust instrument that differentitates between affective and cognitive trust, the research was able to inform managers as to their respective significance. The main research output making a practical contribution is stated in a subsequent section which presents a set of recommendations for practice based on the existing knowledge base and the contributions made to it by the present study.

8.5 Limitations

It is very rare to be able to conduct research without it being limited in some way. Limitations can arise from multiple directions (Broadbent & Rist, 1976) including methodological limitations, practical limitations and potentially theoretical aspects of the research. It is incumbent on researchers to clearly state what limitations were experienced in the research process and how these may affect the findings and their generalisability (Price & Murnan, 2004).

8.5.1 Methodological and practical limitations

As is common in such research, there were sample size limitations. The sample size could have been larger, and the response rate higher. More companies could have been included in the sampling frame and the period the survey was available for responses could have been extended. Additional reminders could have been sent. These measures would likely have increased the number of completed surveys. Future research of this kind should consider ways to increase the non-Saudi subsample. A further limitation arose because responding to the survey was entirely voluntary and as the email was sent through company email systems the researcher personally witness their distribution or fully control steps to introduce randomness.

The study relied on cross-sectional data in that it collected the data at a single point in time. While this is common in doctoral research it does preclude time as a variable. The point in time could have been relevant in the present study if the data was collected at a significant moment associated with adverse or positive events in the Saudi petrochemical engineering sector. For example, job losses or changed reglations affecting expatriate employees could have affected participant responses.

Data analysis was limited to correlation analysis and comparative analysis. No regression analysis was undertaken such analysis may have strengthened the findings on the relationships of interest. Correlation can measure the strength (closeness) of a relationship between two or more variables without needing to know the functional relationships. Regression analysis can determine the form of the relationship between one independent variable and one dependent variable. Furthermore, the addition of a performance variable may have extended the findings in a useful way, for example in determining the effects of trust and leadership practices on performance.

Most researchers experience resource-based limitations with financial and time being the most common types (Bryman, 2008). Particularly as the field work was conducted in a country other than the one the researcher was residing, the researcher needed to place limits on both the number of field trips to collect the interview data and their length.

The potential limitations associated with the use of gatekeepers also need to be considered. Researchers wanting to collect data from the employees of commercial organisations, including those in Saudi Arabia, will invariably need to use gatekeepers in order to access the target population. As explained in Chapter Four, the researcher communicated with the HR departments of the five petrochemical firms in order to establish both access and co-operation. In particular, the HR departments used the company servers to email the link to the survey to employees. While there was no indication that the sample had been skewed as a result, it did been that this part of the research process was not under the personal supervision of the researcher. Generally, the gatekeepers did not seek to exercise influence or control over the research and accepted the guarantees of anonymity, confidentiality and privacy offered by the researcher.

8.5.2 Theoretical limitations

Only two cultural dimensions were used as proxies for national culture, individualism-collectivism and power distance. The reason for this was that the literature confirmed these as the most powerful variables in determining cultural distance between the nationalities featuring in this study. However, there are four other variables in the latest Hofstede model (Hofstede et al., 2010) and there may have been value in considering these as well. Furthermore, national culture was assumed to closely influence behaviours and perceptions of individual leaders and followers. While there is strong evidence that this is the case (Hofstede, 2011; Ingelhart, 2007) it does preclude recognition of variations within a particular national group and the role of personality (Laroche, 2011). For example, a Saudi engineer receiving education and professional development in the West may have somewhat different attitudes to leadership and trust than a purely locally trained engineer.

Finally, in line with the very low representation of women in the engineering profession neither the survey nor the interview study featured female engineers, so a gender dimension to the relationships of interest could not be tested for. Having mixed gender representation in the sample may have, for example, revealed differing trust propensity (Wang and Yamagishi, 2005).

8.6 Recommendations

While some, including proponents of convergence theory (Kerr et al., 1960) may argue that globalisation may propel us towards a single unified business culture at some point in the future, this is by no means certain. More certain is that culturally diverse workplaces will be with us for decades to come. It is very important, therefore, that both leadership practitioners and those researching in this field continue to develop leadership practices which develop trust and mitigate the potential for conflict. To contribute to this objective this thesis close with a set of recommendations, firstly for practice and then for further research.

8.5.1 Implications and Recommendations for practice

The sixth research question presented in Chapter One asked how engineering organisations can improve leader-follower trust in a multicultural workplace. This section addresses this question based on the findings of the two studies presented in this thesis and the theoretical understanding developed through them.

The relationships, implications and recommendations are shown graphically in Figure 8-1.

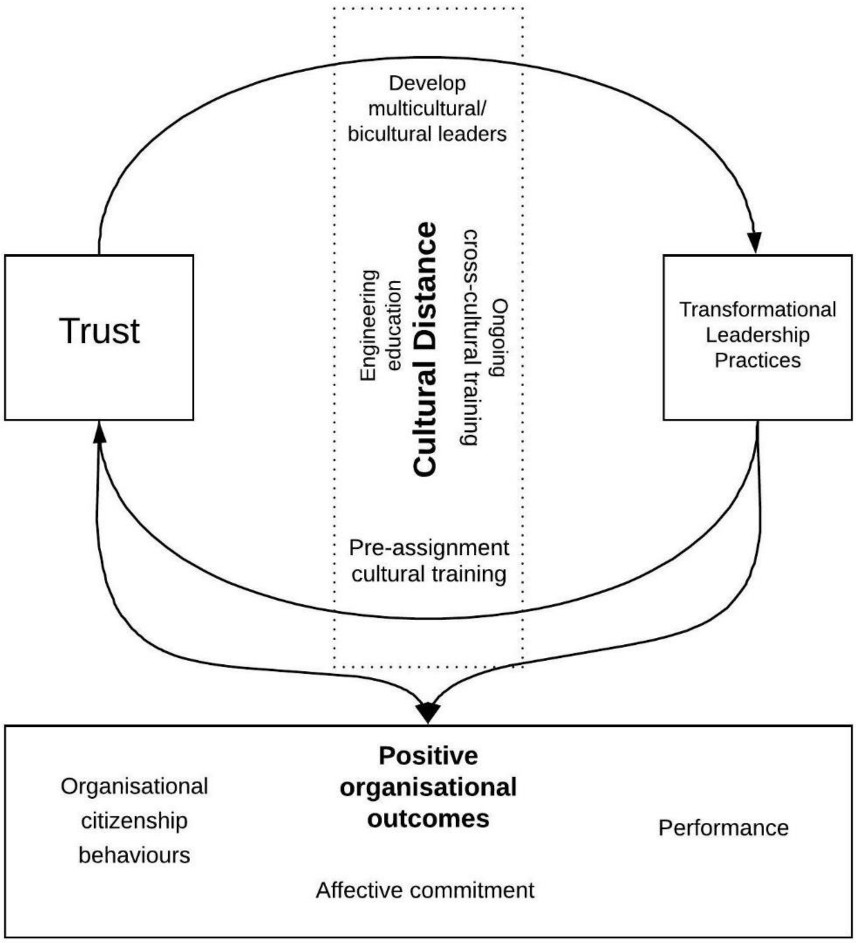


Figure 8-1: Relationships, implications and recommendations

The recommendations given here are intended to help clear what was referred to in the previous chapter as the fog created by cultural distance.

Leader-follower trust was found to be lower in the expat subsample characterised by individuals from an individualist and low power distance culture. This may be a result of the strong collectivist ingroup trust among the Saudi subsample. Where trust was expressed by expats towards their immediate leader it was done so in more task-based instrumental terms. The first implication of this for organisations and individuals in leadership position in multicultural workplaces is leaders should take account of this as part of their overall cultural awareness. Furthermore, Saudi-Saudi trust may be more easily forthcoming for cultural reasons, but more conscious and direct effort may be needed from Saudi leaders towards their expat followers.

8.5.1.1 Addressing culture's consequences in the engineering workplace

Engineering is characterised by project-based work, teams, collaborative problem-solving and innovation. Communication is therefore paramount. This research has confirmed that managers in multinational workplaces face challenges beyond those arising in monocultural ones. Cross-cultural communication simply does not run as smoothly as monocultural cases and can open the door to conflict, such as the low-level conflict found in the present study, Culture, and specifically cultural differences, lead to misinterpretation and mistrust of behaviours. An example of this from this study and others (Tam & Zeng, 2014) is PD. Individuals with a high PD orientation (such as Saudi engineers) may be less forthcoming in contributing their opinions and ideas or in challenging those of superiors. Conversely, those engineers from low PD countries such as the US may contribute and challenge beyond what is culturally acceptable to high PD managers. Either of these has the potential for misunderstanding and even conflict. The answer and the recommendation would therefore be to prioritise leadership practices which support the teamworking, collaborating and problem-solving so fundamental to engineering. This would infer a low PD organisational culture.

Leaders in multicultural engineering workplaces need to possess sufficient cultural awareness or sensitivity to interpret the behaviour of their followers through a cultural lens. So, for example, when a follower appears reluctant to participate in solving a problem the leader should not view this as a lack of ability or knowledge but instead as a result of deeply held national cultural values. Some followers may need greater and more direct encouragement to participate than others, depending on their cultural background. This process needs to be replicated at the organisational level by creating a collaborative and participative organisational culture. Cultural training is a potentially effective way to reduce the incidents of low-level conflicts such as those reported in this research. This applies not just to expats departing for their assignment, but also local Saudi staff assigned to multicultural teams.

Turning to the other cultural dimension used in the analysis, IDV, this was also confirmed as a significant predictor of trust with collectivism being associated with higher levels of both affective and cognitive trust. Combined with the findings of the interview study, this research suggests that management should be aware that trust among expatriate individualist employees is likely to have a different basis than for their local collectivist counterparts. Specifically, management working in the Saudi context may need to adopt more rational exchange-based interactions with expatriate workers and relational longer-term interactions with local employees (House and Javidan, 2004).

This cultural awareness is not a personality trait some managers are born with but is learned. Some learn it through personal experience and exposure to multiple cultures. This, however, is not available to all engineering leaders which leads to a further recommendation that cross-cultural training (sometimes referred to as cultural awareness training) should feature prominently in organisations with multicultural workforces. Pre-assignment training of expat managers is commonplace with many dedicated training consultancies available in countries such as the UK and the US. However, such training is less common for managers in the host country to receive such training which would appear to be a gap that needs to be filled.

Related to cultural awareness is the concept of cross cultural adaptation (Jassawalla et al., 2004). The perceptions voiced by expatriate participants in this study suggest that some adapt better than others. We can also consider the extent to which compound living reduces the need for such adaptation as in these circumstances the expatriate is artially shielded from the host culture.

There are lessons from this research for project team selection. Leaders should consider the cultural values of potential team members when selecting them. That is not to say that teams should be monocultural but such consideration will enable leaders with an understanding of cultural values to anticipate what issues may arise and respond with the appropriate training and communication. There are several aspects to this consideration including religious practices, leadership-followership culture, work culture and ethics.

8.5.1.2 Maximising the benefits of trust in engineering leaders

Trust is known to bring a range of benefits to the organisation, including enhanced, commitment, job satisfaction and overall performance (Deluga, 1995; Dirks & Ferrin, 2001; Flaherty & Pappas, 2000; Robinson, 1996). The survey found that for both affective and cognitive trust, followers trusted their leaders less than the leaders (mostly first line managers/

supervisors) trusted their own leaders. The leaders were more likely to be Saudi and the leaders' leaders can be assumed to be majority Saudis at higher levels of Saudi petrochemical company management. Trust appears relatively higher in Saudi-Saudi leader-follower relationships than for multicultural relationships so building trust in these multicultural relationships is identified as a priority. Pre-departure cross-cultural training is recommended for incoming expats and the training and development of local managers is recommended to include a substantial component aimed at enhancing their cultural intelligence and awareness.

While trust is widely explored through academic research there is a lesser acknowledgement of its importance at workplace level. It is mostly considered as an individual personality trait rather than a concept related to culture, leadership practices and performance. Based on the findings of this research trust is relatively low at Saudi petrochemical engineering firms with multicultural workforces. Put simply, trust as a theoretical concept needs to be unpacked and talked about more including group and organisational level trust. Firms could include trust items in employee surveys. Management should have a deeper understanding of the concept and how it is influenced by culture and leadership practices. When developing future leaders, organisations should consider training programs aimed specifically at developing the skills required to foster trust among followers (Goodman, 2017).

8.5.1.3 Transformational leadership practices

Transformational leadership practices, as classified in the LPI are generally accepted as suited to most workplaces. In the present study, observers reported lower levels of transformational leadership practices among their leaders than the global average. These practices see the leader acting mutually with followers (Bensimon et al., 1989). They are also considered to engender positive behaviours in followers including trust and commitment which ultimately lead to performance benefits (Yukl, 2002). Therefore, as for other organisations it is recommended that Saudi petrochemical engineering firms encourage such practices among leaders at all levels. With organisational culture so closely related to leadership practices senior leadership may need to review whether their own organisational culture is fostering transformational leadership practices and, if not, how it can be changed so that it does. Engineering, in particular, seems ideally suited to transformational leadership practices because of its reliance of collaboration, teamwork and innovation.

8.5.1.4 The engineering dimension

Other than collecting profile data on respondents the enginering dimension was not included in the quantitative element of the research. The interview study did, however, reveal important insights. Two have significant implications for engineering managers and their organisations.

The first is the relatively weak influence of engineering culture which was attributed to the breadth of the umbrella term ‘engineer’. Second, was the support in the findings for the particular challenges arising from the transition from engineer to engineering manager, from individual contributor to a team leader which a new set of priorities and skills to adjust to. This raising training and mentoring issues that organizational need to address to avoid costly failed transitions.

The implications and recommendations are summarized as Table 8-1.

Table 8-1:Key research implications for engineering managers and organisations

Key research implications for engineering managers and organisations		
Issue	Response	Responsibility
Cultural awareness Understanding cultural differences and their consequences in a multicultural work environment.	Cultural awareness training Pre-assignment courses for expatriates Inclusion of cultural awareness in local management development programmes. Develop multicultural leadership and managers with high cultural intelligence. Monitoring of individual cross cultural adaptation among expatriates.	• Curriculum developers • Human resource departments • Senior management
Building trust Understanding and consciously building trust mindful of the role of culture and leadership practices.	Unpacking trust in the workplace Increase management awareness of the benefits of trust. Measure trust at the organisational level. Additional focus on trust building with expatriates. Trust training progams for future leaders.	• Human resource departments • Senior management
Leadership practices Closing the deficit found in transformational leadership practices.	Spreading the use of transformational leadership practices Increase knowledge of transformational leadership practices and their benefits Train managers on application of the 5 practices Periodically measure these practices using the LPI-360	• Human resource departments • Senior management • Individual managers
Engineering Culture Promoting engineering culture to moderate national cultural distance.	Promote unifying professional culture Emphasise engineering excellence in corporate messaging.	• Human resource departments • Senior management • Corporate communications

	Engage organisation with broader engineering community – events, professional organisations etc.	
Transition support Supporting new engineering managers as they transition to leadership.	Recognising and supporting the engineer-manager transition Mentorship programs for new engineering managers Training for newly required skills	• Human resource departments • Training departments/agencies

8.5.2 Recommendations for further research

At a general level, the Saudi government is attempting to diversify its economy and build the capacity of its workforce in order to reduce its reliance on non-Saudis including among engineers. However, with the Saudi Council of Engineers reporting that just 23% of its membership are Saudis (SCE, 2019) the phenomenon of cross-cultural engineering workplaces seems set to continue for some time to come. With such strong reasons to build knowledge of culture, trust and leadership practices at Saudi organizations, further research in this field seems highly worthwhile and the research presented in this thesis can be seen as a starting point on that journey.

In terms of closely replicating the research presented in this study, a larger sample, particularly a larger expatriate subsample, would enable the relationships of interest to be tested further. A larger sample may enable non-Western expatriates to be included as a subsample and which may have led to new understanding and contributions. Another possibility would be a study of a Saudi MNC which collected data on trust and leadership practices at one of their Saudi locations plus one of their US based operations. This could yield interesting comparisons and enable understanding of the relative strengths of corporate cultures and national cultures.

This research examined unidirectional trust, that of the follower's trust in their immediate supervisor. Further research could extend this to examine leaders' trust in followers. To do so may reveal futher important findings on trust, culture and performance in engineering settings, or indeed other settings. We may learn whether or not trust in the other direction (leader-to-follower) mirrors the direction studied here in terms of the effect of cultural differences. Where mutual, bidirectional trust exists there may be positive outcomes for delegation, employee engagement, motivation and other performance predictors. The engineering identity was also a significant dimension in this present research. Future research could explore this by further testing, for example, the relative strengths of national culture and engineering culture in determining workplace values and practices. Also, the existence of an engineering culture could be examined to address the question of whether this is a legitimate concept or whether the engineering umbrella is too broad to have a definable culture.

The phenomenon of compound living for expats in Saudi Arabia is also identified as potential research path. Does this policy make the building of trust in a multicultural team in the kingdom more difficult compared to countries where there is greater non-work integration? Comparative research of multicultural workforces with cases following the compound model compared to those using integrated living would help with our understanding of this.

The countries of the Middle East play an import role in the global economy and not just because of their resource wealth. Their uniquely high reliance on migrant human resource raises fundamental questions of the relationships between national culture, trust and leadership practices that are not yet fully understood. Whilst the present research has sought to add to this understanding, further scholarly endeavour is required in the future.

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Appendix 1: Introductory pages from online survey

Aston University
Engineering & Applied Science

Research Study

National culture, trust and leadership practices in the multicultural workplace

Survey Questionnaire

You were recently emailed a link to this survey and invited to take part in the above-titled study. A participant information sheet was also attached to the email and can be viewed here.

Your participation is completely voluntary and is expected to take about 15 minutes. This questionnaire is in English. If you would prefer an Arabic version please click here.

Before commencing the survey, you will be asked to give your consent. To continue please click here.

Aston University
Engineering & Applied Science

Online Survey Consent Form

You are being invited to participate in a research study titled:

National culture, trust and leadership practices in the multicultural workplace.

This study is being conducted by Abdullah Algarni from Aston University of Birmingham, UK. You were selected to participate in this study because you are a first line engineering manager working in the petrochemical sector in Saudi Arabia at one of the companies cooperating in this research project.

The purpose of this research study is to enhance understanding of the relationships between trust, national culture and leadership practices in a multicultural work setting, specifically Saudi petrochemical companies. If you agree to take part in this study, you will be asked to complete an online survey/questionnaire. This survey/questionnaire will ask about your trust perceptions and your leadership practices and it will take you approximately 15 minutes to complete.

You may not directly benefit from this research; however, we hope that your participation in the study may contribute to research aimed at improving leadership practices in multicultural workplaces.

We believe there are no known risks associated with this research study; however, as with any online related activity the risk of a breach of confidentiality is always possible. To the best of our ability your answers in this study will remain confidential. We will minimize any risks by securely storing the survey data and keeping your responses separate from any information which may identify you. To identify your responses a code will be used instead of your name or email address. The data collected from this survey may be published in anonymised format.

Your participation in this study is completely voluntary and you can withdraw at any time. You are free to skip any question that you choose.

By clicking "I agree" below you are indicating that you have read and understood this consent form and agree to participate in this research study. Please print a copy of this page for your records.

I Agree

Don't Agree

Appendix 2: The quantitative survey

PART 1 GENERAL INFORMATION: Please put an (**X**) in the appropriate block

يرجى وضع علامة (X) في الاختيار المناسب

Gender	❑ Male	❑ Female		
Your age	❑ 20-29 years	❑ 30-39 years	❑ 40-49 years	❑ ≥ 50 years
Your experience	❑ 0-9 years	❑ 10-19 years	❑ 20-29 years	❑ ≥ 30 years
Your education	❑ Diploma	❑ Bachelor's Degree	❑ Master's Degree	❑ PhD
Your nationality	❑ Saudi	❑ Non Saudi ( )		
Working in the Organisation	❑ 1-5 years	❑ 6-10 years	❑ 11-15 years	❑ +16 years
Working with your Subordinate	❑ 1-5 years	❑ 6-10 years	❑ 11-15 years	❑ +16 years
Organisation Type	❑ Oil& gas	❑ Petrochemical	❑ Manufacturing	❑ Other________
Your department	❑ Design/Planning ❑ Manufacturing	❑ Quality Control ❑ Training/HR	❑ Other	
Your engineering discipline	❑ Mechanical ❑ Electrical	❑ Chemical ❑ Civil	❑ System ❑ Software	❑ Other

PART 2 : The following statements are about **your manager's leadership.** Please indicate your level of agreement and circle the answer to the right of the items.

العبارات التالية حول ممارسات **القيادة لدى مديرك**. يرجى اختيار مستوى موافقتك بوضع دائرة حول الإجابة على يمين كل بند.

Almost Never بتاتاً	Rarely نادراً	Seldom قليلاً	Once in a While مرة كل فترة	Occasionally في المناسبات	Sometimes في بعض الأحيان	Fairly Often باعتدال	Usually عادة	Very Frequently غالباً	Almost Always دائماً
1	2	3	4	5	6	7	8	9	10

1. Sets a personal example of what he/she expects of others. يضع نموذجاً شخصيًا لما يتوقعه من الآخرين	1 2 3 4 5 6 7 8 9 10
2. Talks about future trends that will influence how our work gets done. يتحدث عن التوجهات المستقبلية التي ستؤثر على كيفية تنفيذ عملنا	1 2 3 4 5 6 7 8 9 10
3. Seeks out challenging opportunities that test my own skills and abilities. يبحث عن الفرص الصعبة التي من شأنها اختبار مهاراته وقدراته الخاصة	1 2 3 4 5 6 7 8 9 10
4. Develops cooperative relationships among the people I work with. يكون عالقات تعاونية بين األشخاص الذين يعمل معهم	1 2 3 4 5 6 7 8 9 10
5. Praises people for a job well done. يشكر الأشخاص على عملهم الجيد	1 2 3 4 5 6 7 8 9 10
6. Spends time and energy making certain that the people he/she works with adhere to the principles and standards we have agreed on. يبذل الوقت والجهد للتأكد من التزام الأشخاص الذين يعملون معهم بالممارسات والمعايير التي اتفقنا عليها	1 2 3 4 5 6 7 8 9 10
7. Describes a compelling image of what our future could be like. يصف صورة مقنعة لما قد يكون عليه مستقبلنا	1 2 3 4 5 6 7 8 9 10
8. Challenges people to try out new and innovative ways to do their work. يتحدى الأشخاص لتجربة طرق جديدة وابتكارية للقيام بعملهم	1 2 3 4 5 6 7 8 9 10
9. Actively listens to diverse points of view. يصغي جيداً للعديد من وجهات النظر	1 2 3 4 5 6 7 8 9 10
10. Makes it a point to let people know about my confidence in their abilities. يهتم بأن يعرف الأشخاص بثقته في قدراتهم	1 2 3 4 5 6 7 8 9 10
11. Follows through on promises and commitments that I make. يلتزم بالوعود والالتزامات التي قطعها على نفسه حتى النهاية	1 2 3 4 5 6 7 8 9 10
12. Appeals to others to share an exciting dream of the future. يطلب من الآخرين مشاركة حلم مثير عن المستقبل	1 2 3 4 5 6 7 8 9 10
13. Searches outside the formal boundaries of my organization for innovative ways to improve what we do. يبحث عن طرق ابتكارية خارج الحدود الرسمية لمؤسسته لتحسين ما نقوم به	1 2 3 4 5 6 7 8 9 10
14. Treats others with dignity and respect. يعامل الآخرين بكرامة واحترام	1 2 3 4 5 6 7 8 9 10

15. Makes sure that people are creatively rewarded for their contributions to the success of our projects. يتأكد من مكافأة الأشخاص بشكل إبداعي على مساهماتهم في إنجاح مشروعاتنا	1 2 3 4 5 6 7 8 9 10
16. Asks for feedback on how my actions affect other people's performance. يطلب ملاحظات حول كيفية تأثير أفعاله على أداء الآخرين	1 2 3 4 5 6 7 8 9 10
17. Shows others how their long-term interests can be realized by enlisting in a common vision. يظهر لآخرين كيف أن مصالحهم طويلة الأجل يمكن إدراكها من خلال وضع رؤية مشتركة	1 2 3 4 5 6 7 8 9 10
18. Asks "What can we learn?" when things don't go as expected. يسأل "ما الذي يمكن أن نتعلمه؟" عندما لا تسير الأمور حسبما هو متوقع	1 2 3 4 5 6 7 8 9 10
19. Supports the decisions that people make on their own. يدعم القرارات التي يتخذها الأشخاص بأنفسهم	1 2 3 4 5 6 7 8 9 10
20. Publicly recognizes people who exemplify commitment to shared values. يكّرم الأشخاص الذين يضربون المثل في الالتزام بالقيم	1 2 3 4 5 6 7 8 9 10
21. Builds consensus around a common set of values for running our organisation. يقوم بتكوين موافقة بالإجماع على مجموعة عامة من القيم من أجل تشغيل مؤسستنا	1 2 3 4 5 6 7 8 9 10
22. Paints the "big picture" of what we aspire to accomplish. يرسم "الصورة الكبيرة" لما نطمح إلى تحقيقه	1 2 3 4 5 6 7 8 9 10
23. Makes certain that we set achievable goals, make concrete plans, and establish measurable milestones for the projects and programs that we work on. يتأكد من وضع أهداف قابلة للتحقيق، ويضع خططاً قوية ومراحل تنفيذ مشروع يمكن قياسها، وبرامج نعمل عليها	1 2 3 4 5 6 7 8 9 10
24. Gives people a great deal of freedom and choice in deciding how to do their work. يمنح الأشخاص مساحة كبيرة من الحرية والاختيار في تحديد كيفية القيام بأعمالهم	1 2 3 4 5 6 7 8 9 10
25. Finds ways to celebrate accomplishments. يجد طرًقا للاحتفال بالإنجازات	1 2 3 4 5 6 7 8 9 10
26. Is clear about my philosophy of leadership. يكون واضحاً فيما يتعلق بفلسفته في القيادة	1 2 3 4 5 6 7 8 9 10
27. Speaks with genuine conviction about the higher meaning and purpose of our work. يتحدث بيقين تام حول المعنى الأسمى لعملنا والغرض منه	1 2 3 4 5 6 7 8 9 10
28. Experiments and takes risks, even when there is a chance of failure يجرب ويتحمل المخاطر حتى في حالة وجود احتمالية الفشل	1 2 3 4 5 6 7 8 9 10
29. Ensures that people grow in their jobs by learning new skills and developing themselves. يضمن تطور الأشخاص مهنًياً من خلال تعلم مهارات جديدة وتطوير أنفسهم	1 2 3 4 5 6 7 8 9 10

30. Gives the members of the team lots of appreciation and support for their contributions. يقّدر أفراد الفريق كثيًرا ويدعم مساهماتهم	1 2 3 4 5 6 7 8 9 10

PART 3

Instructions: The following statements are about the **relationship with your manager**. Please read each of the following statements and select your level of agreement to each item.

تعليمات: البيانات التالية حول **العلاقة مع مديرك**. يرجى وضع دائرة حول الإجابة على يمين العنصر الذي يمثل بشكل وثيق موافقتك.

	Disagree Strongly	Disagree	Neutral	Agree	Agree Strongly
1. We have a sharing relationship. We can both freely share our ideas, feelings, and hopes. لديناعلاقة مشتركة. يمكن أن نتشارك بحرية في أفكارنا والمشاعر،والآمال	1	2	3	4	5
2. I can talk freely to this individual about difficulties I am having at work and know that he will want to listen. أستطيع التحدث بحرية لهذا الشخص حول الصعوبات التي أواجهها في العمل ،واعرف انه سوف يرغب في الاستماع	1	2	3	4	5
3. We would both feel a sense of loss if one of us was transferred and we could no longer work together. كل منا سيكون لديه شعور بالفقدان إذا تم نقل واحد منا،ولم نعد قادرين على العمل معا.	1	2	3	4	5
4. If I shared my problems with this person, I know he would respond constructively and caringly. إذا شاركت مشاكلي مع هذاالشخص ،فأنا أعلم انه سيتعامل باهتمام وفعالية	1	2	3	4	5
5. I would have to say that we have both made considerable emotional investments in our working relationship. أود أن أقول إنناحققنا العديد من الاستثمارات الوجدانية الكبيرة في علاقة العمل لدينا	1	2	3	4	5

6. This person approaches his job with professionalism and dedication. هذا الشخص يقوم بوظيفته بمهنية واتقان	1	2	3	4	5
7. Given this person's track record, I see no reason to doubt his competence and preparation for the job. نظرا لسجل هذاالشخص ،فأنا لاأرى أي سبب للشك في الكفاءة والجاهزية لهذا المنصب	1	2	3	4	5
8. I can rely on this person not to make my job more difficult by careless work. يمكنني الاعتماد على هذا الشخص الا يجعل مهمتي أكثر صعوبة بسبب الاهمال في العمل .	1	2	3	4	5
9. Most people, even those who aren't close friends of this individual, trust and respect him as a co- worker. معظم الناس ،حتى أولئك الذين ليسوا من الأصدقاء المقربين من هذا الشخص ،يثقون فيه ويحترمونه كزميل عمل.	1	2	3	4	5
10. Other work associates of mine who must interact with this individual consider him to be trustworthy. زميل عمل أخرمن اللذين يجب أن يتعامل مع هذا الشخص يعتبره جدير بالثقة.	1	2	3	4	5
11. If people knew more about this individual and his/her background, they would be more concerned and monitor his performance more closely. اذا كان الناس يعرفون المزيد عن هذا الشخص وخلفيته ،يكونون أكثر قلقا ،ويراقبون ادائه بشكل وثيق	1	2	3	4	5

Appendix 3: Participant information sheet

(Leader interview participant version)

PARTICIPANT INFORMATION SHEET

STUDY TITLE: TRUST IN ENGINEERING MANAGEMENT, LEADERSHIP PRACTICES AND THE MEDIATING ROLE OF NATIONAL CULTURE IN THE [CULTURALLY DIVERSE] SAUDI PETROCHEMICAL SECTOR.

You are being invited to take part in the abovenamed research study. However, before you decide whether to participate it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

<u>Why is this research being done?</u>

The study should help us understand the relationships between trust, national culture and leadership practices in multicultural engineering workplaces like your own. How do these things influence each other? For example, how does national culture influence trust and how does trust influence the practices of first line engineering managers. My plan is that the results will help us understand how to have effective leadership by producing a set of recommendations.

<u>Why have I been chosen?</u>

You recently completed an online survey which was part of the current research. At the end of the survey you indicated that you were willing to participate in an interview. You were originally selected for participation in this study as you are a first line engineering manager working at one of the engineering organisations that have agreed to cooperate with the research. You recently completed an online survey which was part of the current research. At the end of the survey you indicated that you were willing to participate in an interview for another part of the same project. That's why I am contacting you today. For the interview part a total of 20 people is expected to participate.

<u>What will happen to me if I take part?</u>

If you take part, we will agree a convenient time for me to interview somewhere convenient to you. I expect this will take between 45 and 60 minutes. So that I can have an accurate record of the questions and answers for me to consider afterwards I will bring a digital recorder. This will help me when I type up the transcript. Once I have completed the transcript, I will email it you so that you can check it properly represents your answers to my questions. Extracts of your answers may be included in the written report of the research but there will be no way for anyone reading the report to be able to identify whose answers they were. Real names or other identifying terms such as job titles or department names will not be used.

Once the report is ready for publication, I will contact you again by email to let you know how you can obtain a copy.

Are there any potential risks in talking part in the study?

I put the highest priority on making sure there are no negative consequences to you if you take part. Your organisation provided your email address so that I could contact you about the survey. They have also given permission for some of their employees to be interviewed but do not require me to inform them which survey respondents take part in the interviews. Your participation in the interview will only be known to me and my research supervisors.

Do I have to take part?

Your participation in the interview is completely voluntary. Even if you agree to participate now you can withdraw from the project at any time without the need to give a reason. Your organisation will not know at any stage who took part and whether any participants refused to take part or later withdrew.

Interview participants are asked to sign an informed consent form once they have read this information sheet. I have attached this form which you can print, sign and bring to the interview. In case you do not have access to a printer I will bring a copy to the interview and give you plenty of time to read through it before we start the interview.

For practical reasons and because I need to publish a written report of my research, if after I have sent you the transcript of the interview, I have not heard from you within 28 days I will assume that it is an accurate transcription and that you do not wish any amendments to be made.

Your anonymity and the confidentiality of your data

All data will be anonymized. Names will be omitted during the transcribing process, and consent forms with your name will be stored separately from the data. Only the researcher will have access to identity codes on data collection documents. No one other than the researcher and the research supervisors will have access to the participants' personal information. Electronic data containing personally identifiable information about you will be stored on password-protected media that will be accessible only to the researcher. Hardcopies of documentation containing personally identifiable information about you will be kept secure in a locked cupboard during the period of data collection in Saudi Arabia. At Aston University, data will again be kept securely in a locked cupboard that will only be accessible to the researcher and research supervisors. At the end of the study, all data and documents containing personally identifiable information about participants will be destroyed.

However, this research takes place within the confines of current legislation over such matters as privacy and confidentiality, data protection and human rights. Offers of confidentiality may sometimes be overridden by law. For example, in circumstances where I am concerned over actual or potential harm to yourself or others, I am obligated to convey this information to relevant authorities. All data will be stored in line with the Aston university data protection policy which can found at https:://www2.aston.ac.uk/about/management-structure/university-regulation/dataprotection.

What will happen to the results of the research study?

The results of the research will be published by my institution in the form of a doctoral thesis. The planned publication date is [……….]. I will contact you prior to publication and advise you how a copy can be obtained. Once again, I must stress that your name or any information that might identify you will NOT appear in the thesis. The results may also be published subsequently as part of research papers in academic journals. The same anonymity and confidentiality will apply to these papers.

Who is organising and funding the research?

This research is being conducted as a requirement to obtain a PhD degree in Engineering Systems and Management. The researcher is funded for his degree by the government of Saudi Arabia.

Who has reviewed the study?

This study has been reviewed and granted approval by Aston University Ethical Review Panel.

What if there is a problem?

If you have a concern about any aspect of this study, please do not hesitate to contact me. You may email me (Abdullah Algarni) at algarash@aston.ac.uk . Alternatively, if you do not wish to contact the researcher you may contact my academic supervisor Dr Brian Price, (b.j.price@aston.ac.uk) or by phone on + 44 (0)121 204 3531.

Contact for further information

If you have any questions or require any further information, either now or at any time during the study, please contact me (Abdullah Algarni) at algarash@aston.ac.uk

Appendix 4: Participant consent form

Aston University
Engineering & Applied Science

Participant Consent Form

Title of Project: National culture, trust and leadership practices in the multicultural workplace

Name of Researcher: Abdullah Algarni algarash@aston.ac.uk

Please read each of these items carefully and tick each box to indicate your agreement. Then please sign the form at the bottom of the page.

I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	☐
I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.	☐
I agree to the interview being digitally audio recorded.	☐
I understand that data collected about me during this study will be anonymised before it is submitted for publication.	☐
I agree to being quoted directly but only anonymously and that quotations can be used anonymously in future work based my research.	☐
I understand that data collected during this study can be used in future work	☐
I agree to take part in the above study.	☐

Name of participant Date Signature

_________________________ _______________ ________________

Researcher Date Signature

_________________________ _______________ ________________

Appendix 5: Interview schedule

Main Questions	Additional Questions	Clarifying Questions
Participant Profile		
As you know this research is fully confidential and anonymous. Your name will never be published. To help me understand the people who have kindly agreed to be interviewed I have a short set of questions on this sheet. Could you spend a few moments completing this for me?	The questions are on the form.	• Please let me know if you are unclear about any of the questions
Theme 1: a) The engineering profession		
Can you tell me a little about how you came to pursue a career in engineering?	What is your educational background? What attracted you to a career in engineering? What are the personal qualities needed to succeed in the engineering profession?	• Can you expand a little on this?
b) Making the transition from engineer to engineering management		
After developing their technical skills in the first phase of their engineering careers some engineers then move into management roles. What do you think are the main challenges engineers face when making this transition?	Do you think some new managers have difficulty with the new skills they need like communication and coaching skills? Do you think engineers receive the right kind of training and professional development to make the transition to management?	Have you had any personal experience of this, maybe among your peers?
Theme 2: Trust in engineering leaders a) affective trust		
Thinking about your immediate manager or		

supervisor would you say that you trust them?	About your relationship with your immediate manager/ supervisor, do you feel able to share your ideas, your feelings and hopes with them. Would they listen to you and take an interest in what you say? If you and your immediate supervisor/ manager were split up, maybe because one of you got transferred would you feel a sense of loss?	• Can you expand a little on this? • Can you tell me anything else? Can you give me some examples?
b) cognitive trust		
Still thinking about trust and your immediate supervisor/ manager – but now thinking about trusting them to do their job effectively – Would you say that you trust your immediate supervisor/manager as a professional engineer?	When you think about whether you trust your immediate supervisor/ manager – how much do you rely on their track record? Do you think that your view on trusting your immediate supervisor or manager is shared by others who work with him/ her?	How did you get to know about your supervisor/manager's track record? Why do you think that is the case?
Theme 3: Leadership practices (questions for leaders)		
I want to ask you some questions about your own leadership practices, but first could you summarise in a few sentences what you feel your leadership style is?	Is it true to say that you set an example for those people who report to you? Would you say that your team understands what your leadership philosophy is? Would you say you give your team an exciting vision of the future? What do you do to try to make sure all the team are on board with this future vision? Do you challenge team members to try out new and innovative ways to do their work?	How do you know that? • Can you expand a little on this?

	What about yourself, do you search for improvements to the processes involved in your team's work? Engineering requires collaborative working. How far do you think you are successful in encouraging cooperation in the team? When making decisions on matters that affect members of your team, do you involve them in the decision-making process? Can you tell me some of the ways you recognise the achievements of the people you lead?	• Can you tell me anything else? • Can you give me some examples?
Theme 3: Leadership practices (questions for followers)		
I want to ask you some questions about your immediate supervisor/manager's leadership practices, but first could you summarise in a few sentences what you feel their leadership style is?	Would you say that your immediate supervisor/ manager sets an example for those people who report to them? Would you say that you understand what your immediate supervisor/ manager's leadership philosophy is? Does your immediate supervisor/ manager give your team an exciting vision of the future? What do they do to try to make sure all the team are on board with this future vision? Do they challenge team members like yourself to try out new and innovative ways to do their work? Does your immediate supervisor/ manager search for improvements to the processes involved in your team's work?	• Can you expand a little on this? • Can you tell me anything else? Can you give me some examples?

	Engineering requires collaborative working. How far do you think your supervisor/ manager is successful in encouraging cooperation in the team? When making decisions on matters that affect members of your team, does your immediate manager/ supervisor involve you and your colleagues in the decision-making process? Can you tell me some of the ways your supervisor/manager recognises the achievements of the people he/she leads?	
Theme 4: Multi-cultural workplaces		
I am going to ask you some questions about working in a multi-cultural work environment, first can you briefly describe your experience of this?	Returning to the question of trust in immediate supervisor/ manager. Do you think it is easier for them (you) to build trust among people from their (your) own culture than with those from other cultures? [Leaders only] Would you say you adjust your leadership practices depending on whether you are dealing with someone from your own culture or someone from a different culture? What do you think are the advantages and disadvantages of having a multicultural workplace in the engineering sector?	• Can you expand a little on this? • Can you tell me anything else? Can you give me some examples?
Conclusion of Interview		
• Are there any other issues that we have not discussed and that you find important? OR • Do you want to add anything on issues related to trust and leadership? Or on this research?		

Appendix 6: Instrumentation permissions

Re: Permission Request

[redacted] dissertation research. You have my permission to adapt my measures of Affect- and Cognition-based trust for your research.

Best regards,

[redacted]

Sent from my iPhone

On 1 Dec 2016, at 12:27 AM, Algarni, Abdullah (Research Student) [redacted]

[redacted]

I am a Doctoral candidate at Aston University – United Kingdom. I formally request your permission to use the Organizational Trust Inventory which appeared in your article entitled "Affect- and Cognition-Based Trust as Foundations for Interpersonal Cooperation in Organisations" by McAllister (1995). This scale will be used for academic and educational purposes in a study that I have proposed for my project research. My research title is "The role of trust in engineering leadership practices: a study of Saudi engineering middle managers".

I thank you for consideration of this request.

Very respectfully,

Abdullah Algarni

WILEY

December 12, 2016

Abdullah Algami
29 Jinnah Close
Birmingham B120SU
United Kingdom

Dear Mr. Algami:

Thank you for your request to use the LPI®: Leadership Practices Inventory® in your dissertation. This letter grants you permission to use either the print or electronic LPI [Self/Observer/Self and Observer] instrument[s] in your research. You may ***reproduce*** the instrument in printed form at no charge beyond the discounted one-time cost of purchasing a copy; however, you may not distribute any photocopies except for specific research purposes. If you prefer to use the electronic distribution of the LPI you will need to separately contact Joshua Carter (jocarter@wiley.com) directly for further details regarding product access and payment. Please be sure to review the product information resources before reaching out with pricing questions.

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Best wishes for every success with your research project.

Cordially,

[redacted]

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Appendix 7 : Factor Analysis

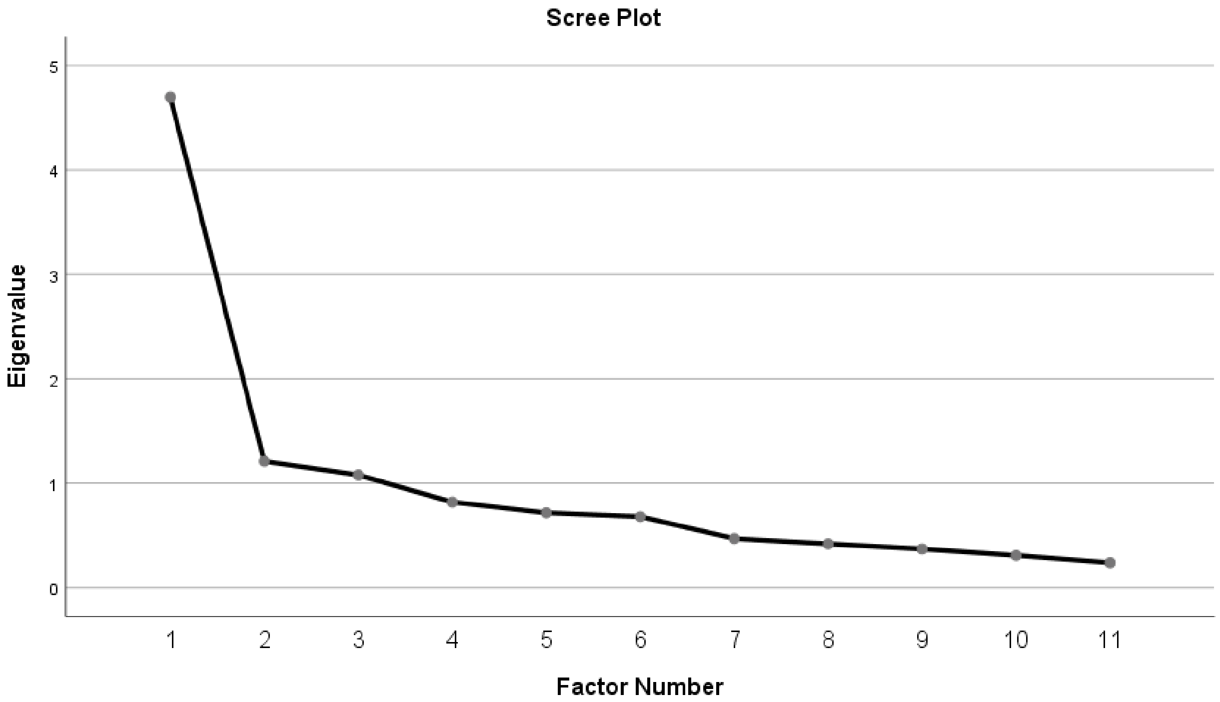
List of factors

Factor #	Question text
1	We have a sharing relationship. We can both freely share our ideas, feelings, and hopes.
2	I can talk freely to this individual about difficulties I am having at work and know that (s)he will want to listen.
3	We would both feel a sense of loss if one of us was transferred and we could no longer work together.
4	If I shared my problems with this person, I know he would respond constructively and caringly.
5	I would have to say that we have both made considerable emotional investments in our working relationship.
6	This person approaches his/her job with professionalism and dedication
7	Given this person's track record, I see no reason to doubt his/her competence and preparation for the job.
8	I can rely on this person not to make my job more difficult by careless work
9	Most people, even those who aren't close friends of this individual, trust and respect him/her as a co-worker.
10	Other work associates of mine who must interact with this individual consider him to be trustworthy.
11	If people knew more about this individual and his/her background, they would be more concerned and monitor his performance more closely

Correlation Matrix[a]

	1	2	3	4	5	6	7	8	9	10	11
1	1.000	.499	.321	.315	.409	.380	.350	.310	.311	.397	-.147
2	.499	1.000	.283	.502	.444	.561	.568	.513	.474	.521	-.096
3	.321	.283	1.000	.481	.409	.129	.351	.359	.367	.239	.135
4	.315	.502	.481	1.000	.250	.363	.476	.425	.391	.446	-.057
5	.409	.444	.409	.250	1.000	.459	.464	.365	.328	.225	.093
6	.380	.561	.129	.363	.459	1.000	.637	.274	.239	.318	-.120
7	.350	.568	.351	.476	.464	.637	1.000	.556	.460	.478	-.030
8	.310	.513	.359	.425	.365	.274	.556	1.000	.530	.515	-.107
9	.311	.474	.367	.391	.328	.239	.460	.530	1.000	.520	-.123
10	.397	.521	.239	.446	.225	.318	.478	.515	.520	1.000	-.071
11	-.147	-.096	.135	-.057	.093	-.120	-.030	-.107	-.123	-.071	1.000

Total Variance Explained



Rotated Factor Matrix[a]

Factor #	Item	Factor 1	Factor 2	Factor 3
1	We have a sharing relationship. We can both freely share our ideas, feelings, and hopes.	.392	.393	
2	I can talk freely to this individual about difficulties I am having at work and know that (s)he will want to listen.	.573	.541	
3	We would both feel a sense of loss if one of us was transferred and we could no longer work together.	.454		.768
4	If I shared my problems with this person, I know he would respond constructively and caringly.	.541	.303	
5	I would have to say that we have both made considerable emotional investments in our working relationship.		.524	
6	This person approaches his/her job with professionalism and dedication		.909	
7	Given this person's track record, I see no reason to doubt his/her competence and preparation for the job.	.509	.589	
8	I can rely on this person not to make my job more difficult by careless work	.690		
9	Most people, even those who aren't close friends of this individual, trust and respect him/her as a co-worker.	.688		
10	Other work associates of mine who must interact with this individual consider him to be trustworthy.	.696		
11	If people knew more about this individual and his/her background, they would be more concerned and monitor his performance more closely			

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

Factor #	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.697	42.702	42.702	4.264	38.768	38.768	2.782	25.293	25.293
2	1.208	10.986	53.688	.855	7.770	46.538	2.149	19.536	44.829
3	1.078	9.804	63.491	.627	5.697	52.235	.815	7.406	52.235
4	.818	7.439	70.931						
5	.716	6.510	77.441						
6	.679	6.173	83.614						
7	.469	4.263	87.877						
8	.418	3.804	91.681						
9	.369	3.356	95.038						
10	.308	2.800	97.837						
11	.238	2.163	100.000						

Extraction Method: Principal Axis Factoring.

Communalities

Factor #	Factor	Initial	Extraction
1	We have a sharing relationship. We can both freely share our ideas, feelings, and hopes.	.364	.312
2	I can talk freely to this individual about difficulties I am having at work and know that (s)he will want to listen.	.569	.624
3	We would both feel a sense of loss if one of us was transferred and we could no longer work together.	.419	.824
4	If I shared my problems with this person, I know he would respond constructively and caringly.	.445	.411
5	I would have to say that we have both made considerable emotional investments in our working relationship.	.429	.430
6	This person approaches his/her job with professionalism and dedication.	.561	.861
7	Given this person's track record, I see no reason to doubt his/her competence and preparation for the job.	.612	.607
8	I can rely on this person not to make my job more difficult by careless work.	.490	.532
9	Most people, even those who aren't close friends of this individual, trust and respect him/her as a co-worker.	.432	.503
10	Other work associates of mine who must interact with this individual consider him to be trustworthy.	.458	.549
11	If people knew more about this individual and his/her background, they would be more concerned and monitor his performance more closely	.130	.092